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THE GEOLOGY AND GEOCHEMISTRY OF THE DAISY CREEK PROSPECT, A STRATABOUND COPPER-SILVER OCCURRENCE IN WESTERN MONTANA

by

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Frontispiece - View of the South Daisy Creek drainage basin. The occurrence lies on the left hand fork near the head of the stream. Stratigraphy dips obliquely to the left and toward the foreground at approximately 45°.

ABSTRACT

Stratabound copper, lead, and silver minerals at the Daisy Creek prospect are hosted by crossbedded feldspathic quartzites and orthoquartzites of the Bonner Formation, Missoula Group, Belt Supergroup. Detailed float rock-chip mapping of a 60,000 m^2 soil grid indicates that mineralization occurs in reduced, coarse grained quartzites, over- and under-lain by fine grained, hematitic quartzites and siltites. Sixty km^2 regional mapping shows that the prospect lies on the eastern limb of a major broad, open syncline, and that two phases of deformation have folded the strata.

Paragenetic relationships in float rock-chips indicate that early diagenetic pyrite was replaced successively by galena, chalcopyrite, and argentiferous bornite and chalcocite. Later, middle diagenetic oxidation resulted in the formation of cupriferous goethite, barite, and acanthite. Holocene supergene oxidation formed abundant malachite, cerrusite, and pyromorphite from these sulfides and earlier oxidation products.

Soil grid geochemical anomalies of Cu, Pb, Zn, Ag, Ba, and Hg occur as overlapping zones over the prospect. These geochemical zones overlie and correlate well with areas containing different gossan types. The types of different gossan morphologies and anomalous geochemical concentrations suggest that the zones are mineralogically related and that they are characterized by the presence of galena, chalcopyrite, bornite, and chalcocite.

The paragenetic relationships, geochemical soil zoning geometries, gossan morphologies, and geochemical and mineralogical constraints on the mineralization suggest that sulfide deposition occurred before the onset of silica cementation. Furthermore, it involved the introduction of metal-chloride complexed, oxidized ground waters along an aquifer into locally reduced sediments. Diffusion of copper, and later oxygen, from the oxidizing ground waters into the reduced zone resulted in the formation of Cu-sulfides and their subsequent oxidation.

A new method of statistical analysis involving the regression of stream sediment data from around the Daisy Creek prospect reveals that the prospect can be precisely located using this technique, and that numerous other 'false anomalies' are recognized. Traditional methods for anomaly recognition fall short of providing the information derived from this technique.

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CHAPTER 1

INTRODUCTION

Location and History

The Daisy Creek prospect, located in the Cabinet Mountains of Lolo National Forest, northwestern Montana, (Figure 1; 115° 06' W, 47° 48' N; R 27 W, T 24 N, S 30), consists of stratabound copper, silver, and lead minerals contained in the Bonner Formation of the Belt Supergroup. The property lies at 1,470 m elevation and can be reached by driving north out of Thompson Falls, Montana along the Thompson River Road for 23 km, then the Fishtrap Creek Road for 13 km, and finally the Daisy Creek Road for 2 km to the Richard's Peak Trailhead. The property lies 200 m south of the 0.5 km mark on the Richard's Peak Trail.

Potential for significant mineralization in the area was indicated by anomalies from a regional stream sediment geochemistry program conducted by Anaconda Minerals Company during the summer of 1982. Geologic investigation later that fall discovered malachite mineralization in float rock-chip samples with grades of up to 2.0% Cu, 0.3% Pb, and 70 grams Ag per tonne.

Aside from several small, barely recognizable pits located over part of the mineralized zone, and probably dug by prospectors during the 1930's, no evidence of mining or prospecting activity was observed in the area. As a result, a pedogeochemical grid survey was conducted during the fall of 1982

Daisy Creek Area Location Map

Sanders County, Montana

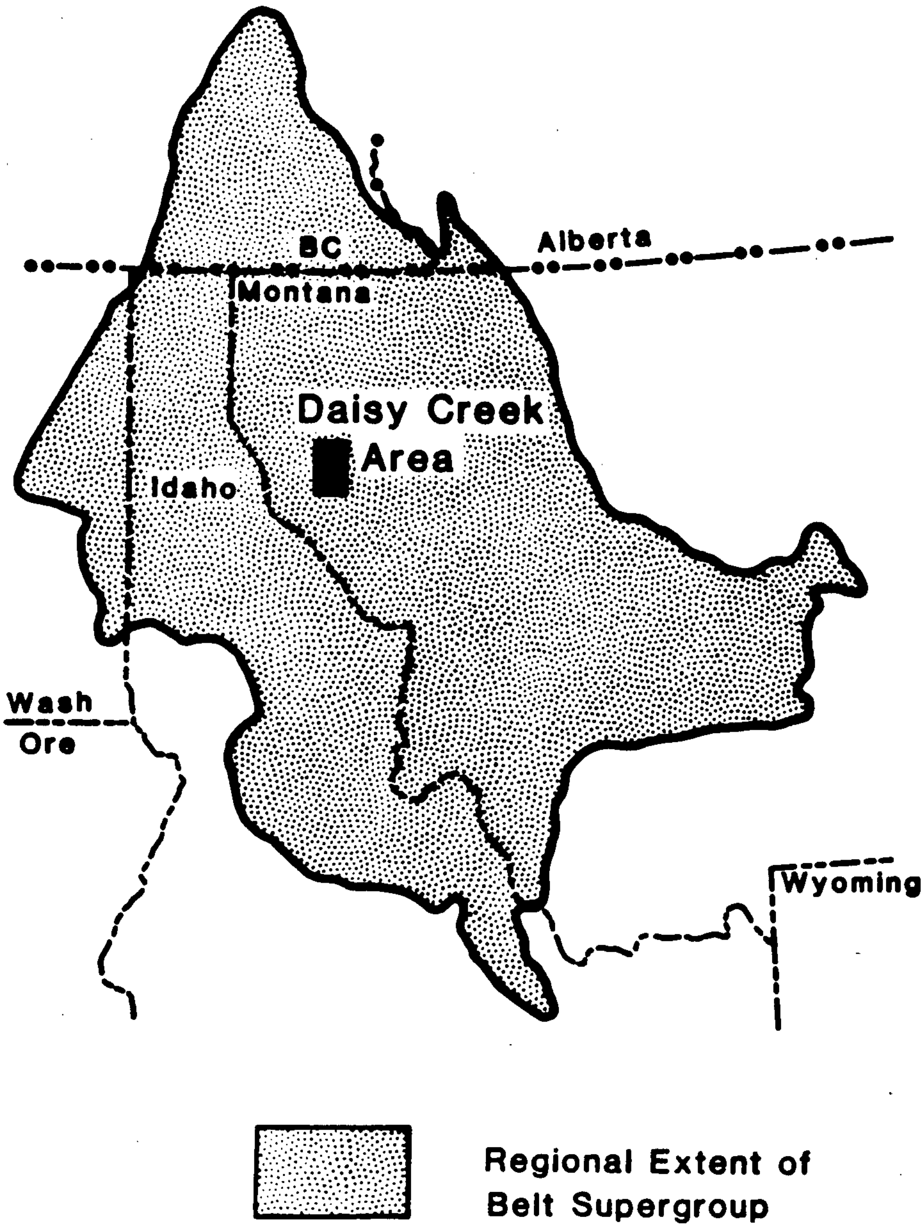


Figure 1

which demonstrated anomalous concentrations of Cu, Ag, and Pb, but failed to bound these anomalies.

Work in 1983, therefore, was devoted to defining the extent of the pedogeochemical anomalies and determining the nature of the mineral occurrence. This work consisted of 60 km^2 of regional (1:24,000) geologic mapping, 60,000 m^2 of detailed (1:1200) soil and float rock-chip mapping, and the collection of 736 additional soil samples.

Surface Features

Topography in the Daisy Creek area is rugged, with elevations ranging from 900 to 1,700 m. Slopes are steep (up to 45°) and densely forested. Bedrock generally weathers recessively and outcrop comprises less than 1% of the field area. No outcrops are present within 0.5 km of the mineral showing at Daisy Creek.

Vegetation in the Daisy Creek area is abundant. South facing slopes support mature canopies of ponderosa pine (*Pinus ponderosa*) at lower elevations, and younger stands of douglas fir (*Pseudotsuga taxifolia*) at higher elevations. Lodgepole pine (*Pinus contorta latifolia*) and subalpine fir (*Abies lasiocarpa*) are found in dense immature stands on north facing slopes, and occur at all elevations. Understory consists of grasses and sedges beneath ponderosa pine, and deadfall and low shrubs beneath douglas fir, subalpine fir, and lodgepole pine. Creek bottoms commonly are choked with deadfall.

On a regional scale, soils generally consist of mature brunisols to immature luvisols. Profiles consist of a >7 cm thick Lh horizon overlying a >50 cm Bm horizon which, in turn, overlies bedrock. Ae and Bt soil horizons occur sporadically, developing over argillaceous bedrock and alluvial deposits, under grassy parklands, and on shallow to flat slopes. Bedrock lies within 1 to 3 m of the surface except where alluvium is present. No evidence of past glacial activity or glacial deposits occur on the prospect or the 60 km^2 regional map area.

Due to high snow accumulation during the winter, spring runoff is nearly torrential and most fine detritus is flushed from the higher order stream beds. Runoff generally drops to a trickle by the end of June, though, and silt size material accumulates, making stream sediment sampling possible by July.

Since soils are well drained, low order streams are ephemeral during most of the summer, and country rocks are largely unreactive, physical weathering dominates over chemical weathering, and stream detritus is immature. This is especially true in the 1st and 2nd order streams within 1 km of the head of the drainage, where stream sediment is texturally and compositionally identical to adjacent soils except for a small amount of sorting and winnowing. Higher order streams contain sorted but generally unweathered sands and silts. Clays and Fe- and Mn-oxides are generally not abundant.

General Geology

The mineralized zone lies on a south facing slope and occurs continuously over 200 m of strike length and 15 m of true width. Strata dip 40° SW and strike approximately 165°.

Bedrock consists of moderately deformed, terrigenous, very fine to coarse grained, feldspathic quartzites and orthoquartzites of the Bonner Formation (Belt Supergroup, Helikian Era) which lie on the eastern limb of a large north-south trending syncline. These sediments were deposited as prograding sands on a deltaic mud flat near the center of the Belt Basin. The Cu-Ag-Pb showing appears to be stratabound and occurs within a coarse grained, crossbedded facies of the Bonner Formation, which generally is more reduced than the surrounding strata.

Minerals of economic interest consist of galena, chalcopyrite, bornite, chalcocite, cerussite, pyromorphite, hinsdalite, cupriferous goethite, acanthite, malachite, chalcanthite, chrysocolla, native silver, barite, and limonite. Unweathered sulfide minerals occur in the quartzite, cementing and often replacing detrital grains. Secondary oxide phases replace these sulfides and occur as coatings on weathered surfaces.

Paragenetic mineral relationships, sedimentary evidence, offset soil geochemical anomalies of Cu, Pb, Zn, Ag, Ba, and Hg, and gossan types which form zones across the prospect area support the hypothesis of the sequential replacement of early diagenetic pyrite by galena, Cu-sulfides, and argentiferous

Cu-sulfides. Geochemical evidence suggests Cu- and Pb-sulfide deposition occurred as a result of the interaction of oxidized, metal-bearing ground water with reduced pore water-bearing and/or pyrite-bearing, unconsolidated sediments, some time during diagenesis. As a result, the mineral showing at Daisy Creek is interpreted to be a stratabound sedimentary copper-type occurrence, and to have formed in a manner similar to other Cu-Ag deposits within the Revett Formation in the Western Montana Copper Sulfide Belt.

CHAPTER 2

REGIONAL GEOLOGY

The Daisy Creek prospect, located in the overthrust belt of western Montana, is hosted by Helikian age sedimentary rocks of the Belt Supergroup. In the Daisy Creek area, no intrusive, volcanic, or high grade metamorphic rocks are present. Low grade load metamorphism has reached lower greenschist facies (Winston, 1978). Chlorite and muscovite, which are the major metamorphic minerals, were probably derived from recrystallized detrital micas, clays, and altered feldspars. Metamorphism had little effect on the other minerals in the strata, which are predominantly quartz and hematite.

The following structure, stratigraphy, and sedimentology sections describe the major features of the host rock in the Daisy Creek area.

Structural Geology

The Daisy Creek prospect occurs in the Libby Thrust Zone, one of several east verging imbricate thrust packages which account for the bulk of the structural shortening and displacement in the overthrust region of Western Montana (Price, 1984). Numerous minor imbricate, and probably listric, detachment surfaces, and several major open anticlines and synclines comprise most of the structure in the Libby Thrust Zone (Reynolds, 1984a, b). Fold axis orientations and thrust directions are consistent with a major stress axis oriented at a 070° to 080° azimuth.

The Daisy Creek prospect lies on the eastern limb of one of these major open synclines (Figure 2; from Harrison et al., 1981) with an axis which trends 164° and plunges 12°, based on ac joint orientations (Figure 3; Plate 1). Bedding strikes 162° and dips vary from 65° SW in the northern third of the field area, to 25° SW in the southern third (Figure 4; Plate 2).

Phase 1 Structures

Two phases of deformation are evident in the Daisy Creek area. Phase 1 structures are minor with respect to the overall deformation, taking the form of two tightly folded anticline-syncline pairs which are located at the Snowslip/Wallace Formation contact, and within the Mount Shields Formation (Plate 2). Axes of these folds trend 288° and 281°, and plunge 26° and 31° SE respectively (Figure 5). The steep

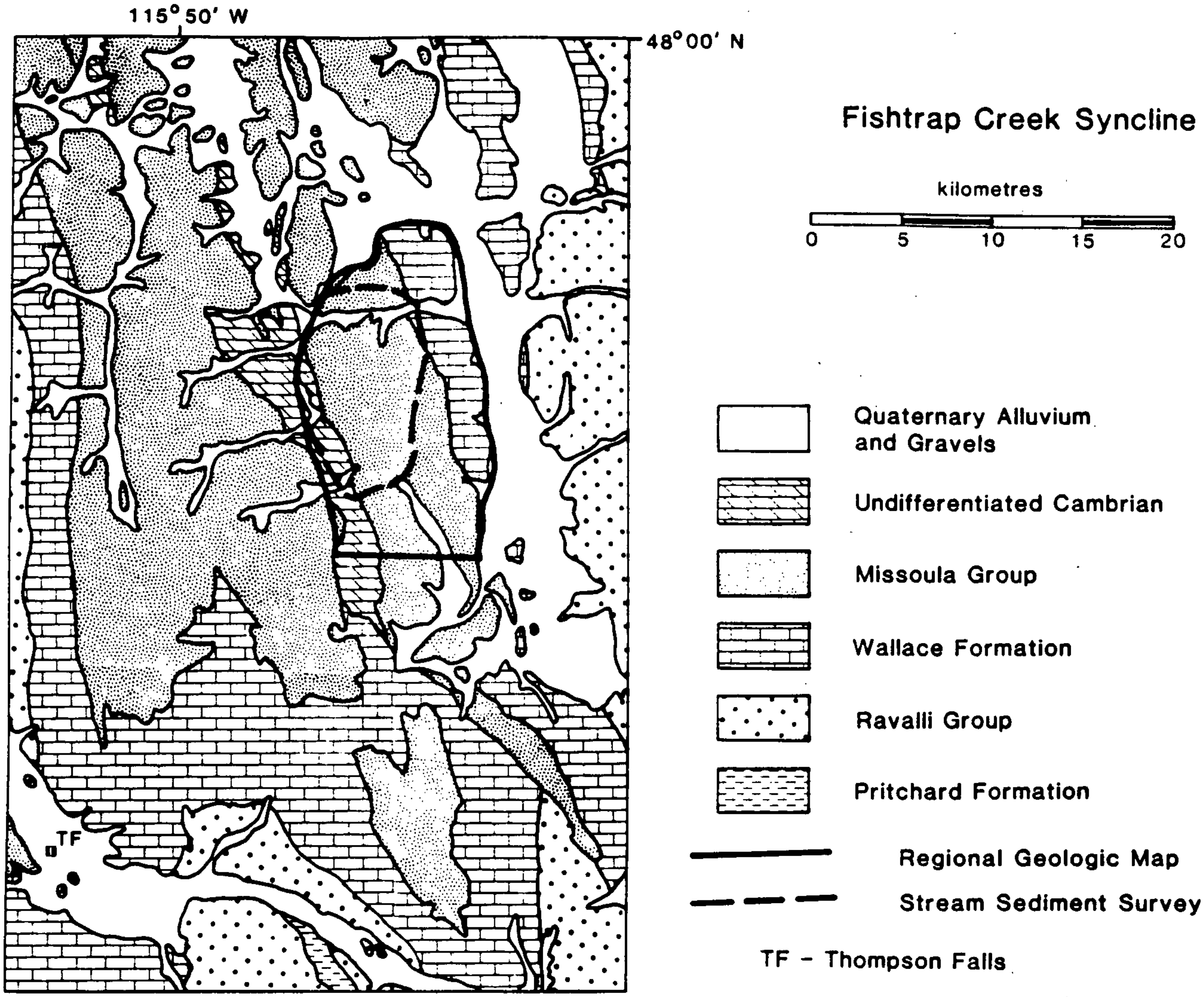

115° 50′ W
48° 00′ N
Fishtrap Creek Syncline
kilometres
0
5
10
15
20
Quaternary Alluvium and Gravels
Undifferentiated Cambrian
Missoula Group
Wallace Formation
Ravalli Group
Pritchard Formation
Regional Geologic Map
Stream Sediment Survey
TF - Thompson Falls
TF

Figure 2

Poles to A–C Joints in Bonner and Libby Formations for Major 164° Trending Syncline

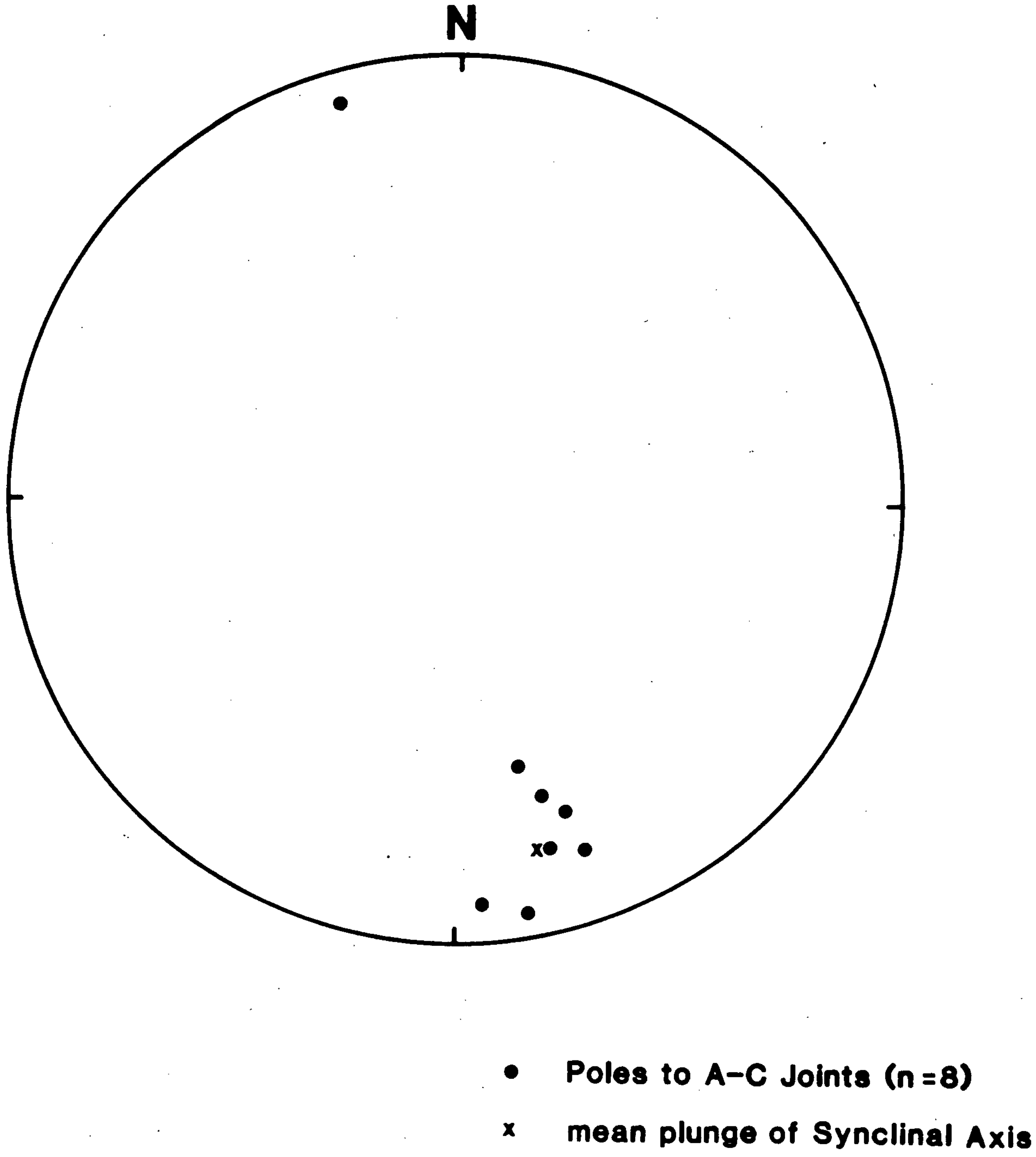
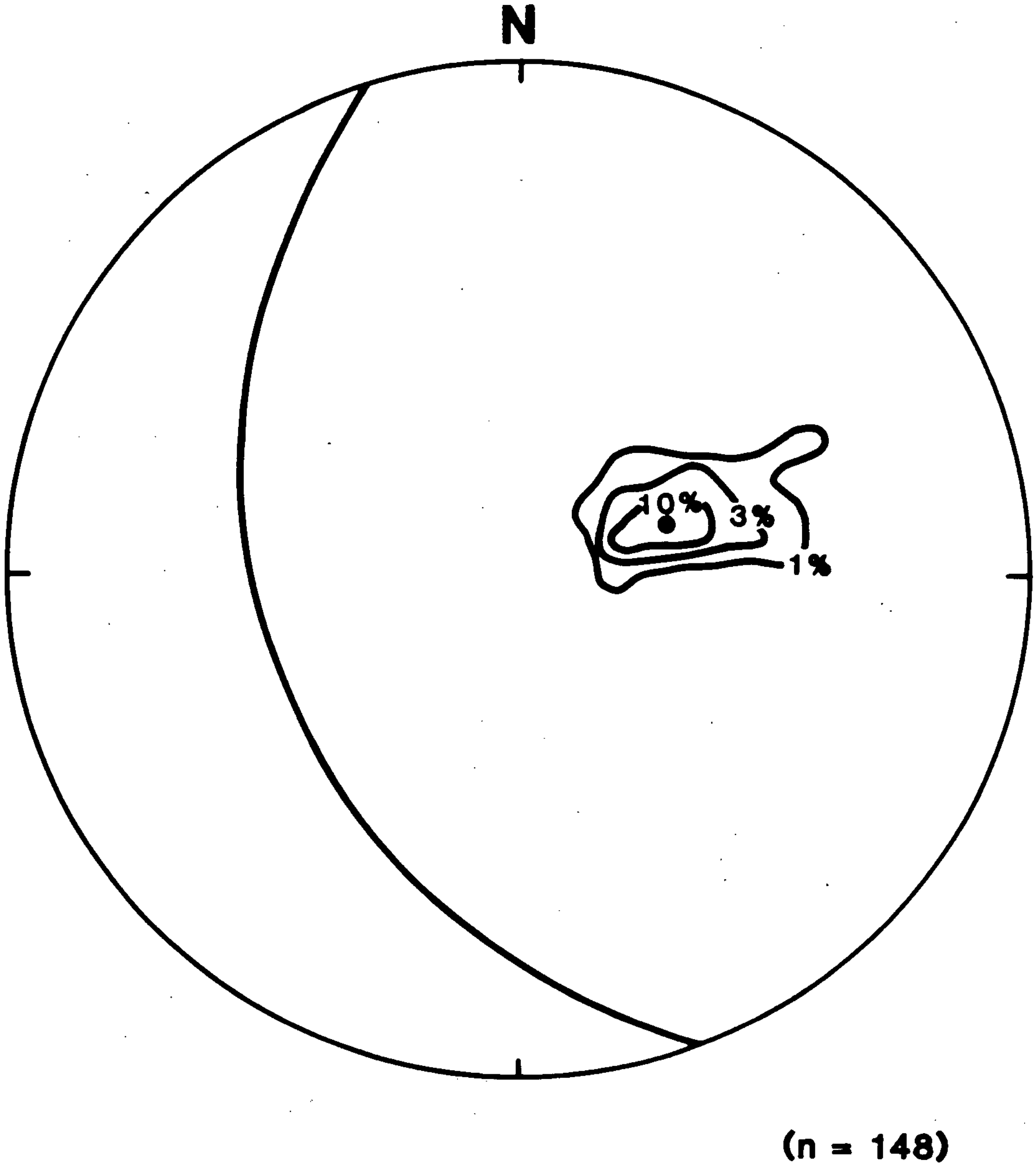


Figure 3

Plate 1

Strong *ac* joints in Ybn$_3$ member
of the Bonner Formation, a hematitic,
flat laminated, fine grained quartzite.
(outcrop is approximately 5 m wide)

Poles to Bedding in the Bonner and Libby Formations and Cambrian Strata



(n = 148)

Figure 4

Poles to Bedding for Phase 1 Folds

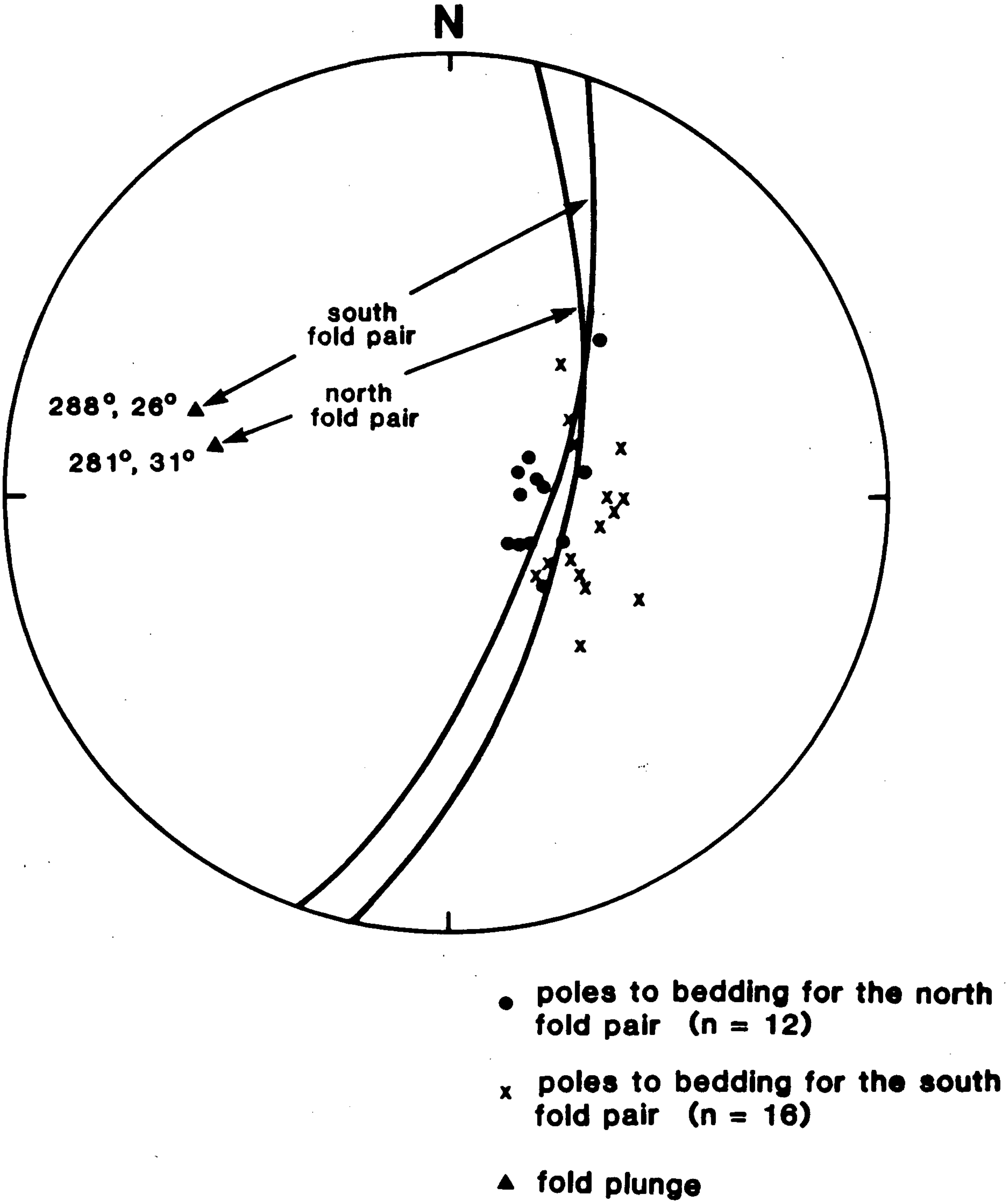


Figure 5

plunge of these fold axes, which lie sub-parallel to the west-dipping bedding surfaces constituting the east limb of the major syncline described above, suggests that they have been folded. This probably occurred during phase 2 deformation, which caused the development of the 164° trending syncline. Prior to phase 2 deformation, the axes of these phase 1 folds were sub-horizontal and had trends of 283° and 277°, respectively (Figure 6).

Minor parasitic fold geometries on the limbs of phase 1 anticline-syncline pairs indicate SW vergence. These minor folds are observed only in carbonate cemented beds of the Wallace Formation and the Mixed Clastic Unit of the Mount Shields Siltite Member. This phenomenon may be related to the fact that, under stress, carbonate cement can recrystallize and twin more readily than silica cement. This would allow carbonate cemented beds to deform ductily, exhibiting folds, whereas silica cemented beds deform brittley under the same stress conditions.

Phase 1 deformation has not been reported previously in this area of the Belt Basin; however, both the pre-thrusting orientation of phase 1 structures (280°), and the present trend of these fold axes (285°), are sub-parallel to the orientation of the Lewis and Clark Line, a major E-W dextral fault system which crosses Western Montana and Northern Idaho, located 50 to 70 km to the SW of the field area. No time constraint for phase 1 deformation is suggested, except that it occurred before phase 2 deformation, and thus is Mesozoic or older.

Plunge Orientations for Phase 1 Folds before and after Phase 2 Deformation

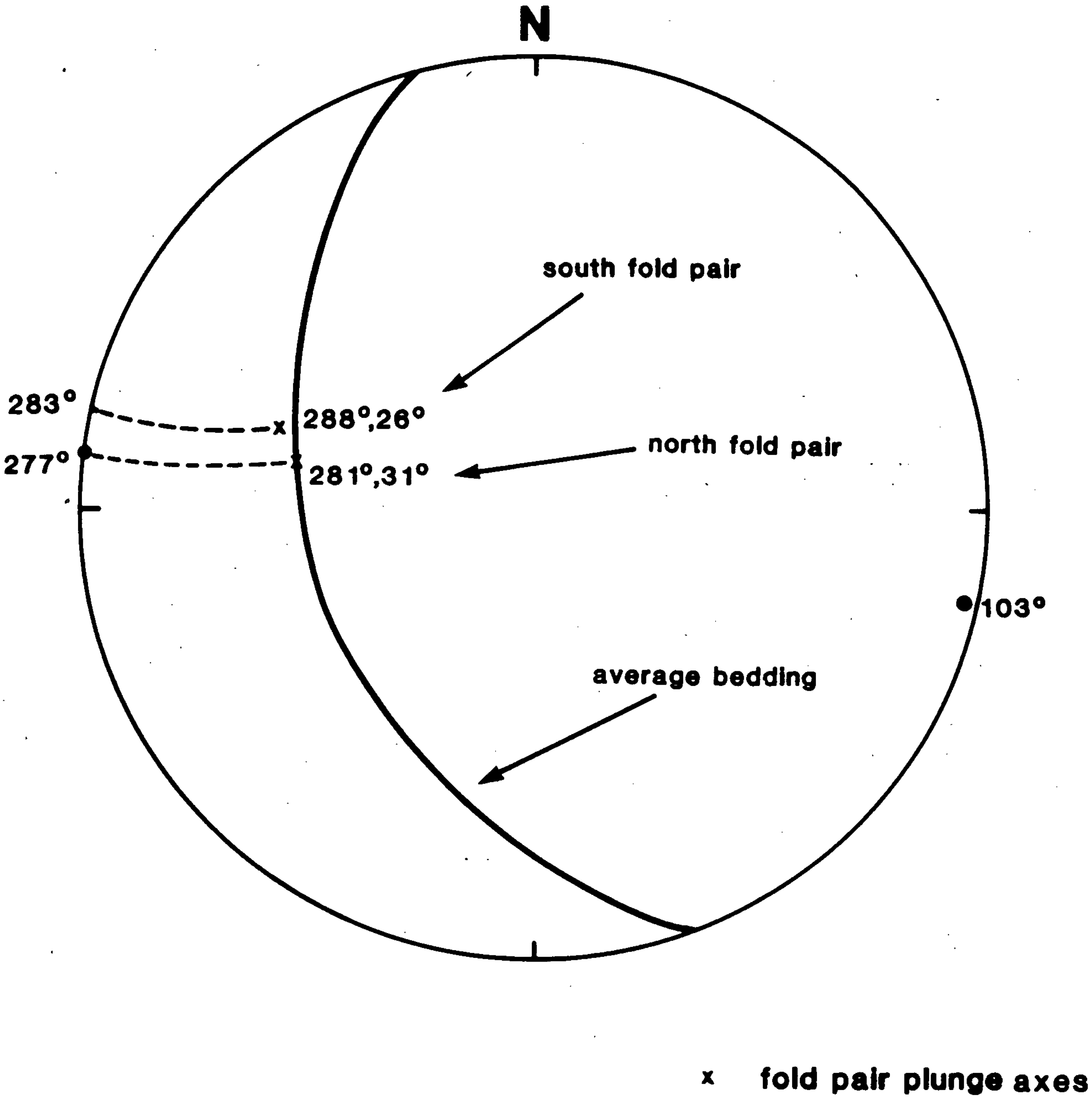


Figure 6

Phase 2 Structures

Phase 2 structures in the Daisy Creek area reflect the development of the Libby Thrust Zone. This phase of deformation is the most prominent in Western Montana and is related to overthrusting of Proterozoic (Belt) and early Paleozoic sediments over Mesozoic and Cenozoic strata (Wheeler, 1983). Phase 2 deformation was active from Jurassic through early Tertiary time. The structural style resulting from this phase of deformation is manifested locally in tight, closely spaced anticlines and synclines and shallow, low angle thrusts in the Daisy Creek area, and regionally, as open, broadly spaced anticlines and synclines and imbricate thrusts.

Structures in the Daisy Creek area related to phase 2 deformation include (Plate 2):

1) a tight, closely spaced anticline-syncline pair (trending 338°; horizontally plunging) at the north end of the field area located in the Snowslip Formation;

2) a broad, widely spaced anticline-syncline pair (trending 327°; doubly plunging) and a minor thrust fault (172° strike, 18° SW dip) located in the Mount Shields Formation, also at the north end of the field area, which constitutes a parasitic fold and thrust set on the eastern limb of the major syncline; this fold and thrust set indicates vergence to the NE; and

3) a homoclinal succession of west-dipping strata which constitutes the eastern limb of the major 164° trending syncline represented throughout the field area; the synclinal axis plunges 8° to the south, based on ac joint measurements.

All of these structures have orientations consistent with a major stress axis trending approximately 075°, which is comparable to that responsible for the development of the Libby Thrust Zone.

Other Structures

Numerous 100° striking, steeply dipping (commonly 80° to the north) quartz veins are recognized in the Daisy Creek area. These veins formed as syntaxial quartz infillings of either, expansion or radial joints during a post-phase 1 relaxation event (their strike is perpendicular to the phase 1 major stress axis), or, more likely, conjugate shear planes developed during phase 2 deformation (their strike is 25° from the phase 2 major stress axis). An obscure fibrous texture and minor brecciation with rotation of fragments is common in these veins. In addition, the veins contain hematite, chlorite, and barite, mimicing the mineralogy of the country rocks they cut (Appendix 1; Bonner and Libby Formations).

The quartz veins are observed cutting only the Libby and Bonner Formations. This may suggest that these formations have the highest tensile strength within the field area and thus deformed brittley when one of the above deformation events occurred. In contrast, closely spaced parasitic folds and thrusts formed during phase 2 deformation and closely spaced folds comprising phase 1 deformation occur only in the Mount Shields, Snowslip, and Wallace Formations. These formations probably have a lower overall strength than the overlying Bonner and Libby Formations, and thus deformed ductily under stresses which did not noticeably deform the Bonner and Libby Formations.

Finally, two major dip-slip faults cut the field area (Plate 2). A steeply dipping fault strikes 355° and is downdropped on the west approximately 210 m, based on marker horizon offset, regional bedding orientations, and the assumption of 100% dip-slip displacement. The fault occurs in the north part of the field area, and is accompanied by abundant deformation along a zone marginal to the fault. This deformation takes the form of tight, closely spaced antiforms and synforms, with attitude changes of over 90° in less than 10 m, numerous normal and reverse faults, and abundant bedding plane slips.

A second, steeply dipping fault occurs at the south end of the field area. It strikes 70° and is downdropped approximately 135 m (assuming 100% dip-slip displacement) on the south side. Distinct folding adjacent to the fault in the Libby and Bonner Formations is structurally consistent with dip-slip movement along the fault.

Minor malachite-stained reverse faults, located in the Bonner Formation adjacent to this dip-slip fault are oriented parallel to <u>ac</u> joints related to the phase 2 syncline. This suggests that this major fault ia a reverse fault with a 70° northerly dip.

Neither of these faults can be related conclusively to either of the deformation phases which are observed in the Daisy Creek area; however, both appear to have undergone significant relative movement since the end of phase 2 deformation.

Regional Angular Unconformity

Separate analysis of bedding orientations for Cambrian and Proterozoic rocks indicates that a minor angular unconformity occurs between these rock packages. Rotation of the mean Cambrian bedding orientations in the west-central portion of the field area to horizontal demonstrates that, during Cambrian deposition, the underlying Proterozoic sediments had a strike of 162° with an 8° SW dip (Figure 7). Similar rotation of bedding orientations in the northwest and southwest parts of the field area yield similar results.

Regional Angular Unconformity between Proterozoic and Cambrian Strata

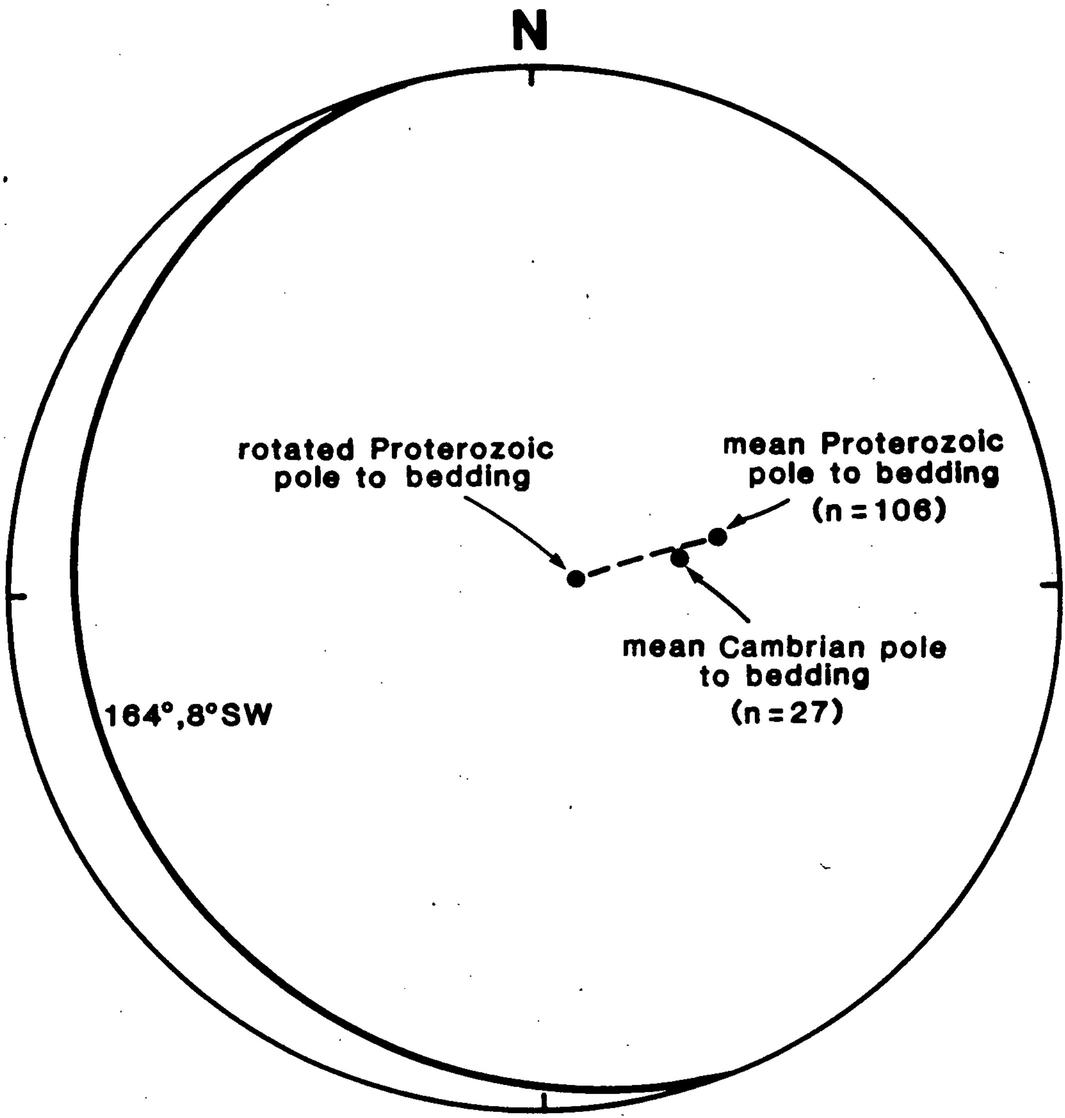


Figure 7

Stratigraphy and Sedimentology

Bedrock in the Daisy Creek area is entirely sedimentary. Two major lithologic packages are present. Helikian fluvial, deltaic, and basinal sediments over 4,200 m thick comprise the Missoula Group and underlying Middle Belt Carbonate of the Belt Supergroup (Johns, 1970; Croweley, 1972). These sediments occur below at least 550 m of a miogeoclinal Cambrian sequence (Lochman, 1957). A stratigraphic column is presented in Plate 3 and a referenced description of this stratigraphy is included in Appendix 1.

Belt Supergroup

In the Daisy Creek area, sedimentary deposition during Belt time appears to have occurred in largely intermittent pulses on a vast alluvial plain or fluvio-deltaic complex prograding into a major basin (Winston et al., 1977). This basin was probably surrounded by granitic and gneissic terranes of Archean and Hadrynian age. Detrital input apparently occurred during flash floods or seasonal monsoons because mud crack casts, mud chip conglomerates, and fining upward sedimentary sequences are common (Winston, 1984a). Most beds in the Daisy Creek area are fine grained and probably were located distal to flood sources; thus waters did not have enough energy to significantly scour previously deposited beds.

Belt sedimentation took place in a semi-arid environment (Winston et al., 1977) and, as paleo-magnetic data indicate, at latitudes less than 25^o (Elston, 1983; Obradovich et al., 1984; Harrison, 1984b). Very little tectonic activity occurred during the bulk of Belt time, except at the edges of the basin, where boundary faults were active intermittently, perpetuating basinal subsidence and sedimentation. Syn-sedimentary faults also presumably occurred at the edge of the sedimentary prism.

Igneous activity was uncommon, consisting of only the Moyie Sills, which intrude the Pritchard/Aldridge Formation, and the Purcell Lavas which occur in the Shepard and Snowslip Formations (Harrison, 1972). Neither of these igneous units occurs in or near the field area. Units older than the Wallace Formation are not present in the Daisy Creek area and are not described in this report.

Middle Belt Carbonate

Wallace Formation

The only part of the Wallace Formation exposed in the Daisy Creek area is the upper part of the Middle Member. It is composed of dark grey to black, laminated, calcareous argillite and siltite, interbedded, in a very distinctive wavy form, with white dolomitic quartzite. The Upper Member, as described by Harrison (1984a), resembles the lower Green Argillite Member of the Snowslip Formation (Ysn_1; Appendix 1), but is not defined as such in this report because of the lack of abundant carbonate cement.

The depositional environment for Wallace sedimentation consisted of quiet, shallow water carbonate mud-flats and shoals dominated by carbonate precipitation. These shoals contain convolute bedding, water escape structures, and ripple marks. Significant fine clastic input with a southern provenence also occurred during this time (Wallace et al., 1984).

The basin also contained minor local sub-basins (Wallace et al., 1976; Godlewski, 1977; Harrison, 1984a) which were sites for soft sediment slumping and sedimentary breccia development along the edges of these local depressions. No slumping features of this sort are recognized in the Daisy Creek area.

Missoula Group

The Missoula Group has been divided into three assemblages based on sedimentologic characteristics, lithofacies, source areas, and dispersal systems (Wallace et al., 1984). These consist, in the Daisy Creek area, of a lower assemblage composed of the Snowslip Formation, a middle assemblage composed of the Mount Shields and Bonner Formations, and an upper assemblage composed of the Libby Formation.

Snowslip Formation (Lower Assemblage)

The Snowslip Formation contains dominantly thin bedded, red and green argillites to very fine grained quartzites (Harrison and Campbell, 1963). Depositional environments for the upper Purple and Green Argillite Member (Ysn_2; Appendix 1; intercalated red and green beds) consisted of mud flats and shallow distributary channels on a vast sedimentary plain. Local lacustrine environments perpetuated sub-aqueous conditions and caused the formation of green beds due to the preservation of ferrous iron in chlorite, while sub-aerial exposure resulted in red beds, caused by the oxidation of iron and the development of hematite. Sub-aerial exposure of the sediment created desiccation cracks, and caused the development of mud chip conglomerates during later floods.

Green beds of the lower Green Argillite Member (Ysn_1; Appendix 1) were deposited in shallow water with rare sub-aerial exposure. Desiccation cracks did not develop because the sediment was always wet, and thus no mud chip conglomerates were formed.

Lithofacies changes across the basin suggest that the provenance for the Snowslip Formation was from the Hudsonian age Canadian Shield to the east and northeast (Wallace et al., 1984).

Mount Shields and Bonner Formations (Middle Assemblage)

The middle assemblage of the Missoula Group is significantly coarser grained than the underlying lower assemblage (Winston, 1984a, b). In the Daisy Creek area, the Bonner Formation and underlying Mount Shields Formation consist of two major packages of prograding sediments, one deposited in supra-tidal, fluvial and delta-plain mud flat environments (Bonner Formation), and the other deposited dominantly in inter-tidal, strandline and possibly sub-tidal, pro-delta environments (Quartzite Member, Mount Shields Formation). These packages are separated by a series of transgressive sediments comprising the Siltite Member of the Mount Shields Formation.

The Bonner Formation consists of trough and epsilon crossbedded, coarse grained quartzites (braided channels; Plate 4) and flat to ripple laminated, fine grained quartzites (inter-channel mud flats). These inter-channel mud flats were temporarily covered by shallow waters, as suggested by abundant ripple marks, but normally dried quickly and were exposed to atmospheric oxidation, because green beds are rare (Plate 1).

Facies and facies thicknesses change rapidly along strike (Plate 5), and many mappable units thin and thicken appreciably along the eight kilometers of strike length in the field area. These variations are common in fluvial environments due to channel migration during stream evolution, and due to local variations in topography.

The two crossbedded members of the Bonner Formation (Ybn_2

Plate 4

Trough crossbeds in Ybn_4 member of the Bonner Formation, a vitreous, coarse grained quartzite.

26 a

and Ybn_4; Appendix 1) represent two minor but separately recognizable periods of progradation, the first extending further to the north than the second (Plate 6; from Winston et al., 1977, and Newton, 1982). Each is correlatable with a probable time-equivalent conglomeratic facies which occurs in the southern part of the Belt Basin. These may represent periods of greater uplift in the highlands surrounding the Belt Basin and/or periods of larger clastic input from these highlands into the Belt Basin.

The Mount Shields Formation consists of two members (Winston et al., 1977). The upper Siltite Member (Ymss; Appendix 1) consists of purple and green transgressive siltites and argillites and overlies the lower Quartzite Member (Ymsq; Appendix 1), another sequence of prograding sediments which is slightly finer grained than the Bonner Formation.

Deposition of the Siltite Member (Ymss; Appendix 1) occurred in shallow water, which often dried or drained away. Occasionally, carbonate cemented the sediments. Green beds were deposited in more permanent waters. Red beds may have been deposited in shallow standing water that soon dried, resulting in desiccation cracks and mud chip conglomerates when later flooding occurred. The waters were not totally quiescent during sedimentation, because the existence of asymmetric tuning fork and undulatory ripple marks suggests that some sort of current existed. These ripple marks may have been caused by currents related to the waning floods which introduced the sediment, but more likely, were caused by the waters draining from the flood plain well after sediment deposition.

Deposition of the lower Quartzite Member (Ymsq; Appendix 1) appears to have been substantially different in form than the Bonner Formation. These differences are especially evident in the Pyritic Quartzite Unit ($Ymsq_3$; Appendix 1). No trough or epsilon crossbeds were noted in this unit, suggesting that it was not deposited in a classical fluvial environment. Instead, only planar and tabular-tangential crossbeds occur. In addition, abundant authigenic pyrite occurs in this unit. These features suggest that the quartzite was deposited as sub-aqueous sheet sands and bars and that it did not dry out significantly after sedimentation. Conditions of this type can only be found in inter-tidal strandline or sub-tidal pro-delta environments.

The Hellgate Quartzite Unit ($Ymsq_1$; Appendix 1), which is the facies equivalent of the Hellgate Quartzite Formation located further to the south (Harrison, 1977), also exhibits crossbeds similar to the Pyritic Quartzite Unit. However, the pink color of its beds suggests that it either dried out after subaqueous deposition, or went through redoxomorphic oxidation during diagenesis where Fe^{II} was oxidized to Fe^{III}.

The underlying Lower Green Siltite Unit ($Ymsq_2$; Appendix 1) of the Quartzite Member was also deposited in a largely subaqueous environment, with little sub-aerial exposure after sedimentation because no desiccation cracks or mud chip conglomerates occur. Thus, all units of the Quartzite Member of the Mount Shields Formation appear to have been deposited in a sub-aqueous inter-tidal strandline and/or sub-tidal pro-delta environment.

The fluvial systems which formed the Bonner and Mount Shields Formations had a granitic source located to the southwest, on 'Belt Island', and on the Dillon Block, south of the Willow Creek Fault Zone (Winston et al., 1977). Limited paleo-current measurements from the Daisy Creek area indicate paleo-transport directions toward 334^{o} (Figure 8) with a shore line roughly perpendicular to this orientation (064^{o}).

Libby Formation (Upper Assemblage)

The Libby Formation (upper assemblage) consists dominantly of mint blue to olive green chert-bearing argillite and siltite. This unit was deposited in shallow water but sediments rarely were exposed to the atmosphere. Mud chip conglomerates occur but these may have been transported into the shallow water from sub-aerial mud flats nearby. Most mud chips are not rounded, suggesting a very proximal source. Available evidence indicates that the Upper Member (Ylbu; Appendix 1; Plate 7) was deposited in shallower water than was the Lower Member (Ylbl; Appendix 1; Plate 8). Both members show some evidence of periodic desiccation; however, the more common desiccation cracks and red beds in the Upper Member indicate that drying was a more frequent phenomenon there than in the Lower Member.

During deposition of this upper assemblage, the sediment source was from the south (Wallace et al., 1984; and based on lithofacies data suggesting finer grained and thinner laminated sediments toward the north - from exposures in the Daisy Creek

Paleocurrent and Shoreline Directions
Ybn 4 Member, Bonner Formation

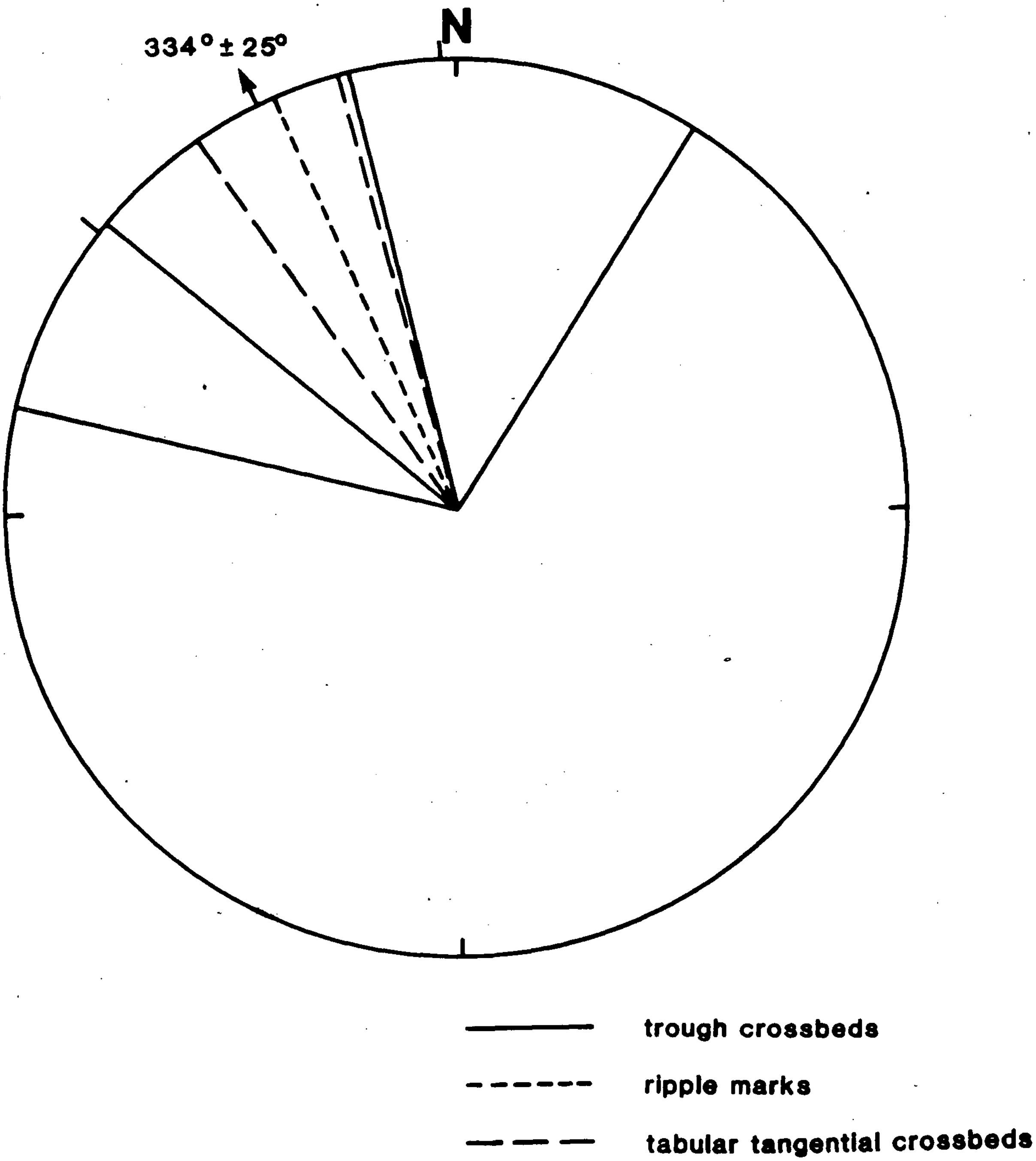


Figure 8

Plate 7

Outcrop of upper member of the Libby Formation (Ylbu). Note swaley bedding and brownish black Fe-oxide stains.

Plate 8

Outcrop of lower member of the
Libby Formation (Ylbl). Note
strong ac joints and pale
tan weathering.

area and around Libby, Montana).

Middle Cambrian Sediments

Above the Libby Formation, and separated by a low angle regional unconformity, lies a transgressive sequence of Middle and Upper Cambrian clastic and carbonate rocks. These rocks occur on the west side of the field area. At the base of this sequence is the Flathead Sandstone, a trough and epsilon crossbedded, coarse grained, quartz- and jasper-rich sandstone overlying a flat laminated, fine grained, hematitic sandstone (Plate 9), deposited in braided channel and inter-channel mud flat environments, respectively, at the edge of a marine basin (Lochman, 1950). The Flathead Sandstone is similar to the Bonner Formation, except that no evidence exists suggesting that the Belt Basin was marine at the time of Bonner deposition.

Overlying the Flathead Sandstone lies the Gordon Shale, a fissile, fossiliferous shale deposited in a marine basin of intermediate depth (Plate 10; Lochman, 1950).

Finally, the Damnation and Dearborn Dolomites overlie the Gordon shale and cap the Middle Cambrian section in the field area. Both of these sandy dolomites contain shaly interbeds.

These formations underlie the rest of the Middle Cambrian, Upper Cambrian, and Devonian section, which is not exposed in the Daisy Creek area, and represent a major Paleozoic transgression which onlapped onto North America from the west, commencing during Middle Cambrian time. These sediments were deposited on

Plate 9

Cambrian Flathead Sandstone (Cfs).
Note maroon 'inter-channel mud flat'
facies interbedded with white, crossbedded
'channel facies'.

Plate 10

"Outcrop" of Cambrian Gordon Shale (Cgs).

top of a partially eroded surface (regional angular unconformity with an 8^{o} dip) of the Belt Supergroup, and are the youngest rocks exposed in the area.

CHAPTER 3

DETAILED GEOLOGY

Soil Grid Geology

The Daisy Creek prospect consists of galena, chalcopyrite, bornite, chalcocite, cupriferous goethite, malachite, acanthite, cerussite, pyromorphite, hinsdalite, chalcanthite, chrysocolla, native silver, and barite disseminated erratically as blebs in medium to very coarse grained, vitreous feldspathic quartzites and orthoquartzites of the Bonner Formation which strike 162° and dip 40° SW. A detailed float rock-chip map was generated by evaluating the average lithologic characteristics at soil sample sites located on a square grid 15 m on a side. The soil grid, covering over 60,000 m^2, is irregular in shape and extends beyond the known mineralized limits. A minimum of 15 rock-chips, greater than 5 cm on a side collected from each soil sample hole, were used to evaluate the geologic characteristics of each site.

Float Rock-Chip Maps

Soil float rock-chip maps are presented in Plates 11 and 12. Results demonstrate a close correlation between the mineral showing (Chapter 4) and several geologic features. These include grain size, sedimentary bed forms, and redox potential. These geologic characteristics allow the subdivision of the Bonner

Formation into several members, as described in Appendix 1, and depicted in Plate 3. A summary map of these members as they occur on the soil grid is presented in Plate 13. Copper minerals appears to be contained entirely within the Ybn_4 member of the Bonner Formation.

Two other stratabound Cu-Ag prospects in or immediately adjacent to the Ybn_4 member are known to occur in southwestern Montana. The Pacman prospect, located in the Southern Pioneer Mountains, and the Bluebird/Mona Lisa prospect, located at the west end of the Anaconda-Pintlar Range, consist of chalcocite and minor bornite which cement and partially replace detrital grains. Host lithologies for these prospects are similar to that at Daisy Creek, although they are significantly coarser grained (Newton, 1982).

In addition to the sedimentologic criteria at the Daisy Creek prospect described above, a distinct zoning pattern of gossan types can be observed across the deposit. Weathered disseminated authigenic sulfide and ferroan carbonate blebs, now converted to Fe-oxide phases (limonites), exhibit distinct color and form differences which are correlatable with original sulfide minerals. These are distributed in zones across the deposit and surrounding strata (Plate 14).

Disseminated limonite blebs occur, as gossans, in all members of the Bonner Formation (Ybn_{1-5}; Appendix 1), as well as the Purple and Green Argillite Unit ($Ymss_4$; Appendix 1) and Pyritic Quartzite Unit ($Ymsq_3$; Appendix 1) of the Mount Shield Formation. Descriptive terminology has been borrowed from

Blanchard (1968), Whitten (1965), Ney et al. (1976), and Anderson (1982). Limonites from the finer grained red beds, which are flat to ripple laminated and thin bedded (Ybn_1, Ybn_3, Ybn_5, and $Ymss_4$; Appendix 1; type A), are indigenous and only minor constituents of the host rock. They are orange in color, appear to be powdery, amorphous aggregates, and completely fill the up to 5.0 mm wide cavities in which they are found.

In contrast, limonite from the coarser grained crossbedded units of the Bonner Formation (Ybn_2 and Ybn_4; Appendix 1; type B) are abundant and red in color, indigenous, appear crystalline in form, and only dust the inside surfaces of the up to 1.0 cm wide cavities they occupy.

Limonite from the Pyritic Quartzite Unit ($Ymsq_3$; Appendix 1; type C) appears to be be a weathering product of the 1.0 mm authigenic pyrite cubes found in this strata and is very different from the disseminated limonite found in the other units and members. It is orange in color, slightly porous, retains the original euhedral pyrite cubic form, is 1.0 to 3.0 mm in width, amorphous, indigenous, and generally is rimmed by red fringing and exotic limonite which is finely disseminated in all directions up to 1.0 cm away from the bleb.

The orange and red indigenous disseminated limonite blebs, found in both thin bedded, flat laminated, fine grained quartzites and crossbedded, coarse grained quartzites, occur ubiquitously throughout the Belt Basin and may be weathering products of authigenic ferroan calcite or ferroan dolomite which act to cement grains in the terrigenous clastics. The color difference may be related to the permeability of the respective units; the coarser grained units have higher permeabilities and thus are exposed to supergene oxidation for a longer period of time during the erosion process than the finer grained beds because oxygen bearing waters can circulate to greater depths in these porous units. This would allow time for limonites from the coarser grained beds to mature through recrystallization and dehydration to more crystalline forms of Fe-oxide, specifically hematite, whereas limonites from the finer grained beds would be relatively immature and consist of poorly crystalline ferric hydroxide and goethite. In addition, the high permeability of the coarser grained rocks would allow the removal of most of the iron in the coarse grained beds, leaving only hematite dusts to coat cavity surfaces.

All of these types of limonite blebs appear to be unrelated to the Cu-bearing zones in the Ybn_4 member of the Bonner Formation. They occur throughout the entire strike length of these strata, and do not appear to be related spatially in abundance, occurrence, color, or crystallinity to the mineralization.

Limonite which occurs on the prospect itself has completely different characteristics than those described above. Four different types occur (Plate 14):

TYPE D - seal brown, indigenous and minor fringing, highly abundant (covers 10% to 50% of fresh rock surface), highly vitreous euhedral limonite up to 1.0 mm wide which dusts the inside surfaces of up to 1.5 cm wide cavities in only the coarsest grained crossbedded quartzites (Plate 15). This limonite occurs at the base of the Ybn_4 member (Appendix 1; east side) at the north end of the prospect. Malachite occurs with this limonite as coatings on highly micaceous quartzites.

TYPE E - red, indigenous, abundant (covers 10% to 30% of the rock surface), vitreous euhedral limonite which thickly dusts to coats but does not fill 1.0 cm wide cavities in coarse to fine grained quartzites (Plate 16). It is gradational with type D limonite and usually indistinguishable from type B limonite (described above), except that they usually do not fill the host cavities. This limonite occurs in the Ybn_4 member (Appendix 1) from the top to the base of the unit and is located at the north end of the mineralized zone in a NW to SE trending band. Malachite occurs with this gossan as coatings in highly micaceous quartzites.

TYPE F - orange, indigenous and fringing, abundant (5% to 25%), subhedral to anhedral, non-vitreous, slightly porous limonite often intergrown with malachite which thickly coats and almost fills 0.5 to 1.0 cm wide cavities in medium to fine grained quartzites. Often coats cracks which cut bleb cavities and occurs in rocks containing black oxide coatings on fracture surfaces. This limonite occurs from the base to the top of the Ybn_4 member (Appendix 1) over the central portion of the mineralized zone in a NW to SE trending band.

Plate 15

Cut surface of coarse grained quartzite
from Type D Gossan (Ybn_4 Member, Bonner Formation).
Note hematite dusting vacant cavities
up to 5 mm wide (scale in mm).

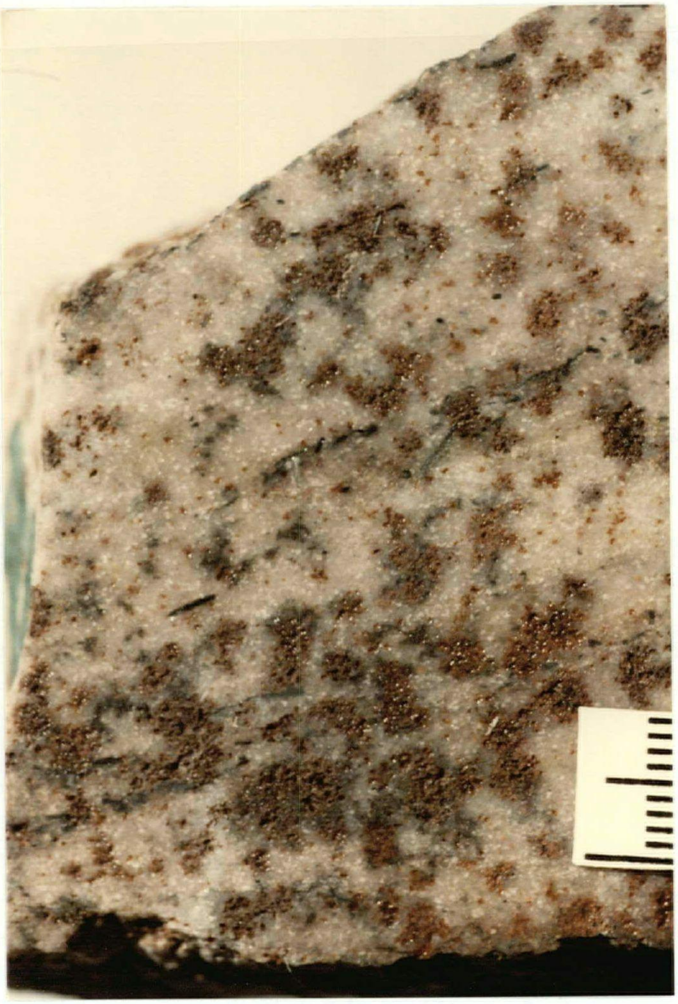


Plate 16

Cut surface of coarse grained quartzite
from Type E gossan (Ybn$_4$ Member, Bonner Formation).
Note limonite coating up to 5 mm wide cavities
(scale in mm).

TYPE G - yellow to orange, indigenous, moderately abundant (1% to 15%) limonite completely filling 5.0 mm wide bleb cavities, as intergrowths of dense, yellow, adamantine, subhedral to anhedral crystals (Plate 17) with various amounts of orange, porous, powdery anhedral Fe-oxide. Occurs with black vitreous aggregates which coat grain boundaries in accumulations up to 1.0 cm in size. Occurs from the top to the base of the Ybn_4 member (Appendix 1) in medium to fine grained quartzites but is more prevalent near the top of the unit.

The four limonite types described above are zonated across the prospect. From NE to SW, the sequence of zones consists of gossan type D, E, F,and G. Blanchard's (1968) descriptions of gossans developed over different types of sulfide minerals correspond well with the different types of gossans developed over the prospect. Limonite types D and E, which together constitute a continuum, are similar in occurrence to those gossans which develop over bornite and/or chalcocite (mainly red to seal brown, indigenous limonite; Blanchard, 1968), which occur in country rocks with a large buffering capacity provided by high carbonate, mica, or feldspar contents, and which contain only small amounts of sulfuric acid- or ferric sulfate- producing sulfides (pyrite). The Ybn_4 member (Appendix 1) has a low pyrite content and thus could conceivably develop gossans of this type. Its limonite is restricted to indigenous forms because iron is not soluble in the reacting meteoric waters and thus remains in place. Abundant malachite would also be produced in this

Plate 17

Cut surface of fine grained quartzite from Type G gossan (Ybn_4 Member, Bonner Formation). Note yellow cerrusite and black Fe-oxides disseminated throughout (scale in mm).

gossan, occurring in rocks with high buffering capacities caused by high carbonate, feldspar, or muscovite contents.

Limonite types D and E occur over zones which contain anomalous soil Ag concentrations (Chapter 4). Since Ag can be readily substituted in the bornite and chalcocite lattices up to significant levels (>1%), and malachite occurs in micaceous quartzites, the mineralogic zone underlying these limonites is interpreted to have consisted of chalcocite (under type D limonite) and bornite (under type E limonite) minerals.

Limonite type F is similar in occurrence to those developed over chalcopyrite mineralization (orange, porous, indigenous and fringing limonite myrmekitically intergrown with malachite; Blanchard, 1968) in the aforementioned country rock. It occurs over a zone with anomalous soil Cu concentrations (Chapter 4) where float hand samples contain recognizable chalcopyrite. For this reason, type F limonite appears to occur over a chalcopyrite mineralogic zone in the Daisy Creek prospect.

Finally, limonite type G is similar in occurrence to those gossans developed over galena mineralization (yellow to orange, indigenous limonite; Blanchard, 1968). This limonite occurs over a zone of anomalous soil Pb concentrations (Chapter 4) and corresponds spatially with a portion of the prospect containing numerous prospect pits, presumably dug by prospectors who were successfully panning the soils for galena and other insoluble galena oxidation products, such as anglesite, cerussite, or pyromorphite. Heavy mineral concentrates from soils over this gossan contain abundant amounts of both cerussite, the yellow, adamantine mineral in these float rock-chips, and pyromorphite. For this reason, the G type limonite is interpreted to occur as a gossan over a galena zone in the Daisy Creek prospect.

The existence of these gossan types suggests that these rocks contained a significant buffering capacity. This probably consisted of carbonate, probably ferroan calcite or ferroan dolomite which has now released its carbonate to malachite, feldspars, now largely replaced by clay minerals, and detrital muscovite. Although very little carbonate is observed at the surface, except for malachite, it may have comprised a significant percentage of the host rock, based on the current porosity of the weathered mineralized quartzites, and the abundance of gossanous cavities after carbonate in several of the strata in the Daisy Creek area (gossan types A and B). The carbonate presumably has been dissolved and remobilized under acidic conditions created by the oxidation of the sulfides on the prospect to sulfate and sulfuric acid.

The zonation of gossan type representing chalcocite, bornite, chalcopyrite, and galena mineralogic zones is similar to the mineralogic zonations observed at many other sedimentary copper deposits (e.g., Kupferschiefer (Rentzsch, 1974), Zambian Copperbelt (Annels, 1974; Bartholome, 1974; Van Eden, 1974; Bowen and Gunatilaka, 1976), White Pine (Ensign et al., 1968; Brown, 1971, 1974), Troy (Hamilton and Balla, 1983; Hayes, 1984; Hughes, 1984), Northwest Territories (Watson, et al., 1975; Chartrand and Brown, 1978), Africa (Caia, 1976), Udokan Basin (Bakun, 1967), Adelaide (Rowlands, 1974), and in general: Renfro, 1974; Smith, 1976; Holcombe, 1977; Brown, 1978; Bjorlykke and Sangster, 1981; Gustafson, 1981). Careful mapping of gossan characteristics has thus given indications of the unweathered mineralogy of the Daisy Creek Prospect and could be a helpful exploration tool on stratabound-type copper deposits in environments similar to those at Daisy Creek.

Soil Map

In addition to the float rock-chip maps, a soil map was also obtained from soil color and grain sizr data (Plate 18). Distinct soil color zones can be recognized which correspond with different underlying lithologies.

Rusty-brown (10 YR 6/3 or 'Pale Brown' on the Munsell Soil Color Chart) soils occur over the Libby Formation rocks and tend to be fine grained. Pinkish-brown (5 YR 6/4 or 'Light Reddish Brown') soils occur over the Bonner Formation red-bed, fine grained quartzites and tend to be fine grained but commonly feel granular when rolled between the fingers. These soils occur over both members Ybn_5 and Ybn_3 (Plate 18; Appendix 1) on the Daisy Creek soil grid.

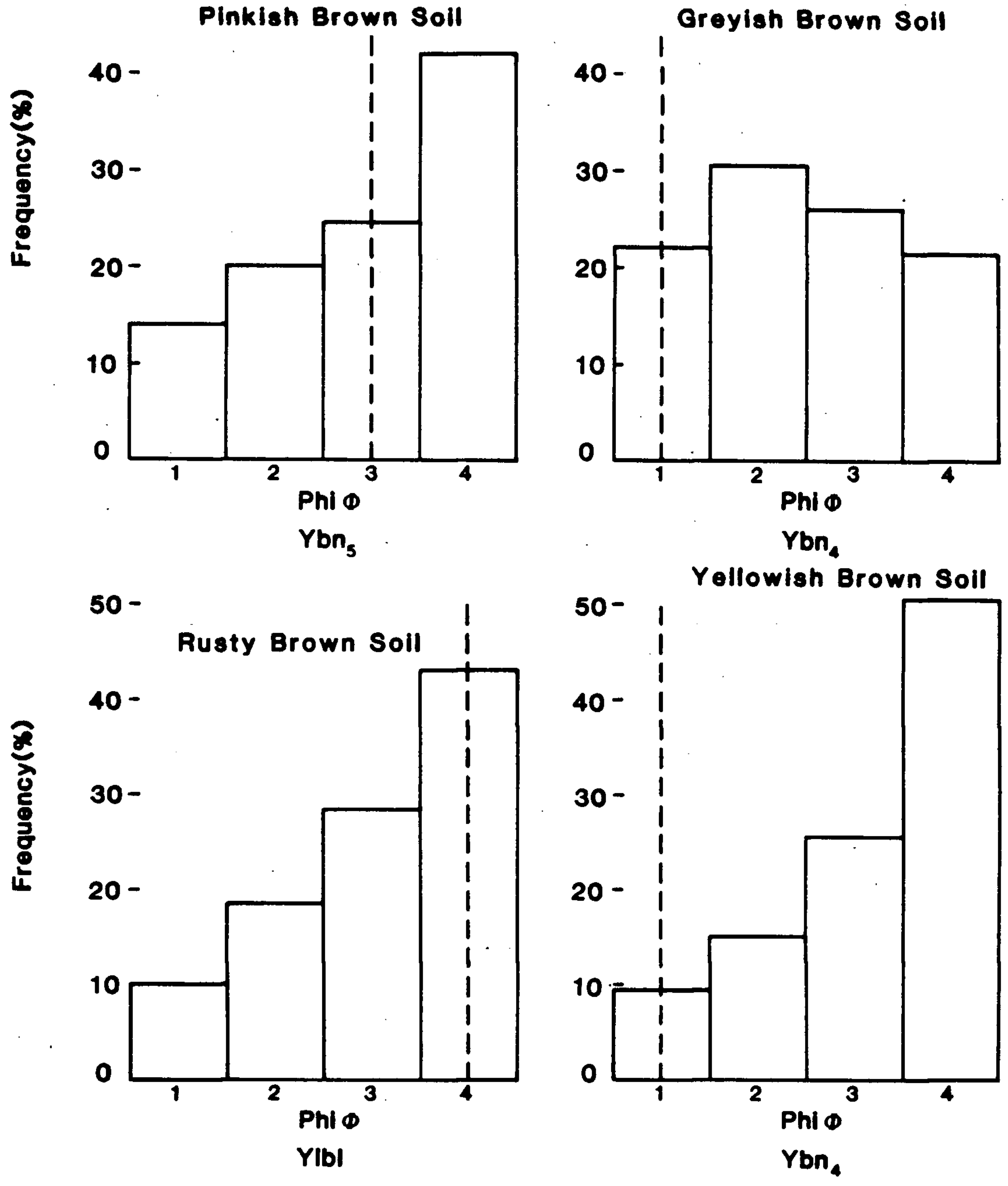
Over the Ybn_4 member of the Bonner Formation (Plate 18; Appendix 1), two soil types occur. The first, with a greyish-brown (7.5 YR 6/4 or 'Light Brown') soil, is very coarse grained and granular. It occurs over areas in this member which do not contain significant amounts of economic minerals. The second soil tends to be yellowish-brown (10 YR 7/5 or 'Very

Pale Yellowish Brown') and is very fine to powdery in texture. This soil type tends to occur over the Ybn_4 member (Plate 18; Appendix 1) in areas with significant mineralization and correlates well with zones of anomalous Cu and, to a lesser extent, Pb soil concentrations (Chapter 4).

Distinct differences in textural data for typical soils from each group are apparent in Figure 9. Yellowish-brown soils exhibit much finer grain sizes than the greyish-brown soils despite both occurring over the same lithology. This may be due to more acidic conditions in soils overlying mineralization, caused by the oxidation of sulfides and the resulting sulfuric acid produced. Destruction of much of the cement, feldspars, and non-quartz detrital grains would thus take place, reducing the overall grain size. The yellowish-brown color likely is due to the formation of immature ferric hydroxides from iron bearing phases in the Ybn_4 member (Appendix 1). More alkaline conditions associated with barren zones of the Ybn_4 member would not have produced substantial decreases in grain size or significant and rapid destruction of iron bearing phases, and thus remain neutral (i.e., grey) in color and coarse grained, like the unmineralized portions of the Ybn_4 member.

Results indicate that the limits of mineralized zones can be determined without geochemical analysis by using soil maps based on careful examination of soil color and grain size. In addition, in areas without outcrop, soils can be effective for indirect mapping of the underlying lithologies.

Soil Textures From The Daisy Creek Prospect



*dashed line represents average phi(Φ) value for underlying sedimetary rock

Figure 9

Mineralogy

Over 100 hand specimens of the soil float rocks occurring over the Daisy Creek prospect were collected for laboratory study. All were examined under a binocular microscope. In addition, 27 thin sections, 45 polished sections, and two polished thin sections were examined. Eleven polished sections were evaluated using a scanning electron microscope and energy dispersive x-ray emission spectrometer. Numerous x-ray diffraction scans were also made to identify individual minerals.

Rock Forming Minerals

The mineralized rocks at the Daisy Creek prospect consist of feldspathic quartzites and orthoquartzites. Quartz is the predominant mineral and comprises up to 85% of the rock. Feldspars are largely destroyed, and this probably occurred during both a diagenetic phyllomorphic event, when they were altered to muscovite, and during a supergene oxidation event, when they were weathered to kaolinite. For this reason, and because the heavy minerals present in the country rock suggest that the source terrane for this detritus was granitic, the feldspars are probably largely potassium varieties.

Heavy minerals in these quartzites are (in order of decreasing abundance) magnetite, apatite, monazite, zircon, leucoxene, and specularite. The specularite may be recrystallized accumulations of Fe-oxides which formed during diagenesis from the destruction of minor mafic Fe-bearing minerals. All other minerals are of detrital origin. Leucoxene appears to be an altered remanent of detrital ilmenite because it occurs mostly with indigenous and fringing limonite (Dimanche and Bartholome, 1976; Marod and Aldahan, 1982; Bartholome, 1974).

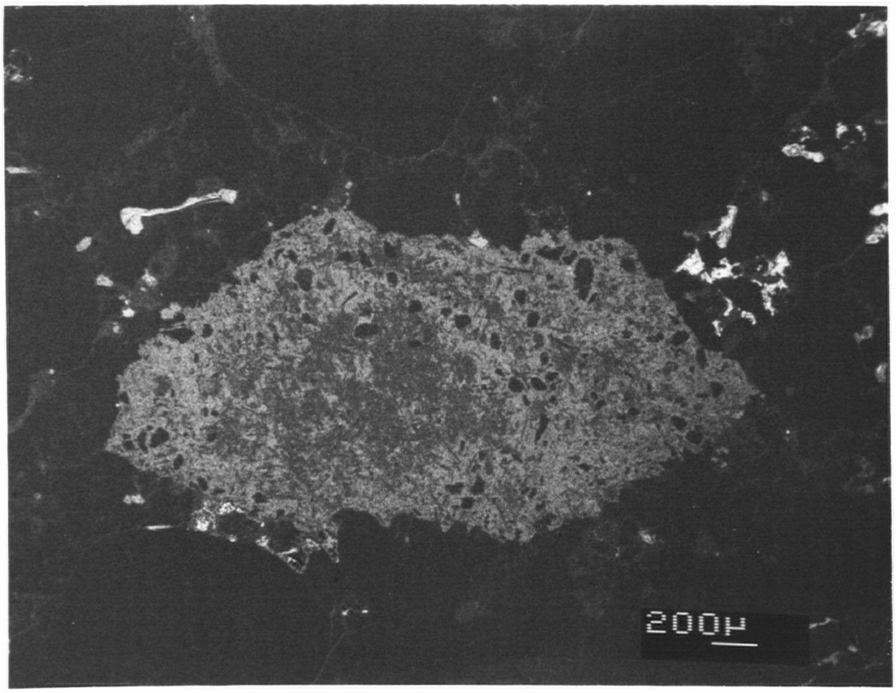
Apatite occurs as discrete detritus and as a major constituent in green mud chips. The Ybn_4 member contains very large amounts of apatite as both mud chips (Plate 19) and discrete grains (up to 1%), and heavy mineral concentrates of soils located over this member reveal that 15% of the apatite present in the soil occur as euhedral prisms of apatite which may be growing in situ, probably as a fluoro-carbonate apatite. This suggests that the Ybn_4 member has an extremely high phosphorus content.

The monazites in these quartzites occur with two distinctly different chemistries, one consisting of dominantly a cerium/neodymium phosphate, and the other a cerium/lanthanum phosphate (Figure 10). In addition, some of the Ce/La type monazites are rimmed by zircon (Plate 20), which have epitaxial overgrowths of bastnaesite, a yttrium/rare earth fluoro-carbonate, in this case containing gadolinium, dysprosium, and minor samarium and neodymium.

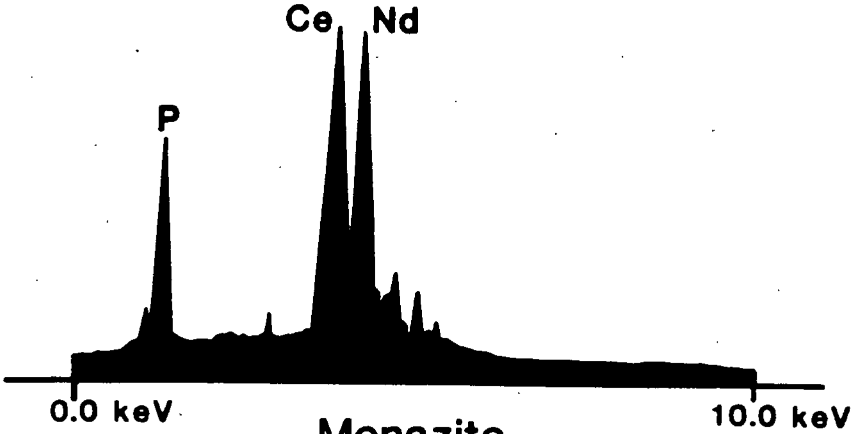
Texturally, the feldspthic quartzites and orthoquartzites of the Ybn_4 member exhibit several predictable trends. The finer the grain size, the more muscovite and less feldspar is present. This suggests that the feldspar was abraded in the fluvial environment at a very rapid rate and altered to clay minerals

Plate 19

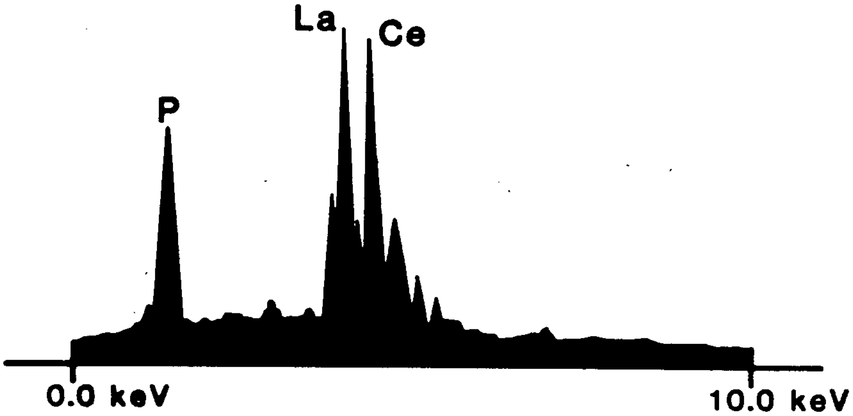
SEM photomicrograph (backscattered electrons) of phosphatic mud chip from the Ybn_4 member, Bonner Formation.


200µ

SEM/EDS Spectral Image of Monazite



Monazite

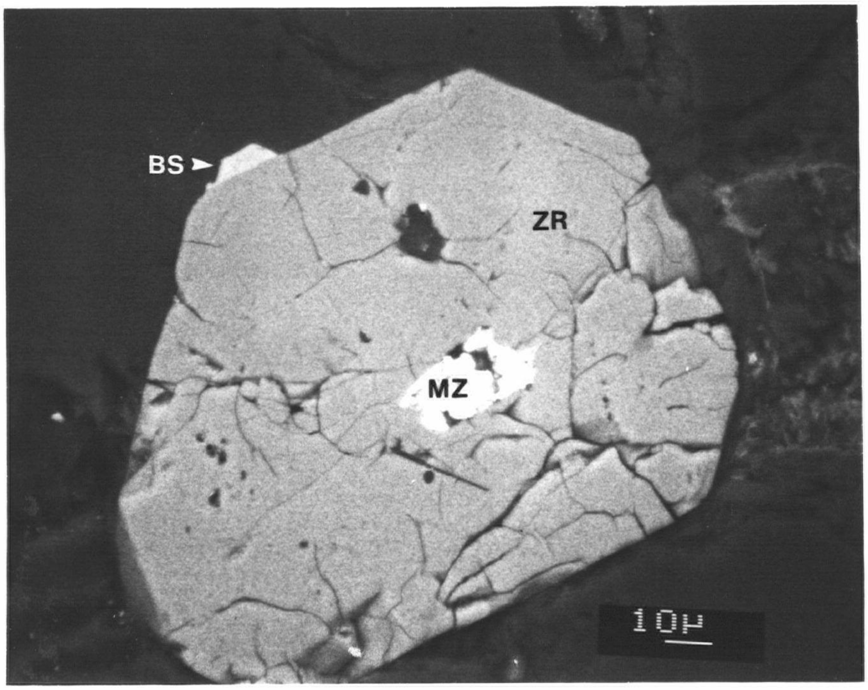


Monazite with Zircon Rim

Figure 10

Plate 20

SEM photomicrograph (backscattered electrons) of detrital heavy mineral. Core consists of Ce/La monazite (MZ); Rim consists of zircon (ZR). Note epitaxial overgrowth of Gd/Dy/Sm/Nd yttrian bastnaesite (BS), a rare earth yttro-fluoro-carbonate.


BS
ZR
MZ
10µ

when reduced to very small grain sizes. These small grains, having large surface-to-volume ratios, would be chemically reactive and alter readily to muscovite. The larger grains of feldspars did not react chemically until they were abraded to smaller grain sizes because of their small surface-to-volume ratios.

Thus, muscovites in finer grained quartzites are generally replacing the destroyed feldspars (Plate 21), whereas in the coarser grained quartzites, those that occur are probably detrital. This detrital muscovite is very prevalent in the mineralized zone and is often coated with extensive amounts of secondary malachite.

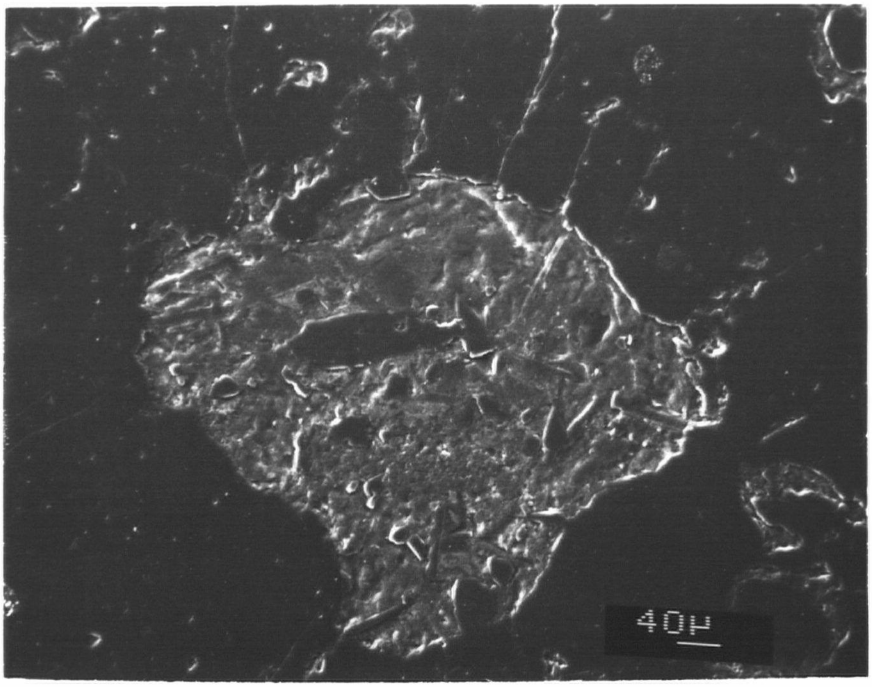
The matrix of the quartzites generally is composed of quartz, hematite, and carbonate, in order of decreasing abundance. Carbonate was not observed, but limonitic cavities, which probably contained a ferroan carbonate that has since weathered out, are abundant in many units and occur as disseminations up to 5.0 mm in size.

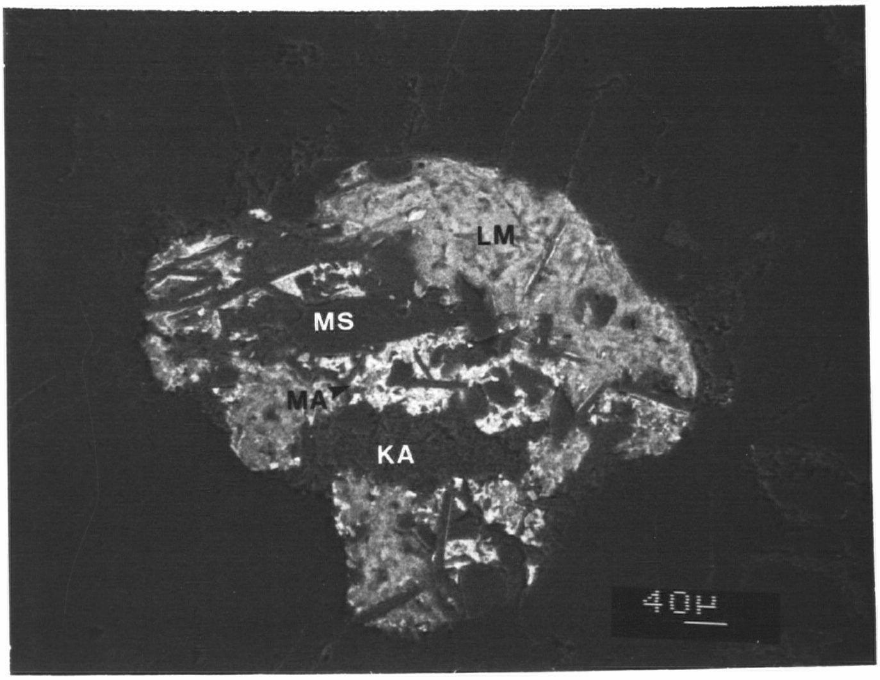
In general, the finer grained quartzites contain more hematite cement than the coarser grained quartzites. This cement is extremely prevalent but formed before the onset of quartz cementation and the development of quartz overgrowths.

Quartz overgrowths are more common in the cleaner, coarser quartzites. In the coarsest crossbedded units, the overgrowths have developed to such a point as to exhibit a true graphic texture. Furthermore, the quartz overgrowths surround all of the sulfide minerals at the prospect as well as the cupriferous

Plate 21

SEM photomicrographs (secondary electrons above, backscattered electons below) of remains of detrital feldspar, now consisting of malachite (MA), limonite (LM), muscovite (MS), and kaolinite (KA).


40μ


LM
MS
MA
KA
40μ

goethite seen rimming and replacing many chalcopyrite grains. This indicates that economic minerals precipitated before the onset of quartz overgrowth development (i.e., before late diagenesis).

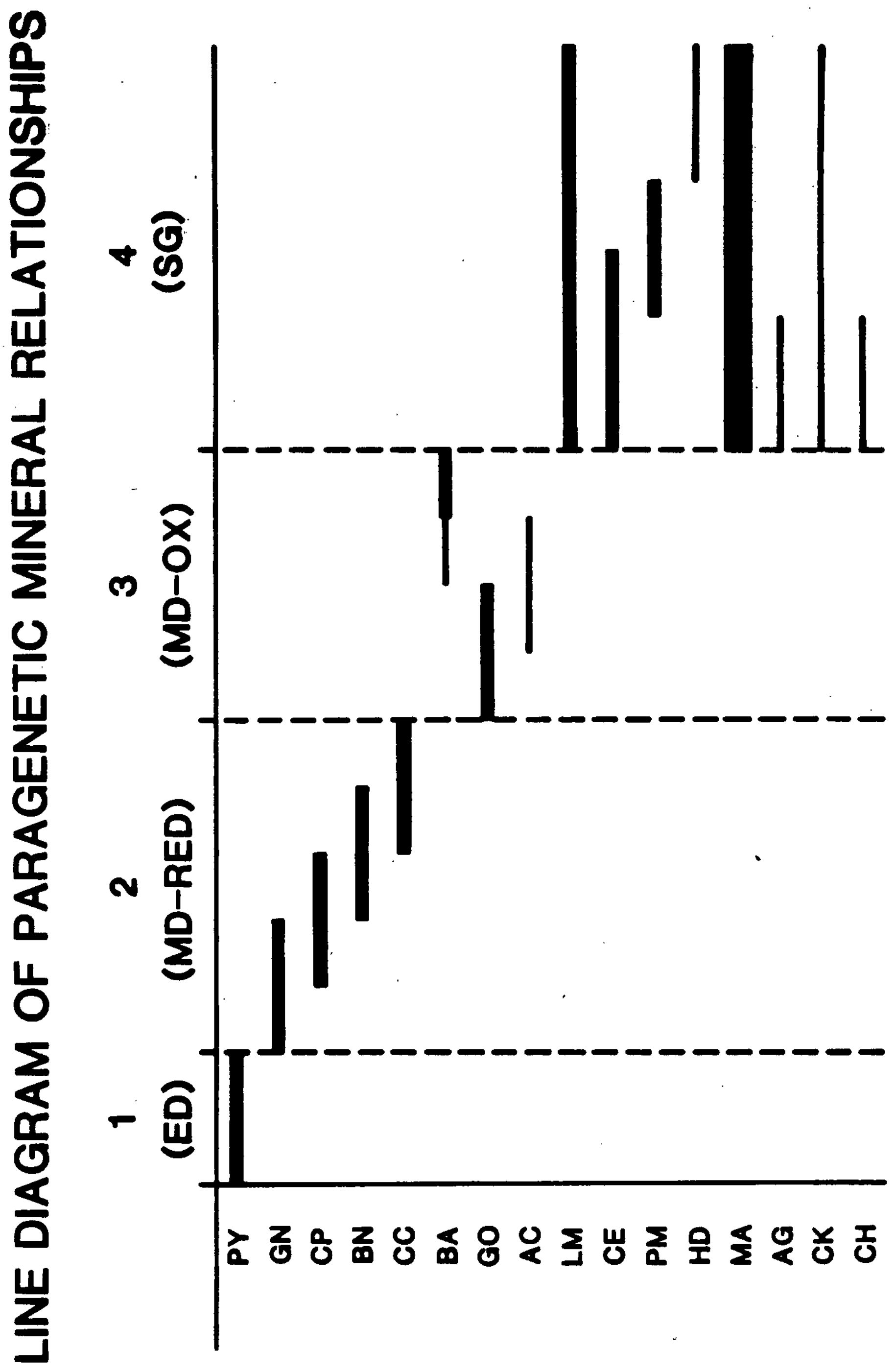
No mafic minerals were observed in either the coarse or fine grained quartzites of the Bonner Formation, probably because they were rare in the well sorted quartzites in the first place, and would have been unstable in the diagenetic environment, altering to hematite and limonite.

Economic Minerals

The paragenetic relationships and occurrence of the copper bearing and associated minerals at the Daisy Creek prospect are complex. Four different episodes of mineralization are indicated, as summarized in the line diagram (Figure 11) and the Van der Veer diagram (Figure 12).

Early Diagenesis

The first episode is characterized by what appears to have been the authigenic development of euhedral pyrite which grew at the expense of both feldspar and quartz grains. Detrital quartz grains adjacent to pyrite cubes commonly are truncated by the flat sides of the pyrite (Plate 22), whereas feldspars appear to have been replaced preferentially, but generally are not replaced completely.



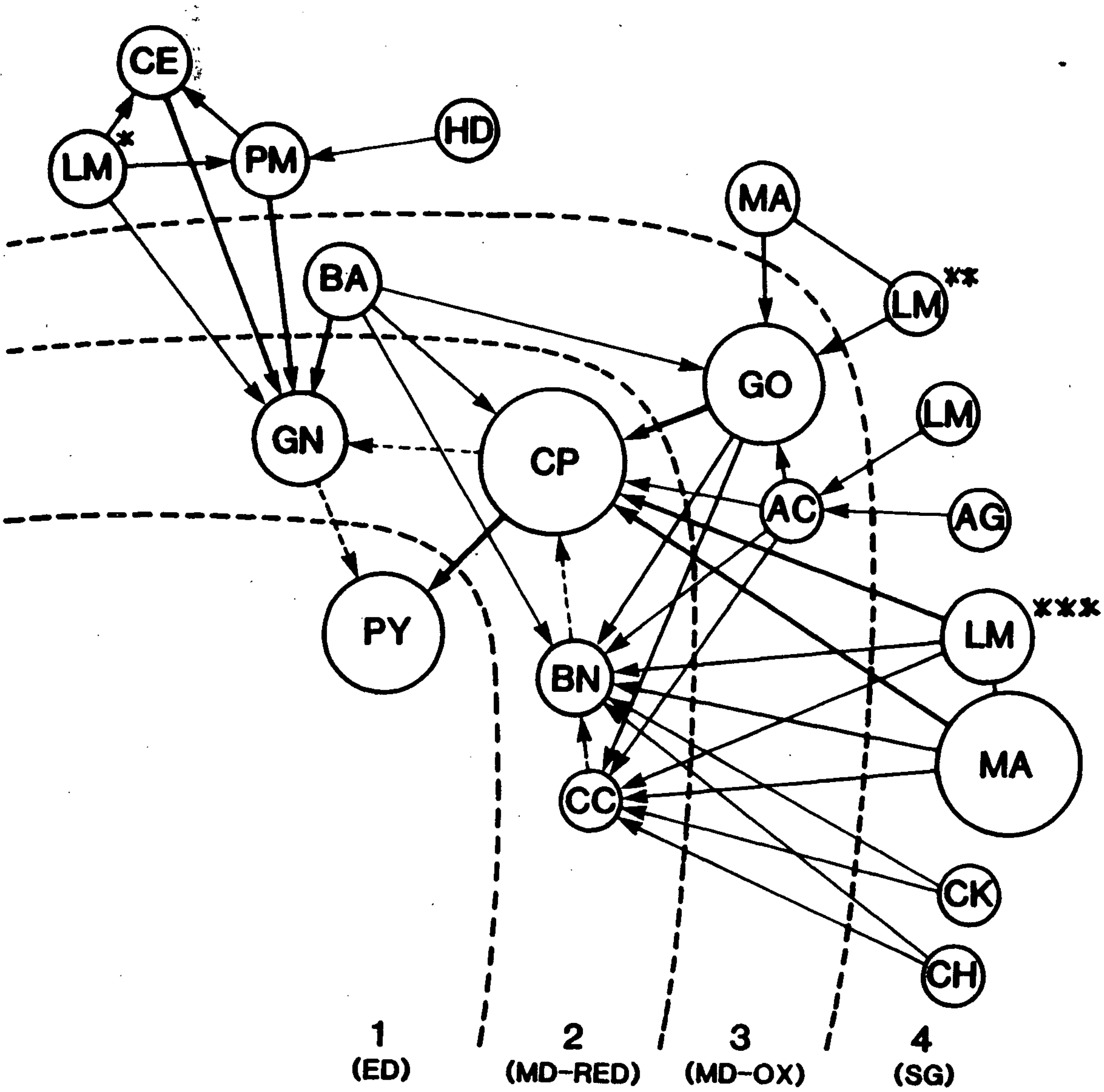
Abbreviations :

ED	early diagenesis
MD-RED	middle diagenesis (reducing)
MD-OX	middle diagenesis (oxidizing)
SG	supergene oxidation

PY	pyrite
GN	galena
CP	chalcopyrite
BN	bornite
CC	chalcocite
BA	barite
GO	Cu-goethite
AC	acanthite

LM	limonite
CE	cerussite
PM	pyromorphite
HD	hinsdalite
MA	malachite
AG	native Ag
CK	chalcanthite
CH	chrysocolla

Figure 11



Van der Veer Diagram of Mineral Paragenesis at the Daisy Creek Prospect

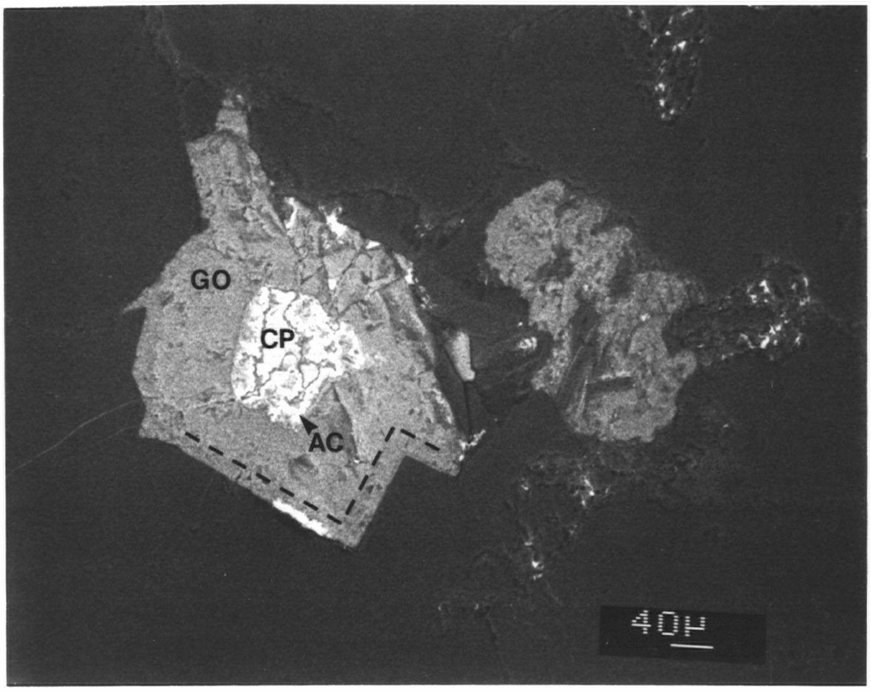
(see Figure 11 for abbreviations)

* limonite from Type G gossan
** limonite from Type F gossan
*** limonite from Type D and E gossans

Figure 12

Plate 22

SEM photomicrograph (backscattered electrons) of chalcopyrite (CP) completely replacing cubic form of pyrite. Chalcopyrite is, in turn being replaced by cupriferous goethite (GO).


GO
CP
AC
40µ

Precipitation of pyrite in the Ybn_4 member probably took place while the sediment was unconsolidated (i.e., early diagenesis) as a result of bacterial activity which decomposed organic material buried in the sediment. Authigenic pyrite does not occur in beds which contain large accumulations of hematite cement. This may suggest that these sediments probably were either buried at too rapid a rate, or remained too wet to allow the introduction of oxygen into the sediment and the oxidation of iron and sulfur in the sediment to occur.

The iron in the sediment contained in both pyrite and hematite, was probably supplied by the destruction of mafic minerals during early diagenesis. Under reducing conditions this iron was fixed as pyrite, and under oxidizing conditions, it formed as ferric hydroxide, which later dehydrated and recrystallized to goethite and then hematite.

The high phosphorus content of the Ybn_4 member may be related indirectly to the development of pyrite in the sediment. The phosphate may have acted as a nutrient for algae, allowing a major algal bloom to occur in that unit. The algae, which grew at the surface, would be buried with the sediment and could have provided the organic material necessary to allow sulfur reducing bacteria (Desulfovibrio or Desulfotomaculum) to reduce sulfate to sulfide. Coincidentally, the Ybn_4 member contains evidence of early diagenetic pyrite development only in the Daisy Creek prospect area, and this also is the place where the largest amount of phosphatic mud chips occur.

Reducing Middle Diagenesis

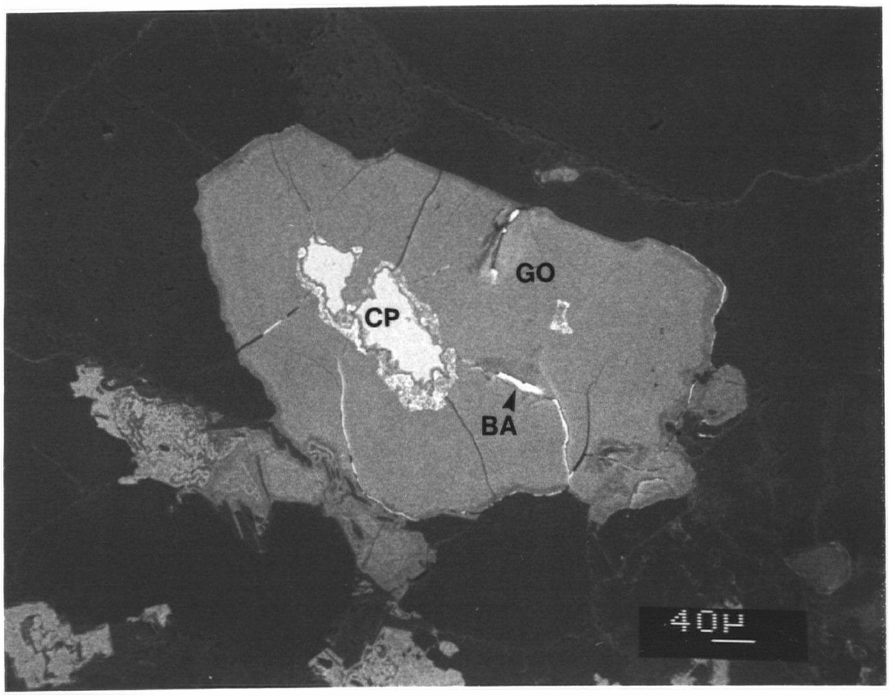
Additional mineral reactions appear to have occurred after the development of early diagenetic pyrite, but before the development of quartz overgrowths, which mark the start of late diagenesis. Most obvious is the replacement of pyrite by chalcopyrite (Plate 22). Replacement of pyrite by galena also probably occurred, but evidence for this is less conclusive, because both minerals have cubic forms. Thus the replacement of galena by chalcopyrite may also have occurred, but no evidence for this has been observed.

The replacement of pyrite by Cu-bearing phases probably occurred under acidic conditions, where copper would be mobile as a chloride complex. The precipitation of pyrite during early diagenesis probably occurred under alkaline conditions, because pyrite replaces the quartz, which would be unstable under these conditions. Thus, the formation of Cu-bearing sulfides represents a distinctly different mineral precipitation event, which differed in its chemical environment from that during early diagenesis.

Indirect evidence for the successive replacement of chalcopyrite by bornite and then chalcocite during the Cu-sulfide precipitation event is also present. Plate 23 depicts a typical chalcopyrite grain in one of the highly phosphatic, mud chip bearing, coarse grained, crossbedded quartzites of the Ybn_4 member. Chalcopyrite comprises the core of the crystal and appears to replace pyrite as a pseudomorph. The chalcopyrite is

Plate 23

SEM photomicrograph (backscattered electrons) of cupriferous goethite (GO) replacing chalcopyrite (CP). Note rim on cupriferous goethite with higher Cu concentration.

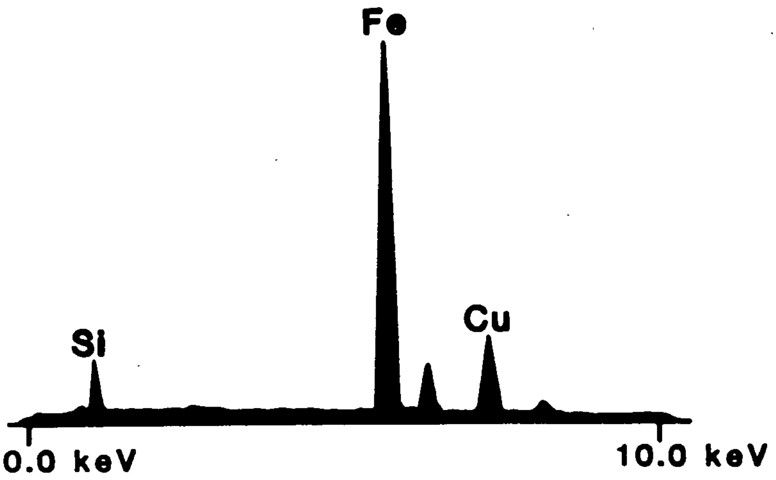

GO
CP
BA
40µ

replaced marginally by cupriferous and silica bearing goethite (Figure 13). Very consistent ratios of Cu and Fe occur across the cupriferous goethite, based on a qualitative EDS scan, and may reflect the stoichiometry of the original phase. This suggests that the Cu was present in this phase which was replaced by goethite, and probably consisted of chalcopyrite.

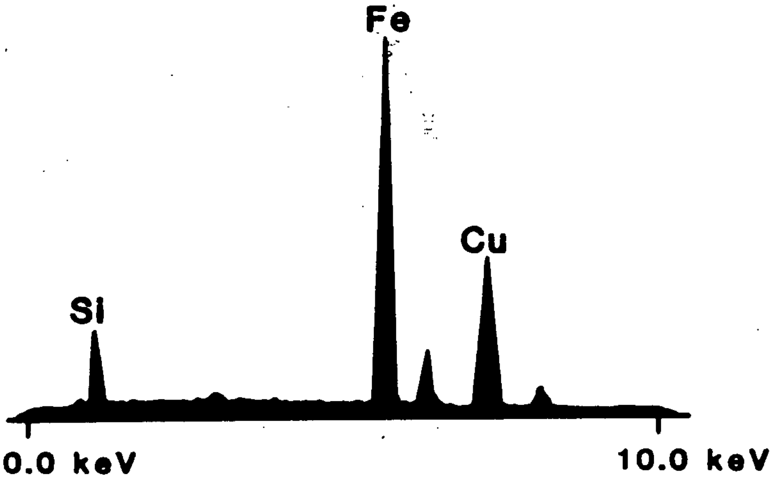
In addition, a rim can be seen which surrounds the cupriferous goethite. This is also a goethite phase, but with a distinctly higher Cu to Fe ratio (i.e., a higher copper concentration; Figure 13). This high Cu goethite may represent an entirely different original phase which has been oxidized, but which originally contained both Cu and Fe. Since bornite, as well as chalcocite, has been observed in heavy mineral concentrates from soils over the prospect, it is the obvious choice and it is reasonable to assume that bornite replaced chalcopyrite. Paragenetic relationships observed in detrital grains from heavy mineral concentrates suggest that chalcocite subsequently may have replaced bornite. In any case, neither bornite nor chalcocite comprise major amounts of the sulfide in the deposit.

This scenario is consistent with the paragenetic relationships observed at many other stratabound copper deposits (Troy (Hamilton and Balla, 1983; Hayes, 1984), White Pine (Ensign et al., 1968; Brown, 1971, 1974), Kupferschiefer (Rentzsch, 1974), Zambian Copper Belt (Annels, 1974; Bartholome, 1974; Van Eden, 1974), etc.).

SEM/EDS Spectral Image of Cupriferous Goethite



Cupriferous Goethite Core



Cupriferous Goethite Rim

Figure 13

Oxidizing Middle Diagenesis

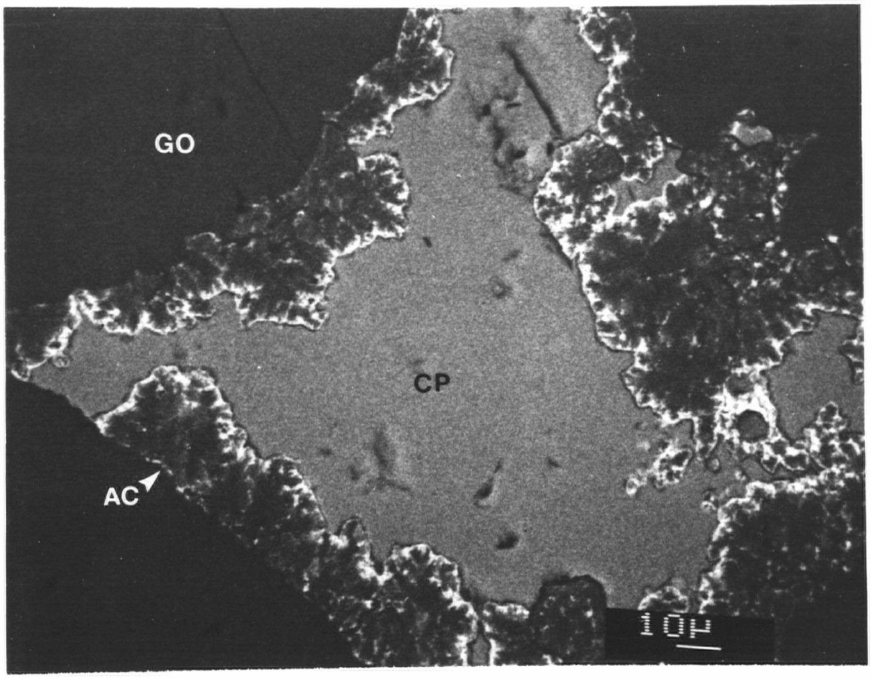
After the successive replacement of pyrite by galena (?), chalcopyrite, bornite, and possibly chalcocite (?), many of the sulfides at the Daisy Creek prospect underwent oxidation, probably during middle diagenesis (i.e., before silica cementation). All copper sulfides underwent at least partial oxidation. Plates 22 and 23 show a chalcopyrite crystal partly replaced by cupriferous goethite. In addition, a silver bearing sulfide, probably acanthite, occurs just outside the unaltered chalcopyrite remanent within the confines of the cupriferous goethite (Plate 24). This 'acanthite' appears to be an oxidation product of the sulfide(s) present, yet neither the chalcopyrite nor the cupriferous goethite are argentiferous.

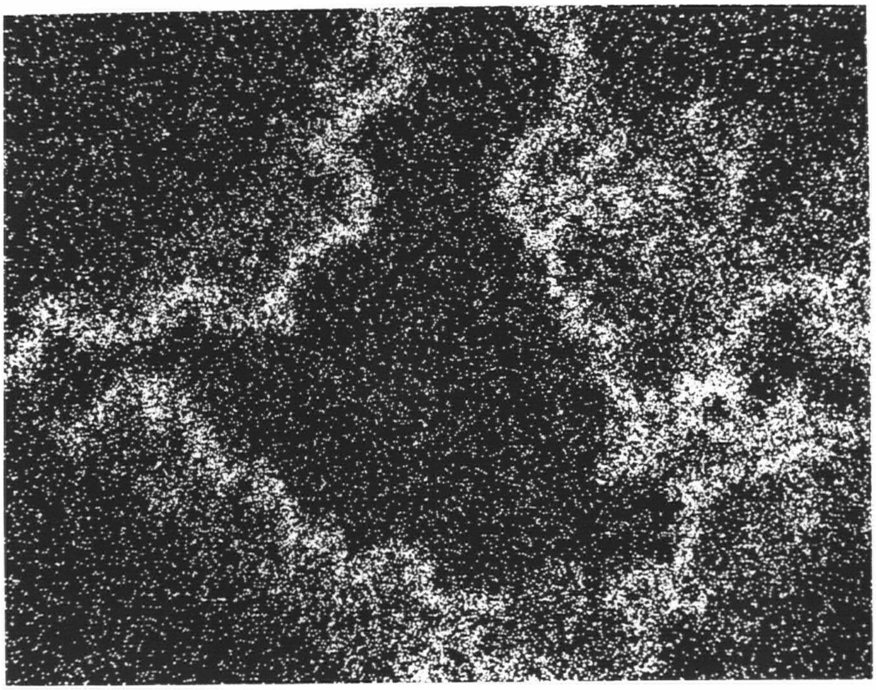
Stratabound copper deposits in the Belt Supergroup commonly contain significant concentrations of silver (Clark, 1971; Harrison, 1974; Harrison et al., 1977; Lindsey, 1977; Lange and Eby, 1981; Newton, 1982; Lange and Sherry, 1983). This silver is contained largely in the crystal lattice of bornite and chalcocite in these deposits (Hurlbut and Klein, 1977).

The chalcopyrite in Plates 22 and 23 is partly oxidized, but in this case, two oxidation processes seem to have occurred simultaneously. The first involves the oxidation of ferrous (+2) to ferric (+3) iron. The second involves the oxidation of sulfide (-2) to sulfate (+6). Iron oxidation involves the loss of only one electron whereas sulfide oxidation involves the loss of eight electrons. Ignoring kinetic controls, which are generally very

Plate 24

SEM photomicrograph (backscattered electrons; above) of cupriferous goethite (GO) replacing chalcopyrite (CP), with acanthite (AC) zone surrounding the chalcopyrite.
Below is backscattered element map for silver.


GO
CP
AC
10µ



rapid in redox processes, it seems reasonable to assume that the oxidation of iron would take place faster than the oxidation of sulfide. This is because the ionization potential for the oxidation of ferrous iron is less than that for sulfide. Thus, precipitation of goethite would occur in the presence of coexisting sulfide. This sulfide would be available to react with any metal released in the oxidation process, in this case silver from the bornite lattice, and would immediately precipitate, forming acanthite.

Thus, as the oxidation process continued silver was released and, while some diffused outward and was lost, some diffused inward, encountered sulfide, and precipitated in voids and replaced goethite. The silver-rich zone adjacent to the chalcopyrite is thus a result of silver migrating with the oxidizing front in the chalcopyrite/goethite crystal inward from the bornite rim. As further oxidation occurred, sulfide eventually converted to sulfate, releasing silver to be lost outward and captured inward by newly released sulfide. The lack of any copper sulfide phase could be due to the favored stability of acanthite over any possible Cu phase (chalcocite or covellite), or because Cu fits readily into the goethite lattice.

Figure 14 demonstrates the association of the thickness of the high Cu goethite rim, and presumably related to the amount of bornite and, thus, the amount of silver present <u>before</u> oxidation, with the thickness of zone where acanthite is present outside of the chalcopyrite, and presumably related to the amount of silver now present <u>after</u> oxidation.

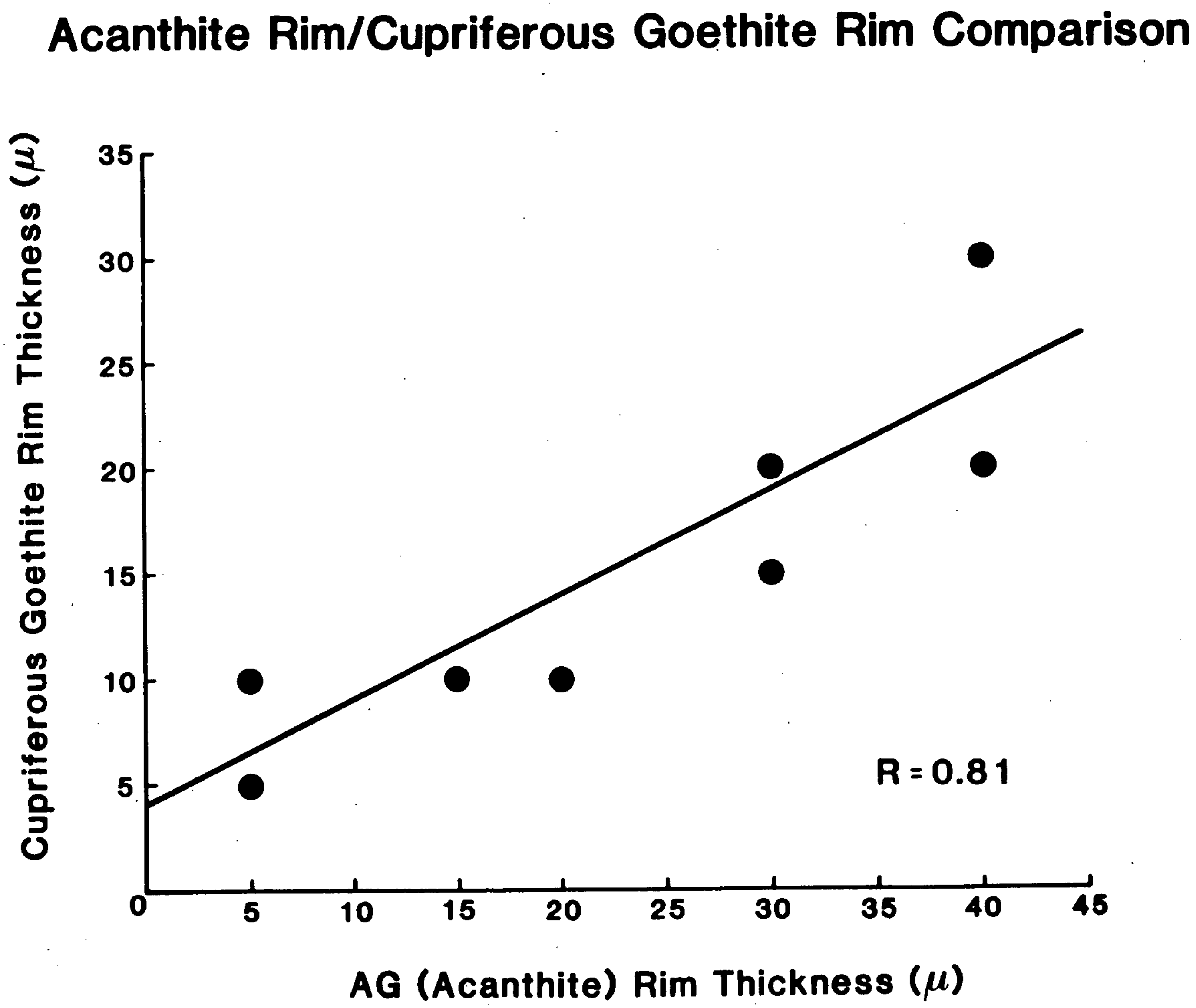

Acanthite Rim/Cupriferous Goethite Rim Comparison
Cupriferous Goethite Rim Thickness (μ)
35
30
25
20
15
10
5
0
5
10
15
20
25
30
35
40
45
AG (Acanthite) Rim Thickness (μ)
R = 0.81

Figure 14

In one case, two discrete cores of chalcopyrite are connected by rims of cupriferous goethite (Plate 25). One chalcopyrite grain contains acanthite around it and has a Cu-rich goethite rim, whereas the other has neither. The high correlation (0.81; >99th%ile) of these two thickness variables (Figure 14) suggests that the silver was, in fact derived from the high Cu goethite rim, which probably consisted of bornite originally. If the original sulfide had been chalcocite, iron would have had to have been introduced, resulting in highly variable Cu/Fe EDS ratios, which are not observed.

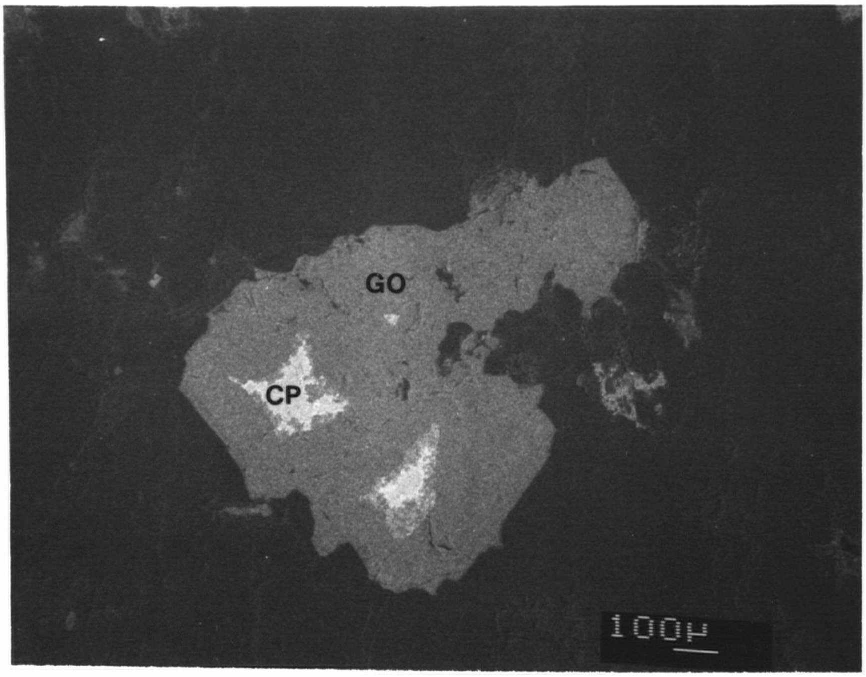
Radial cracks are observed in the cupriferous goethite, but do not extend into the chalcopyrite (Plate 26). These cracks (Plates 22, 23, 25, and 26) are probably the result of a recrystallization of the goethite to a more crystalline form which resulted in a net loss in volume or due to volume loss in the chalcopyrite to goethite reaction. If the cracks were due to the dehydration of ferric hydroxide to goethite, a well known diagenetic reaction, a larger volume loss would occur, resulting in much larger cracks.

Barite commonly fills these cracks and also occurs sporadically along the rims of cupriferous goethite (Plate 27). These barite 'veinlets' formed after the formation of goethite, and are probably the last oxidation product, in that they derived their sulfate from the oxidation of chalcopyrite and acanthite.

The formation of the barite probably occurred during middle diagenesis because of the low solubility of barium in the supergene environment. Supergene waters would not be able to

Plate 25

SEM photomicrographs (backscattered electrons) of cupriferous goethite (GO) replacing chalcopyrite (CP). Note various thicknesses of high Cu cupriferous goethite rims, and various thicknesses of acanthite (AC) zones.


GO
CP
100µ

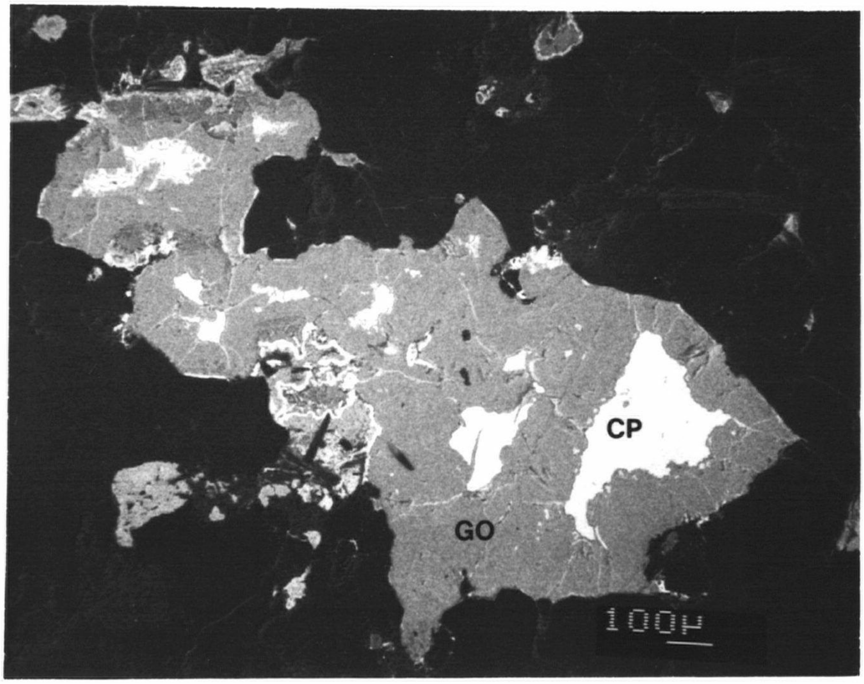

CP
GO
100µ

Plate 26

SEM photomicrograph (backscattered electrons) of cupriferous goethite (GO) replacing chalcopyrite (CP). Note cracks in cupriferous goethite do not penetrate chacopyrite.

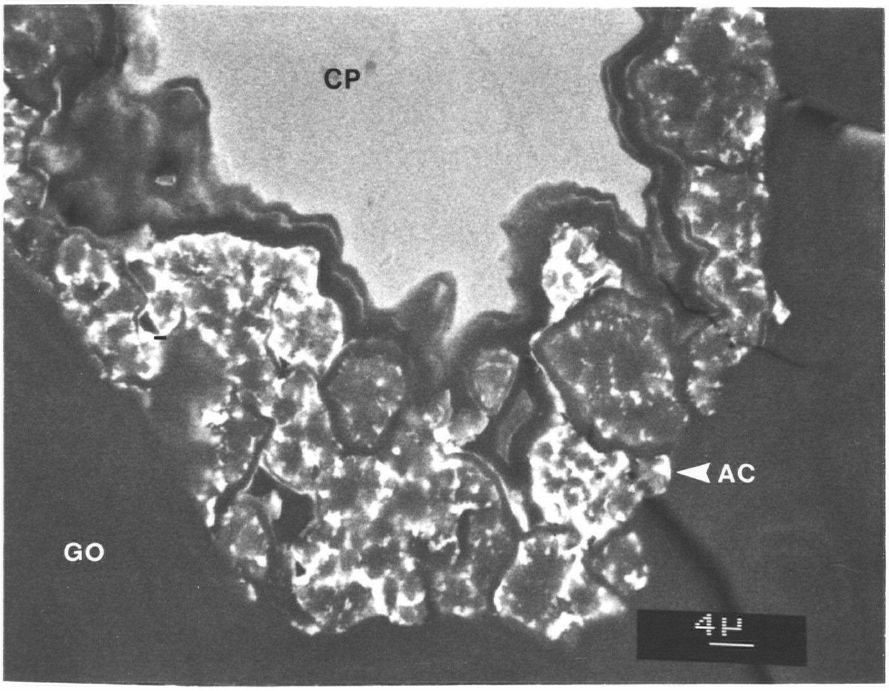
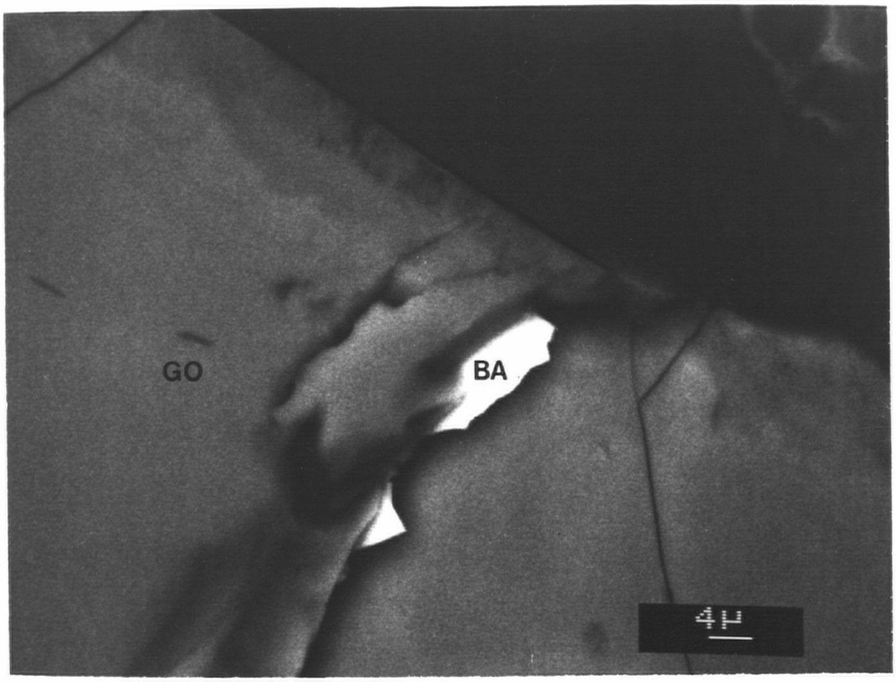
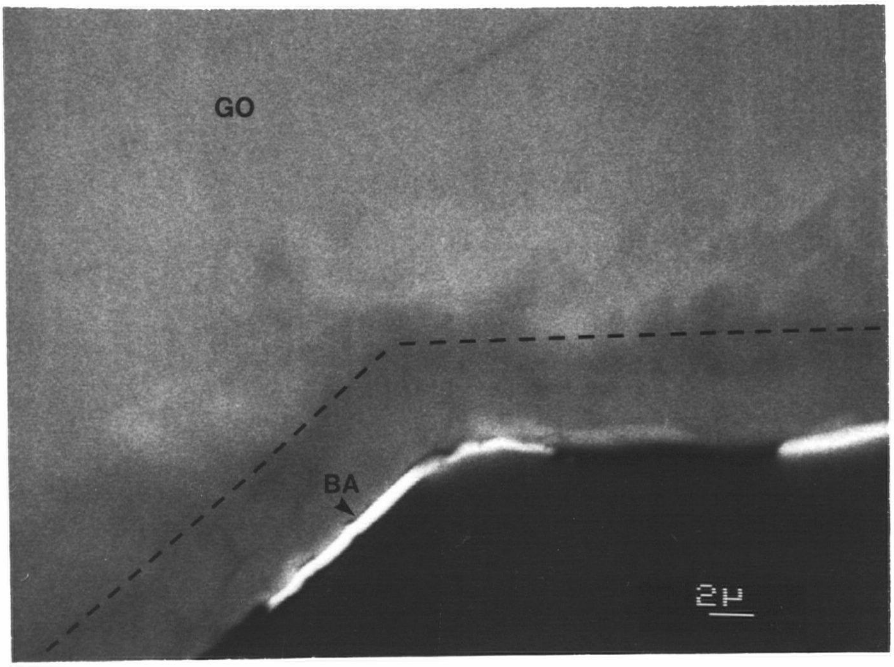

CP
AC
GO
4μ

Plate 27

SEM photomicrographs (backscattered electrons) of barite (BA) occurring in cracks in cupriferous goethite (GO), and rimming curpiferous goethite.


GO
BA
4μ


GO
BA
2μ

carry barium in solution to react with the sulfate diffusing out of the cupriferous goethite crystals; however, chloride brines possibly responsible for the sulfide minerals (Rickand, 1974; Rose, 1976; Rye et al., 1984) and later oxidation could carry it as chloride complexes, especially if it were being released from altering feldspars, where it is a trace to minor constituent.

In addition, major amounts of barite are observed as a replacement of galena. This reaction is probably also a result of oxidation, and, coincidentally, is suggested by an overlap in both Pb and Ba soil anomalies (Chapter 4).

Thus the precipitation of barite could only occur during middle diagenesis and represents the last middle diagenetic oxidation reaction. Quartz overgrowths surround many of these barite crystals.

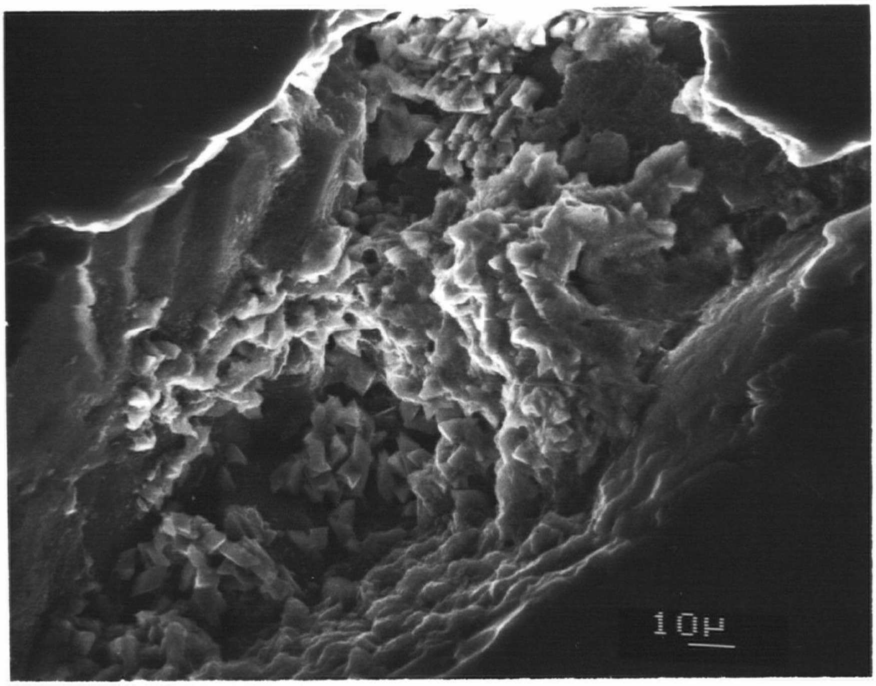
Supergene Oxidation

Extensive Holocene supergene oxidation has occurred on all minerals in the Daisy Creek prospect. Galena has altered to cerussite and pyromorphite. Carbonate was probably derived from unstable ferroan carbonates which are also weathering out, and phosphate was supplied by the apatites in the Ybn_4 member (Appendix 1). A rare mineral, hinsdalite [$PbAl_3(SO_4)(PO_4)(OH)_6$)] (Plates 27 and 28), occurs coating pyromorphite, and has been described at only three other localities in the world (Birch, 1977; Wilkinson, 1980).

Cupriferous goethite largely is altered to a myrmekitic

Plate 28

SEM photomicrographs (secondary electrons above; backscattered electrons below) of hinsdalite (HD). Note above hinsdalite occurs in vacant cavity in quartzite.


10µ

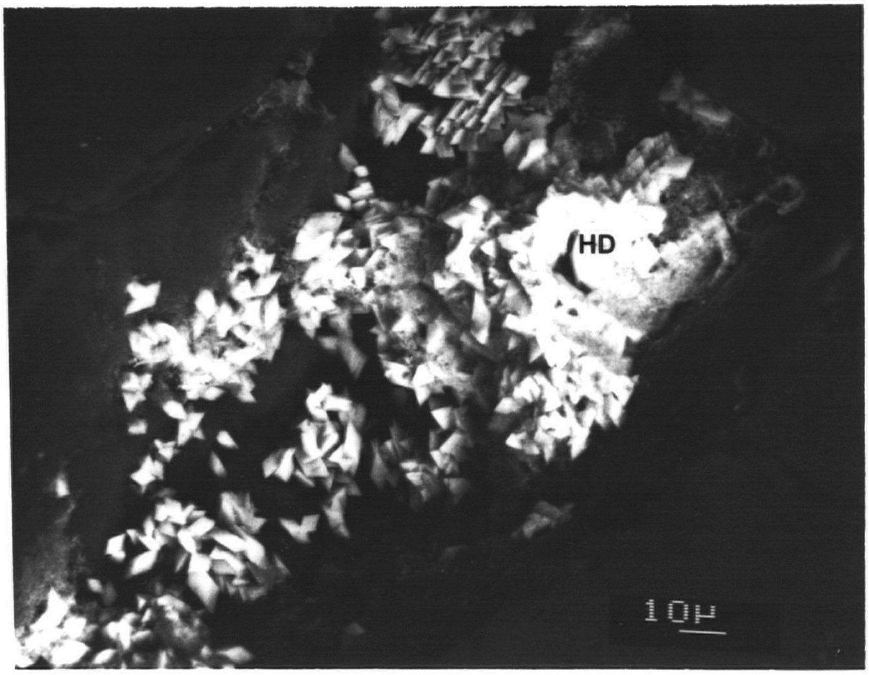
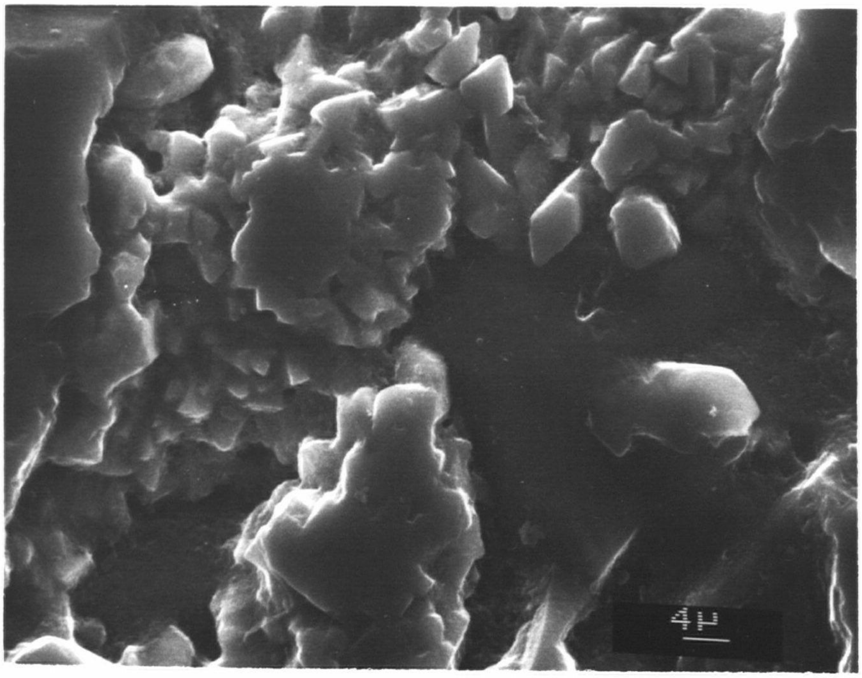
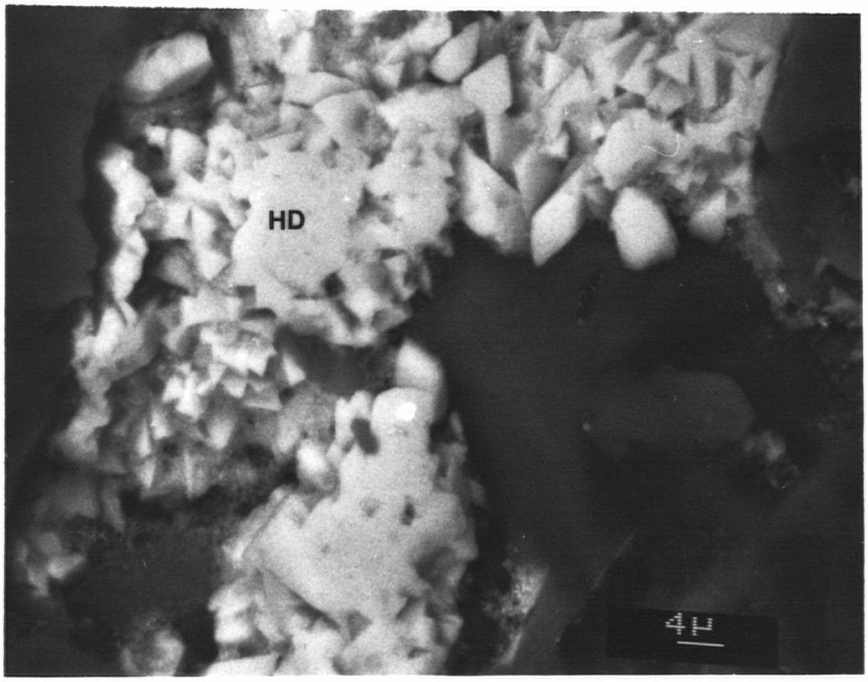

HD
10µ

Plate 29

SEM photomicrographs (secondary electrons above; backscattered electrons below) of hinsdalite (HD).


4µ

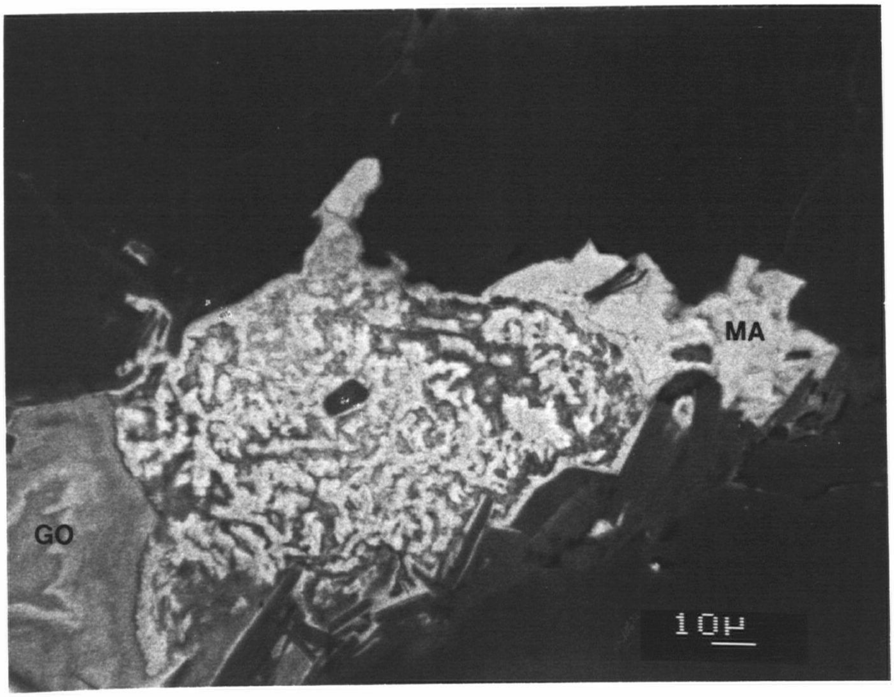

HD
4µ

intergrowth of malachite and limonite (limonite type F) only where grain boundaries intersect the cupriferous goethite crystal (Plate 29). Some (<10%) of the limonite is manganiferous and these are the only limonites which contain intergrown native silver and malachite. Abundant malachite occurs within quartzites containing detrital muscovite and probably formed from the oxidation of chalcocite, and, where associated with limonite, bornite. Minor chrysocolla and chalcanthite have replaced both bornite and chalcocite. Limonite appears as a replacement of galena, chalcopyrite, bornite, chalcocite, cupriferous goethite, acanthite, and possibly ferroan carbonate). Minor native wire silver has been observed in panned concentrates of soils on the prospect.

Thus four separate episodes of reactions involving metals in the Daisy Creek prospect can be identified. Each can be separated from the other by distinct mineralogic criteria and paragenetic position. Although the first episode (early diagenesis), and the last episode (supergene oxidation), occur separately in time, the middle two (during middle diagenesis) probably represent a continuum. The reducing event probably evolved from a replacement reaction under reducing conditions, to a replacement reaction under oxidizing conditions. A possible reaction mechanism for this includes an oxidizing metal-chloride complexed ground water (Shipulin, 1971; Renfro, 1974; Rickand, 1974; Rose, 1976; Whipple, 1984) interacting, through the diffusion of metals from the oxidizing to reducing conditions, with an early diagenetic pyrite-bearing permeable host rock containing reduced pore

Plate 30

SEM photomicrograph (backscattered electrons)
of myrmekitic intergrowth of malachite (MA; light)
and limonite (LM; dark). Note at left
the liesegang diffusion rings in the
cupriferous goethite (GO).


MA
GO
10µ

waters. Mineralization may have been a result of the infiltration of metalliferous ground waters adjacent to this reducing environment, and involved the initial replacement of pyrite by Cu-sulfide phases, probably as a result of copper diffusion from the oxidizing to reducing environment. Subsequent diffusion of free oxygen into the reducing environment resulted in the replacement of the Cu-sulfides by Fe-oxides.

CHAPTER 4

EXPLORATION GEOCHEMISTRY

Stream Sediment Geochemistry

During the summer of 1982, a stream sediment geochemistry survey was conducted by Anaconda Minerals Company. A data set comprising 416 samples surrounding the Daisy Creek Prospect from a portion of this survey was made available for interpretation.

This data set consists of sample number, location, and raw element concentration variables. Elements determined include Cu, Pb, Zn, Mo, Ag, Co, Mn, Fe, Ba, and F. Concentrations reported for all elements are in ppm, except for Fe, which is reported in percent. Detection limits are presented in Table I. A listing of the raw data is included in Appendix 2.

Each stream sediment sample consisted of a 1 kg composite of 10 subsamples collected along 30 m of the stream. Every attempt was made to collect non-organic fine stream detritus. Samples were collected every 750 m along the streams and above all stream confluences on each fork. This resulted in a sample density of approximately two samples per km^2 and a total coverage of over 210 km^2.

Samples were air dried, sieved to -80 mesh, and submitted for analysis by the Anaconda Minerals Company Sample Preparation Laboratory located in Monte Vista, Colorado. Analysis of the samples was made using atomic absorption spectrometry for all

Table I

Detection Limits for Stream Sediment Data
(values in ppm)

Element	Detection Limit	Recode Value
Cu	2.0	*
Pb	2.0	*
Zn	5.0	*
Mo	1.0	0.5
Ag	0.2	0.2
Mn	20.0	*
Fe	5000.0	*
F	20.0	*
Ba	20.0	*
Co	2.0	1.0

* denotes no samples at or below detection

elements except F, which was analyzed by the specific ion electrode technique. Dissolution was accomplished using aqua regia. All geochemical analyses were carried out by Bondar-Clegg Laboratories, Vancouver, B.C.

Control samples, collected in conjunction with the exploration samples, consist of 16 pairs of field replicates. These were samples which were collected at the same field site as the exploration samples, but were analyzed independently. These samples were thus used to determine the amount of combined sampling, preparation, and analytical error for each analysis.

Error Analysis

Samples which were collected as replicates were evaluated to determine the precision of the geochemical analyses (Meisch, 1967; Plant et al., 1975; Garrels and Goss, 1978). A listing of the replicate data is presented in Table II.

Statistical analysis of this data was made by comparing the median concentration of a replicate pair against the medial coefficient of variation for that pair (CV_m%). The medial coefficient of variation is the medial standard deviation, derived using the median in the standard deviation formula instead of the mean, divided by the median. This evaluation technique is analogous to that described by Thompson and Howarth (1973, 1976a, b, 1978) for duplicate analytical data. The median CV_m% value is the best estimate of the relative error for a set of replicate analyses because it is a non-parametric

Table II
Replicate Samples from Stream Sediment Survey

SAMP NUM	REP NUM	Cu ppm	Pb ppm	Zn ppm	Mo ppm	Ag ppm	Mn ppm	Fe pct	Ba ppm	F ppm	Co ppm
33783	1	9	11	37	2.0	0.2	660	1.70	510	230	8
33784	2	8	11	37	2.0	0.2	615	1.70	490	300	6
33805	1	33	22	66	2.0	0.3	1000	2.10	950	350	9
33807	2	35	22	70	1.0	0.4	1150	2.20	970	430	9
33844	1	20	19	81	2.0	0.2	800	2.50	730	520	14
33845	2	24	19	84	2.0	0.2	820	2.50	710	430	14
38061	1	40	45	99	1.0	0.2	835	2.10	510	390	9
30638	2	48	52	102	1.0	0.4	960	2.20	530	250	13
46526	1	4	11	66	2.0	0.2	575	1.20	740	270	5
47400	2	6	10	63	1.0	0.2	530	1.20	720	220	4
46539	1	39	18	61	2.0	0.4	840	2.20	730	550	8
46540	2	41	18	61	3.0	0.6	770	2.15	700	480	8
46620	1	37	37	90	2.0	0.2	1100	2.25	860	630	9
46621	2	48	44	107	3.0	0.2	1050	2.40	840	420	9
46646	1	38	22	77	3.0	0.4	1200	2.10	870	540	7
46647	2	36	22	78	2.0	0.2	1250	2.10	860	770	8
46693	1	22	16	64	2.0	0.2	865	1.55	1010	420	8
46694	2	17	18	60	1.0	0.2	665	1.50	890	570	8
46836	1	15	14	45	2.0	0.2	540	1.25	780	270	7
46837	2	14	12	47	1.0	0.2	495	1.20	770	300	6
46842	1	10	11	75	3.0	0.2	258	1.65	770	400	6
46843	2	10	10	71	2.0	0.2	232	1.70	780	480	6
46844	1	37	15	62	2.0	0.3	1200	2.40	970	460	11
46847	2	37	15	60	3.0	0.2	1200	2.50	950	550	12
47417	1	64	21	65	2.0	0.2	1000	2.05	930	460	9
47378	2	50	18	72	3.0	0.2	830	1.90	880	390	8
47420	1	55	40	57	2.0	0.2	1400	1.80	750	360	10
47421	2	52	36	56	2.0	0.2	1200	1.75	740	400	10
61129	1	19	26	56	1.0	0.2	660	1.80	860	570	9
61130	2	20	23	57	0.5	0.2	750	1.95	820	600	8
68663	1	12	13	72	1.0	0.2	770	1.35	950	330	7
68664	2	15	13	64	0.5	0.2	600	1.45	920	270	5

approximation of the error. Results are presented Appendix 3.

The replicates demonstrate excellent precision for geochemical analyses. This may be due in part to the fact that most of the replicate samples were analyzed sequentially; thus, contamination and analytical drift were minimized. Relative errors for most elements are below 10%.

Many of the calculated CV_m% values for Ag and Mo are extremely high due to the lack of analytical precision at the near-detection limit concentrations (Table I) of the analyzed replicate samples. In the case of F, the only element determined by a technique other than atomic absorption spectrometry, the higher relative error of 9.7% may simply be related to a lower level of precision inherent in the specific ion electrode technique.

Statistical Analysis

Statistical evaluation of the geochemical data consisted of an initial probability plot analysis for each element to evaluate whether multiple populations were represented in the data (c.f., Sinclair, 1976). No obvious multimodal distributions were described (Appendix 4); however, all elements were lognormally distributed so further statistical analysis was performed on the logarithm of the element concentration.

In order to simplify the interpretation of the geochemical data, additional statistical evaluation was limited to operations on only the Cu concentration variable. This variable was chosen because it is a major pathfinder element and ore constituent in stratabound copper deposits of the Belt Basin and the most probable economic target in the survey area.

Since classification of anomalous Cu concentrations based on multimodal distribution discrimination was impossible, arbitrary thresholds were chosen to define the anomalous samples. Two different, but often used, threshold selection techniques are presented.

The first involves the selection of a threshold at the mean plus two standard deviations concentration level. For Cu, this corresponds to 97 ppm, based on log-transformed data. Samples above this concentration are dotted in Plate 31. Four anomalous samples are recognized.

An alternative yet similar approach would be to select the threshold at the 95th percentile. This threshold corresponds to 63 ppm Cu and samples greater than this threshold are stippled on Plate 31. Numerous single point and several multi-point anomalies are recognized.

These two methods vary only in the number of samples which are recognized as anomalous. Classification is basically a boolean operation: anomalous, or not anomalous. No other information is provided. Anomalies might be ranked for follow-up based on the concentration level of the different anomalous samples, or based on the number of anomalous samples which are contiguous and thus constitute multiple point anomalies. Unfortunately, these criteria may be completely unrelated to criteria which define where mineralization might be located or how it is expressed in the surface geochemical environment. This may be because the sample density is not appropriate for the mineralization type being sought, or because different lithologic units in the survey area have different background levels and true anomalous samples may not have the highest concentrations.

One would be forced, using this type of procedure, to follow up each of the anomalous samples to see if they are related to mineralization. Utilization of a geologic map might add some information which could be used to eliminate anomalous samples from consideration (e.g., those which occur over unfavorable host rocks), but no insight is added which allows an understanding of why the anomalies occur where they do, until they are actually field checked. No information is available which might rank these anomalies in terms of their potential for being related to mineralization or some other geochemical phenomenon such as contamination.

As a result, an alternative approach is presented which allows further interpretation of the geochemical data at this level of investigation and utilizes the multivariate nature of the available data.

Alternative Statistical Technique

The following statistical technique assumes that all samples fall into one of two categories; anomalous or background. Samples from a background category, or population, constitute those unrelated to any type of irregular geochemical concentration with respect to the population as a whole, either from a single or multi-element perspective. Samples which are anomalous constitute those which are irregular for some reason.

Unfortunately, in most surveys, several different types of anomalous samples may be present. Different types of mineralization may exist which have different geochemical and mineralogical signatures. Vein-, skarn-, and stratabound-type mineralization each could have different suites of anomalous elements and produce different types of anomalous geochemical signatures. Likewise, different types of weathering processes may have occurred which create different types of geochemical anomalies. Elements which are anomalous in a displaced seepage anomaly may be entirely different from those in a clastically borne dispersion train anomaly, yet both may derive their anomalous metal concentrations from the same mineral deposit.

In a similar manner, there may be more than one type of background sample. The background geochemical category (or population) may actually be composed of several individual populations. These multiple background populations are common in geochemical datasets, and generally are related to fundamental geologic or geochemical factors or processes, such as the lithology which underlies or provides the source material for the sample, or the type of sample collected such as dry streams versus wet streams or B versus C soil horizons. It is up to the geochemist to separate the data into groups which correspond to these criteria and to treat each group separately. The groups can be processed statistically and results from each group can then be interpreted with a minimum of ambiguity. In many cases, individual groups will demonstrate multimodal distributions not obvious in the data as a whole, while the combination of several multimodal distributions may result in an apparent unimodal distribution (a corollary of the central limit theorem).

The following statistical technique is recommended in cases where a single background population exists, either because the data are homogeneous or because they have already been divided into individual groups.

Threshold Selection

Two thresholds can be chosen to divide the data into three groups if a bimodal distribution is present. These groups constitute an anomalous population, a background population, and an intermediate zone in between (Figures 15 and 16). These thresholds are selected using a probability plot (c.f., Sinclair, 1976), and should be chosen to eliminate background samples from being assigned to the anomalous population and anomalous samples from being assigned to the background population. In this way, both high and low groups are 'pure', in that no other samples, or at least an insignificant number, would be misclassified. The intermediate zone consists of samples where classification into high and low groups is ambiguous because it represents the range of overlap of the background and possible anomalous populations.

Note that because we know that there is only one background population in the data, since we would have subdivided it into

THRESHOLDS FOR HISTOGRAM DISTRIBUTIONS

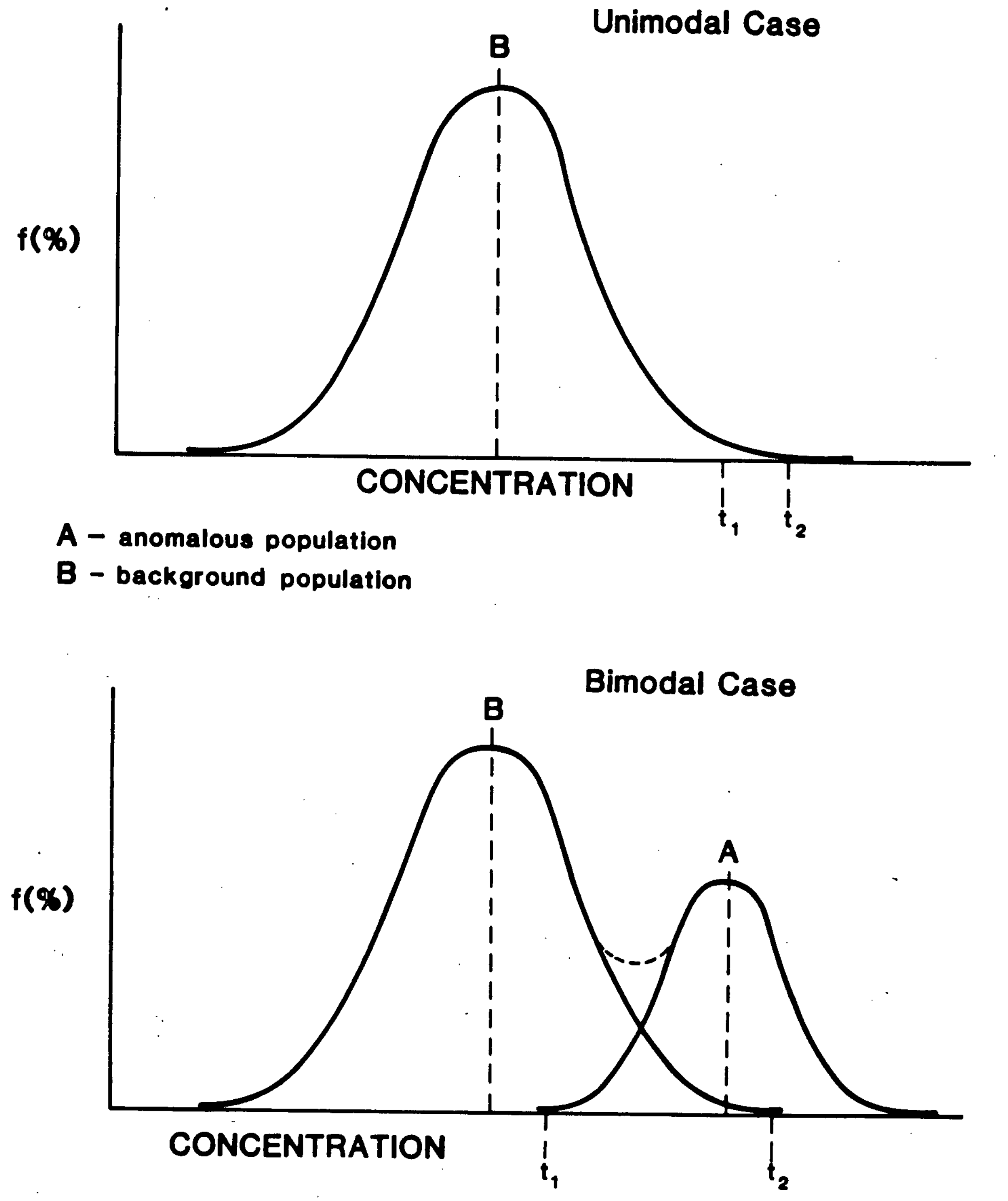


Figure 15

Thresholds for Frequency Distribution

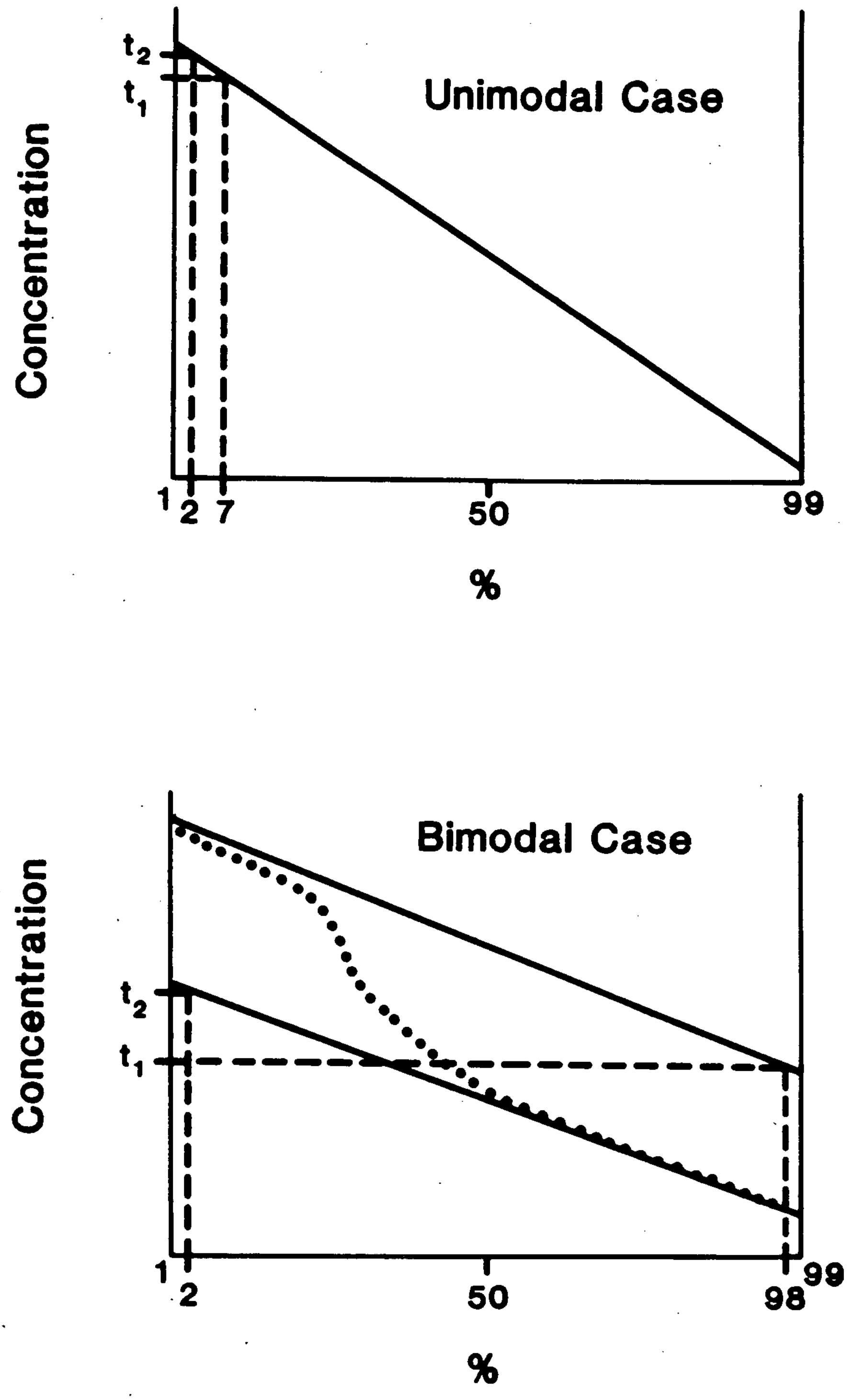


Figure 16

fundamental groups if there is more than one, only one type of background sample is present in the background population. This may not be the case in the anomalous population, because several different types of anomalies may be present.

An arbitrary choice of thresholds can be made if a unimodal population distribution exists. We assume that anomalous samples are present in the data, but they may not be sufficiently different from the background samples, at least on a single element basis, or do not constitute a large enough proportion of the data to be recognizable on the probability plot. Thus we choose a threshold which we are certain will be low enough to prevent the anomalous samples from being classified as background samples. This provides us with a 'pure' background dataset. In the case presented, a threshold was chosen at the 93rd percentile (mean plus 1.5 standard deviations in a perfect normal distribution), which corresponds to 60 ppm Cu.

In addition, a higher threshold at the 98th percentile has also been chosen (the mean plus two standard deviations in a perfect normal distribution), which corresponds to 90 ppm. This threshold may separate the zone of overlap from the anomalous population. In this case, since we do not have any evidence to support a bimodal distribution, and thus a second population, this threshold may be of little consequence, but it has been chosen to demonstrate the statistical technique in a manner consistent with the case where two thresholds are essential to the procedure.

Whether we now have a bimodal or unimodal population, the data have been divided into three different groups. In both cases the lower, background group is 'pure', that is, all contained samples have a high probability of representing background.

Samples from the high group, with concentrations greater than the upper threshold, generally would be considered to be anomalous if a bimodal distribution existed. Thus, no further evaluation need be performed on these samples at this stage. Such is not necessarily the case for a unimodal distribution.

Samples from the low group, with concentrations less than the lower threshold, are considered to have too low a concentration to be of interest and are automatically categorized as background samples.

Samples from the third group, with concentrations between the two thresholds, are those whose classification as anomalous or background is indeterminable based solely on the concentration level, given the amount of analytical error in the data and because of population overlap. Such values need to be classified as either part of the anomalous population or part of the background population. The additional statistical analyses presented below are directed toward this end.

One approach to recognizing anomalous samples in the zone of population overlap is to determine what type of multielement geochemical signature an anomalous sample might have, and to recognize other samples which have a similar signature. Unfortunately, in many practical cases too few anomalous samples are available to determine the multielement characteristics of a typical anomalous sample. Additionally, several types of anomalous geochemical signatures may be present in the data because of different mineralization sources or because several processes may be acting to form different types of geochemical anomalies.

As a result, an alternative approach is suggested which is designed to recognize the anomalous samples using criteria from information provided by the background population. This involves doing the opposite operation, that of determining the multielement geochemical signature for background samples and recognizing those samples which are not similar to this signature. These samples are then classified as anomalous. In this way, all possible anomalous samples are recognized and can be grouped and interpreted as to their origin and significance with further statistical techniques. A characterization of the typical background sample can be made because these samples come from only one population.

Regression Analysis

The method chosen to discriminate between anomalous and background samples in the concentration range of population overlap is a backwards stepwise multiple linear regression technique. A dependent variable, in this example, copper, is regressed against all other elements, the independent variables, for all of the samples which were classified as background using the probability plot technique (i.e., Cu concentrations <60 ppm). The resulting regression function was then applied to the samples from the zone of overlap. In this case we will apply it to both anomalous and zone of overlap samples because we do not know if the upper group is truly anomalous. A scatter plot of the actual concentration versus the concentration predicted from the regression function is evaluated to determine which samples have a background multielement geochemical signature and which do not.

This technique is similar to that described by Matysek et al. (1982); however, by utilizing only background samples in the determination of the regression function, a high multiple regression correlation is possible because no samples from other populations are included.

Unfortunately, one must remember that every variable in a geochemical data set is subject to error. As a result, normal least-squares regression is not valid because the independent variables are not known precisely. This is an assumption in least-squares regression. An alternative approach must be utilized which accounts for errors in each variable. This technique, known as the 'reduced major axis regression technique', has been described by Dent (1933), Kermack and Haldane (1950), Till (1973), and Mark and Church (1977); however, the derivation of this form of regression has only been worked out for two variables. A description of the derivation for this technique which determines a regression function for more than two independent variables is in preparation.

The reduced major axis technique allows the construction of a regression line which corresponds to the general trend of the raw data where the expectation of the residual is 0 across the full range of the data; this is not necessarily the case in a normal least-squares regression situation, where the average expectation of the residual is zero (Lindley, 1950; Ezekial, 1961; Kendall and Stuart, 1963; Jones, 1972, 1979; Spiegelman, 1982).

The advantage of this empirical technique is that it allows one to extrapolate the regression line outside the bounds of the data used to define the line from <60 ppm (the background population) into the zone of mixing of the anomalous and background populations (60 to 90 ppm). This enables one to evaluate the similarity of these samples with respect to the general trend of the background population. In this way, quantitative comparisons of residuals for the samples can be made whereby the residuals may be analyzed using probability plots to separate the populations and samples which have multielement geochemical characteristics which are similar to those of the background population can be classified as such.

Interpretation

Results of the reduced major axis backwards stepwise multiple linear regression technique for Cu are presented in Appendix 4. Elements with large contributions to the regression equation include Fe, Pb, Mn, and Ag (in decreasing order; Appendix 5). Figures 17 and 18 are plots of the predicted Cu concentration from the regression function versus the actual Cu concentration. Several samples from the zone of population overlap fall on or near the predicted regression line (slope = 1) and thus are

REGRESSION PREDICTED VS. OBSERVED COPPER CONCENTRATIONS

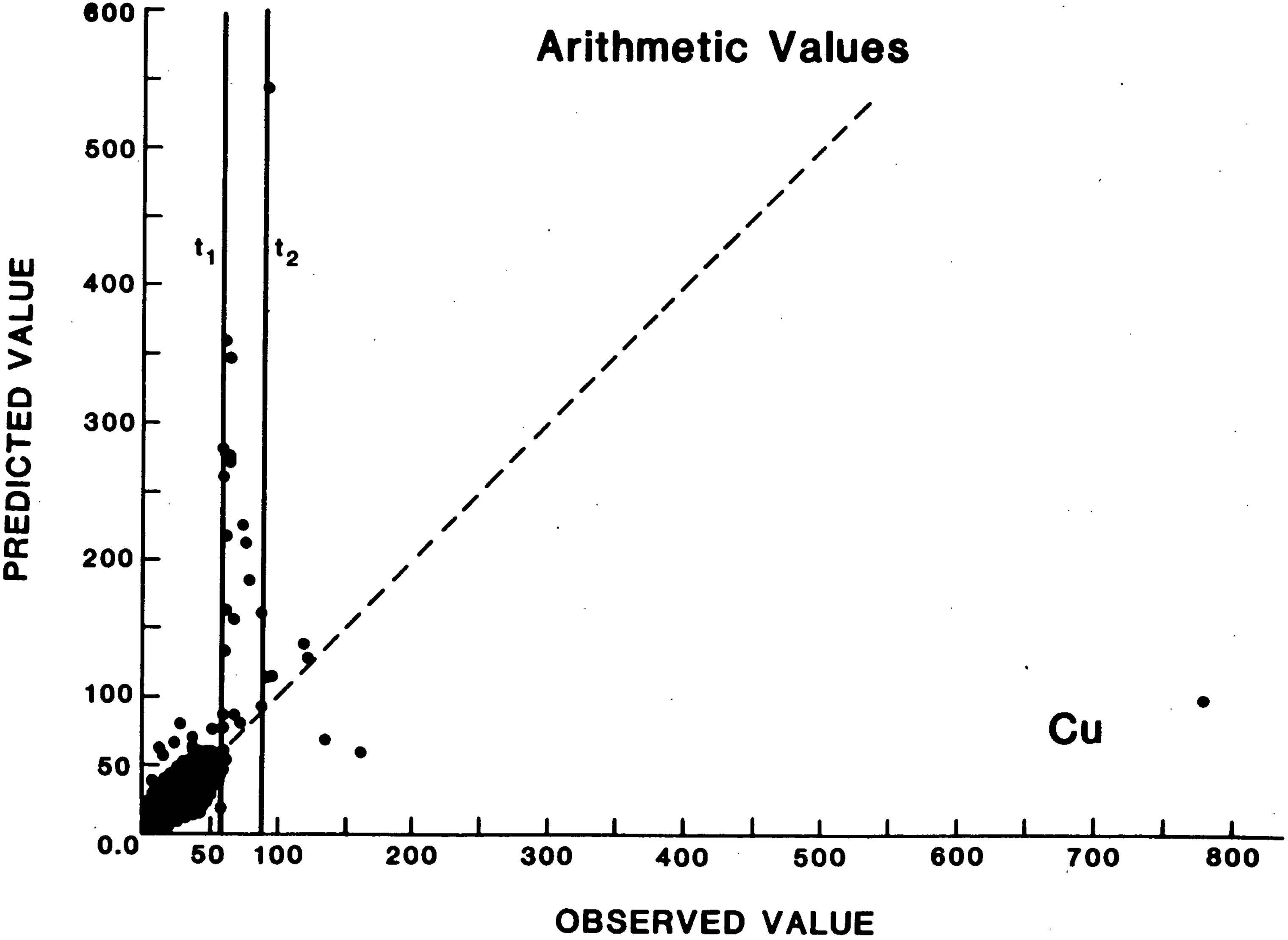


Figure 17

REGRESSION PREDICTED VS. OBSERVED COPPER CONCENTRATIONS

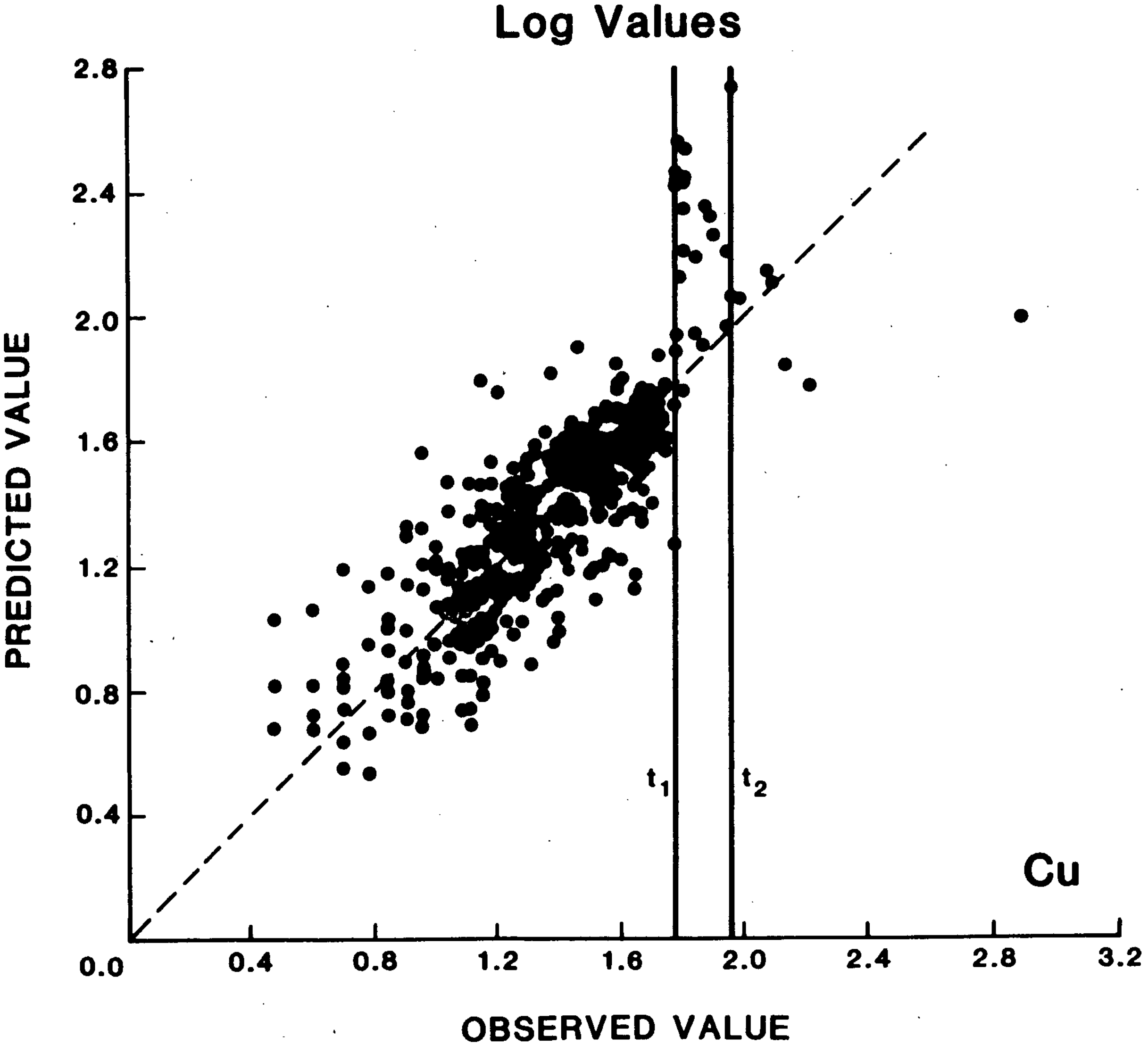


Figure 18

considered to be background samples.

In addition, three obvious trends for samples greater than 60 ppm are observed. One trend, which corresponds to samples with an actual Cu concentration which is greater than that predicted by the regression function (shallow slope), consists of three samples. Four samples, comprising a second trend (intermediate slope), which are deemed anomalous because their Cu concentration is greater than 90 ppm occur along the multiple regression line within the 95th percentile error bounds for the background population. Since we are only assuming that there is an upper anomalous population, these samples may or may not be truly anomalous. Finally, a third trend, which has predicted Cu concentrations which are greater than the actual concentrations (steep slope), comprises the remaining samples which do not fall on or near the regression line.

Plate 32 is a drainage basin map of the area covered by the geochemical survey around Daisy Creek. Drainage basins which contain samples deemed initially anomalous in Cu (>90 ppm) are stippled. Those drainage basins containing samples which are part of the shallow slope trend are lined vertically, those which are part of the steep trend are lined horizontally, and those which lie along the regression line are lined at an angle. Drainage basins containing samples deemed to be background are blank.

Evaluation of the anomalies with the use of the geologic map (Plate 2) reveals several important conclusions:

1) a two point anomaly occurs in the South Daisy Creek drainage basin and appears to be related to the

mineralization at the Daisy Creek prospect; the sample at the head of the drainage basin (sample 46726; Appendix 2) may represent the actual mineralization; it is anomalous in Cu only and visible malachite and Cu-sulfides have been observed in heavy mineral concentrates from the stream; the other sample (46727) may be related to downslope dispersion, adsorbed concentrations of Cu on Fe- and Mn-oxides (because of its high Mn and Fe concentrations), or to contamination by a previous anomalous Cu concentration (46726);

2) a two point anomaly (46736 and 47424) occurs in the north end of the survey area at the Meadow Creek anomaly, a region known to contain malachite as discrete grains and coatings on stream detritus and which is underlain by the Snowslip Formation, a unit which contains abundant copper occurrences of the green bed type; samples from this anomaly have extremely high Cu concentrations;

3) two single point anomalies (46699 and 68157) occur over the Bonner Formation, the same unit which hosts the Daisy Creek prospect; these may be related to adsorbed Cu on Mn- or Fe-oxides, because of their high Mn or Fe concentrations, or to other minor stratabound Cu-Ag occurrences in the Bonner Formation;

4) two multiple point anomalies occur on the east side of the survey area and are underlain by the Wallace Formation (30739 and 38062; to the north) and the Snowslip Formation (33886, 33887, and 33888; to the south); both

occur adjacent to occupied dwellings and may represent contamination from these sources; the anomaly to the north has high Pb, Fe, and Mn concentrations, possibly suggesting that Cu, as well as these elements, were fixed by high pH's created by the carbonate bedrock. The anomaly to the south has high Fe and Mn concentrations, which may suggest Cu adsorption. Alternatively, these samples are sequentially ordered, and thus may represent contamination during analysis;

5) a semi-continuous set of anomalous concentrations occur along the 355° striking high angle fault at the north end of the field area; these anomalies (46827, 46833, and 47417) occur downhill from the Meadow Creek anomaly along this structure and may represent displaced anomalies created by ground water circulation and hydromorphic redistribution of metals along the fault to regions separate from the mineralization source; anomalous samples along this trend have high Fe and Mn concentrations and thus may contain large amounts of adsorbed Cu on accompanying Fe- and Mn-oxides;

6) a four point anomaly located at the head of the Daisy Creek drainage basin (46678, 46679, 47410, and 68665) is anomalous in Fe, and may be a seepage anomaly from the mineralization at the Daisy Creek prospect; these samples are on the opposite side of the valley as the Daisy Creek Prospect at about the same elevation; consequently, this interpretation is not likely. These

samples may be related to green bed-type mineralization occurring in the underlying Mount Shields Formation; The Purple and Green Argillite Unit of the Siltite Member contains minor disseminated limonite blebs which are similar to those at the Daisy Creek prospect; alternatively, these samples are those which are greater than 90 ppm but which fall along the multiple regression line (intermediate slope) and thus have a similar multi-element geochemical signature as the background population; they may not, in fact, be truly anomalous; the large area covered by this anomaly may not be related to a point source, representing mineralization, as at the Daisy Creek prospect and the Meadow Creek anomaly, but rather to a large zone related to high background concentrations in that area.

Both the Daisy Creek prospect and the Meadow Creek anomaly contain anomalous samples which fall along the shallow slope trend on the regression scatterplot (Figure 17). These anomalous samples are all at the heads of their respective drainage basins and are at fairly high elevations. Areas such as these generally have immature stream sediments which have not undergone extensive chemical weathering. At both locations, malachite has been observed coating rocks in the stream bed (c.f., Cazes, 1981). As a result, the shallow slope trend is considered to be related to detritus containing mineralogically borne metal concentrations in malachite, cupriferous Fe-oxides, and Cu-sulfides, which are all seen in heavy mineral concentrates from these areas.

In contrast, the samples comprising the steep slope trend of the regression scatterplot (Figure 17) are located in sites where hydromorphic dispersion and seepage anomalies seem reasonable given the geologic environment. Some occur downstream from known mineralization, adjacent to dwellings, and along major faults. In addition, they generally contain high concentrations of Fe and/or Mn. For this reason, the steep slope trend of anomalous samples is interpreted as representing anomalous Cu concentrations which resulted from hydromorphic metal transport, and which are now adsorbed to oxides.

Finally, samples which are part of the anomalous group which clusters along the regression line are interpreted to be either not anomalous at all, or a seepage anomaly related to minor green bed occurrences in the Mount Shields Formation.

Note that samples which originally were classified as anomalous are not necessarily related to the two areas of mineralization and that samples from the zone of population overlap are, in many cases, as important to the overall interpretation as those samples initially classified as anomalous.

Using this anomaly recognition technique, a determination can be made as to whether several types of anomalies are present in the data. These anomaly types can be recognized and distinguished based on the multi-element geochemical trends of the anomalous samples. Ranking of the anomalies can be made based on combined input from the statistical evaluation and geologic criteria. Finally, since a rigid threshold value is not applied, samples which comprise the higher concentration tail of the background population can be recognized and eliminated from consideration.

Conversely, for the standard anomaly ranking techniques described previously, a rigid arbitrary threshold is assigned, and, thus, samples from the high concentration tail of the background population cannot be eliminated. This results in an abundance of uninterpretable single point anomalies which still have to be field checked.

The most prominent anomaly in the 95th percentile threshold example is located at the head of the Daisy Creek drainage basin, a location which is thought to be unimportant based on the probability plot/regression technique and where no mineralization is known to exist. The mean plus two standard deviation technique recognizes only four samples and incorrect priority might be assigned because of the very high concentrations at the Meadow Creek anomaly (785 ppm Cu), and because it consists of two contiguous anomalous samples.

Thus, the probability plot/regression technique described above offers significant advantages over the standard 95th percentile and mean plus 2 standard deviations techniques, and represents a better analytical tool in the evaluation of geochemical data. Anomaly ranking, elimination of random scatter, and multiple anomalous population recognition provide additional interpretive criteria for the exploration geochemist and allow the ready recognition of significant geochemical anomalies.

Soil Geochemistry

Pedogeochemical data from the 1982 soil grid survey was also evaluated statistically and interpreted. A geochemical data set of 116 samples was provided by Anaconda Minerals Company. Information for each sample includes sample number, location coordinates, and element concentrations for Cu, Pb, Zn, Mo, Ag, Co, As, Hg, and Ba. A listing of these data is presented in Appendix 6. Detection limits for the geochemical concentration data are given in Table III.

All samples consisted of 1 kg of material from a single soil pit. Depths ranged from 10 to 35 cm but all samples were collected from the top 15 cm of the Bm soil horizon. These soils were generally less mature than the average soil underlying the regional map area and are classified as orthic-dystric to degraded-dystric brunisols (Miller, 1982). No developement of any Ae or Bt soil horizon occurs.

The samples were air dried, sieved to -80 mesh and submitted for analysis by the Anaconda Minerals Company Sample Preparation Laboratory located in Monte Vista, Colorado. All geochemical determinations were done using atomic absorption spectrometry, except for As (colorimetric), and Hg (gold foil). These analyses were carried out at Skyline Laboratories, Golden, Colorado.

Sample sites are located on a N-S oriented square grid which is 15 m on a side. The total soil grid measures 180 m by 180 m.

The survey consisted of 107 routine soil samples and 9 site replicate samples collected at three different grid locations.

Table III

Detection Limits for Soil Grid Data
(values in ppm)

Element	Detection Limit	Recode Value
Cu	5.0	*
Pb	5.0	2.5
Zn	5.0	*
Mo	1.0	**
Ag	0.2	0.1
Co	5.0	2.5
As	5.0	5.0
Hg	0.005	*
Ba	20.0	*

* denotes no samples at or below detection

** denotes no samples above lower detection limit

These site replicate samples were located at points approximating the vertices of an equilateral triangle three meters on a side, which was centered around a routine exploration sample. All were collected in non-anomalous terrane.

In addition, 26 samples were resubmitted for a second analysis of all elements except Hg. Three of these sample replicates consist of known and well blended standards. These sample replicates, along with the site replicates, were considered together and used to evaluate the sampling, preparation, and analytical error for the geochemical analyses.

Error Analysis

Replicate sample data (Table IV) were processed statistically in the same manner as the stream sediment replicate samples. Plotted results are presented in Appendix 7. Relative errors are low and acceptable for most elements (approximately 5%). Copper, Pb, Zn, Ag, and As all exhibit higher levels of relative error at lower concentrations, near their respective detection limits. One replicate analysis for Ba is highly imprecise, but the remainder are acceptable. Molybdenum, Co, and to a lesser degree, Ag and Hg all have most of their replicate values at or near their respective detection limits, so the relative error determined is not significant. More realistic relative error estimates, obtained by inspection based on the average CV%, for these elements would be 10.0% for Mo, 3.0% for Ag, 6.0% for As, and 5.0% for Hg. All are within acceptable levels for geochemical

Table IV

Replicate Samples From Soil Grid Survey

SAMP NUM	REPL NUM	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Co (ppm)	Mo (ppm)	As (ppm)	Hg (ppb)	Ba (ppm)
88858-V	1	0.1	25	2.5	50	2.5	1	5	30	670
88860-V	2	0.1	25	2.5	45	10.0	1	5	20	850
88862-V	3	0.1	20	2.5	45	10.0	1	5	30	650
88864-V	4	0.1	25	2.5	45	10.0	1	5	20	680
88886-V	1	0.1	30	2.5	45	10.0	1	5	50	780
88888-V	2	0.1	75	2.5	80	2.5	1	5	60	750
88890-V	3	0.1	15	10.0	70	10.0	1	5	40	870
88812-V	4	0.8	20	5.0	55	10.0	1	5	30	690
88972-V	1	0.1	30	15.0	45	5.0	1	5	10	570
88974-V	2	0.1	30	10.0	70	10.0	1	5	20	660
88976-V	3	0.1	25	20.0	45	5.0	1	10	30	470
88978-V	4	0.1	50	15.0	90	5.0	1	5	20	650
10001-S	1	18.0	110	335.0	165	2.5	4	1100	300	1050
10002-S	2	17.0	110	335.0	160	5.0	6	1050	300	1000
10003-S	3	18.0	115	330.0	170	5.0	6	1100	320	920
10004-S	4	19.0	110	375.0	160	5.0	6	960	300	1050
10011-S	1	5.9	70	75.0	170	10.0	1	390	100	1000
10012-S	2	5.4	70	70.0	140	10.0	4	430	100	1000
10013-S	3	5.6	75	70.0	155	10.0	4	370	90	1050
10021-S	1	0.1	60	20.0	235	15.0	1	30	20	830
10022-S	2	0.1	65	15.0	240	15.0	2	20	20	890
10023-S	3	0.1	50	20.0	225	5.0	4	20	20	870
88956	1	0.1	35	10.0	95	10.0	1	5		**470
	2	0.1	35	10.0	45	5.0	1	5		530
88028	1	0.1	60	20.0	235	2.5	1	5		610
	2	0.1	50	10.0	35	5.0	1	5		590
88972	1	0.1	35	15.0	50	2.5	1	5		540
	2	0.1	30	15.0	45	5.0	1	5		570
88984	1	0.1	125	15.0	75	10.0	1	5		720
	2	0.1	130	15.0	70	5.0	1	5		780
88928	1	0.1	5	5.0	25	5.0	1	5		400
	2	0.1	15	2.5	20	2.5	1	5		440
88810	1	0.1	135	2.5	70	5.0	1	5		800
	2	0.4	125	2.5	70	10.0	1	5		850

Table IV Cont.

SAMP NUM	REPL NUM	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Co (ppm)	Mo (ppm)	As (ppm)	Hg (ppb)	Ba (ppm)
88842	1	0.1	35	5.0	50	5.0	1	10		610
	2	0.1	30	5.0	50	5.0	1	5		240
88878	1	0.1	30	10.0	45	10.0	1	10		570
	2	0.8	30	5.0	50	2.5	1	5		620
88002	1	0.1	40	20.0	35	5.0	1	10		470
	2	0.1	35	20.0	35	5.0	1	10		440
88832	1	1.7	1050	15.0	65	5.0	1	10		790
	2	1.7	950	20.0	65	2.5	1	10		710
88898	1	0.1	40	5.0	60	5.0	1	5		710
	2	0.1	25	5.0	50	2.5	1	30		620
88940	1	0.2	90	205.0	60	10.0	1	5		750
	2	0.2	80	240.0	55	15.0	1	5		750
88061	1	0.4	90	5.0	80	10.0	1	5		620
	2	0.4	85	10.0	75	2.5	1	5		610
88078	1	0.7	50	5.0	75	5.0	1	5		590
	2	0.6	55	10.0	75	10.0	1	5		520
88019	1	0.1	30	5.0	40	2.5	1	5		620
	2	0.1	30	2.5	35	10.0	1	5		540
88064	1	0.4	40	15.0	120	5.0	1	5		620
	2	0.4	35	15.0	120	2.5	1	5		580
88094	1	1.0	35	5.0	85	5.0	1	5		600
	2	0.8	50	10.0	80	10.0	1	5		510
34739	1	0.1	35	5.0	105	10.0	1	5		690
	2	0.4	25	2.5	95	10.0	1	10		630
88870	1	0.1	15	2.5	35	5.0	1	5		570
	2	0.1	15	2.5	35	5.0	1	5		570
88910	1	0.1	15	2.5	35	2.5	1	5		530
	2	0.1	15	2.5	30	2.5	1	5		520
88998	1	0.7	30	10.0	85	5.0	1	5		530
	2	0.6	35	15.0	105	10.0	1	5		550
70001-R	1	0.1	15	20.0	65	5.0	1	10		610
	2	0.1	15	20.0	65	10.0	1	10		580

Table IV Cont.

SAMP NUM	REPL NUM	Ag (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Co (ppm)	Mo (ppm)	As (ppm)	Hg (ppb)	Ba (ppm)
70002-R	1	0.1	5	2.5	20	2.5	1	5		240
	2	0.1	15	2.5	20	2.5	1	5		280

V - represents site replicate samples
S - represents standards
R - represents rock chip sample

* - All non-designated samples are duplicate soil samples.

** - All standards, rock chip, and duplicate soil samples are sample replicates (the crushed material was submitted a second time for analysis); site replicates are actually a different sample collected at the same site.

analyses.

At one replicate site, the central exploration sample and two of the three replicate samples are in good agreement; however, the third replicate sample is different. This is because it was collected in a gully which drains an area of anomalous Cu, Pb, Zn, and Ba soil concentrations. This sample is more of a stream sediment sample than a soil sample and its higher metal concentrations appear to be due to clastic and hydromorphic dispersion downhill from the corresponding soil anomalies. The other three samples at this replicate site were collected over routine non-anomalous soil locations. This discrepancy imposed an artificially high relative error measurement for this replicate group but has not increased the overall relative error determination significantly.

Statistical Analysis

The average concentration of most of the elements analyzed in the soil survey are extremely low, especially for residual soils. This may be due to the inability of the soils to fix many of the soluble metals of interest. Because the underlying bedrock is composed primarily of quartz with hematite cement, resulting soils have similar compositions, and these soil constituents have little potential for adsorbing and concentrating metals. In addition, bedrock beneath the soil grid contains low amounts of mafic minerals and other impurities, such as volcanoclastics, which normally contain large amounts of base metals. Thus, background concentrations for these metals are very low. Nevertheless, rocks containing economic minerals do have anomalous soil concentrations developed over them.

Statistical evaluation of the pedogeochemical data was limited to a probability plot analysis because this technique effectively separated distinct populations within the data; hence, additional processing was deemed unnecessary. Most elements display obvious multimodal probability density functions, and have easily interpretable anomalous populations which correspond spatially with geologic criteria.

Probability plots are included in Appendix 8 and population distribution (anomaly) maps are presented in Figures 19 to 26. Thresholds used to obtain the maps were derived from the probability plots and represent the optimal concentrations for discriminating anomalous concentrations from the background population (c.f., Sinclair, 1976). Table V contains a list of these thresholds for each element.

Note that Mo has been omitted from consideration because no Mo concentrations are greater than the 1 ppm detection limit. In addition, As and Co anomaly maps are presented (Figures 25 and 26), but they do not exhibit any recognizable trend and have a very low concentration range and contrast.

Interpretation

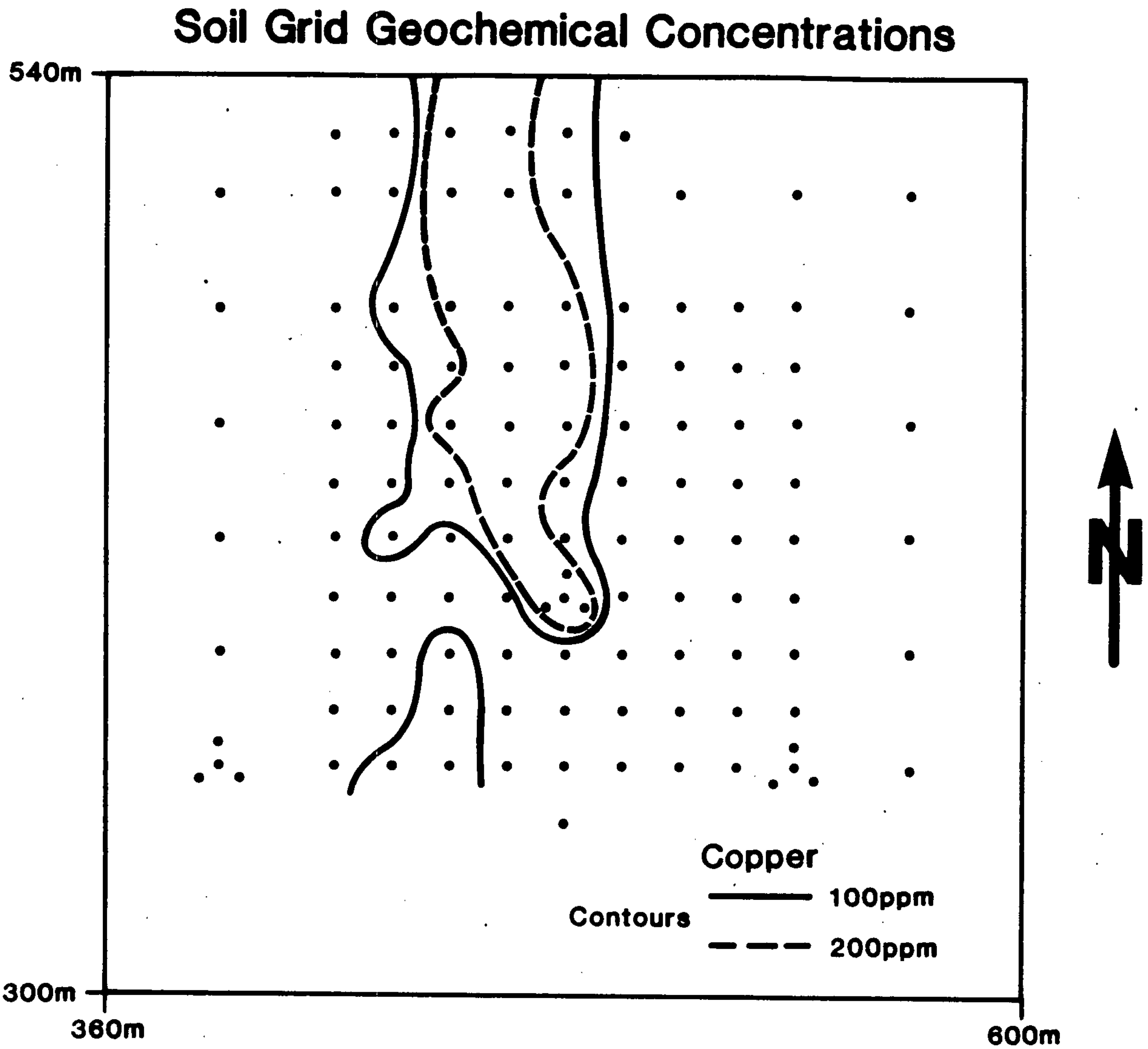
The soil grid maps show several features. First, Cu defines the most obvious anomaly. Silver, Pb, and to a lesser degree,

Table V

Thresholds for Soil Grid Data
(values in ppm)

Element	Modes	Threshold	Percentile
Cu	3	100.0	22
		220.0	12
Pb	3	15.0	28
		90.0	7
Zn	3	65.0	21
		80.0	7
Ag	3	0.2	4
		0.4	2
Hg	3	0.030	32
		0.050	2
Ba	2	800.0	9
Co	2	10.0	7
As	3	5.0	9
		10.0	2

* Mo is omitted because all values were equal to the detection limit.



Soil Grid Geochemical Concentrations
540m
300m
360m
600m
N
Copper
Contours
100ppm
200ppm

Figure 19

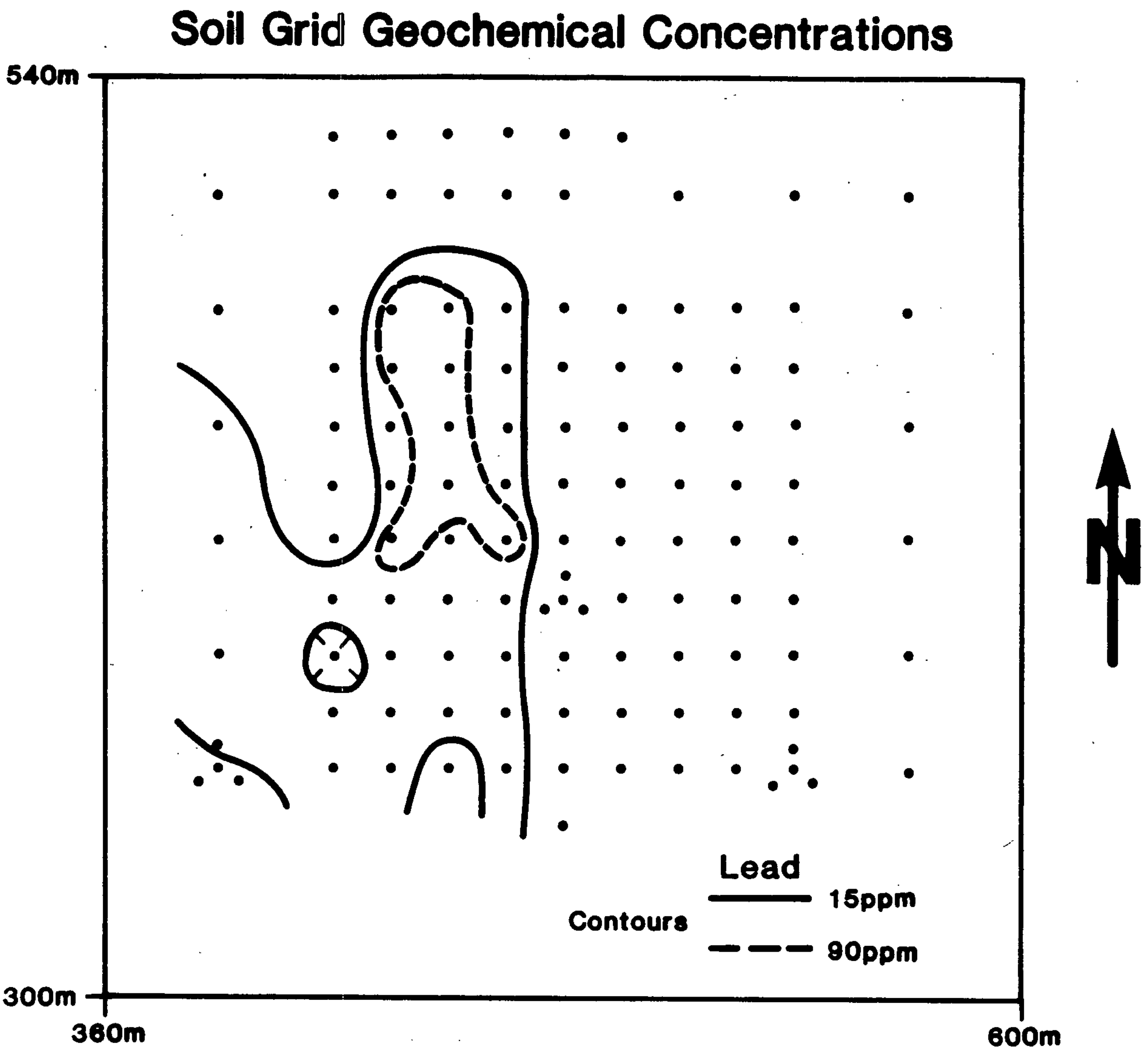

Soil Grid Geochemical Concentrations
540m
300m
360m
600m
N
Lead
Contours
15ppm
90ppm

Figure 20

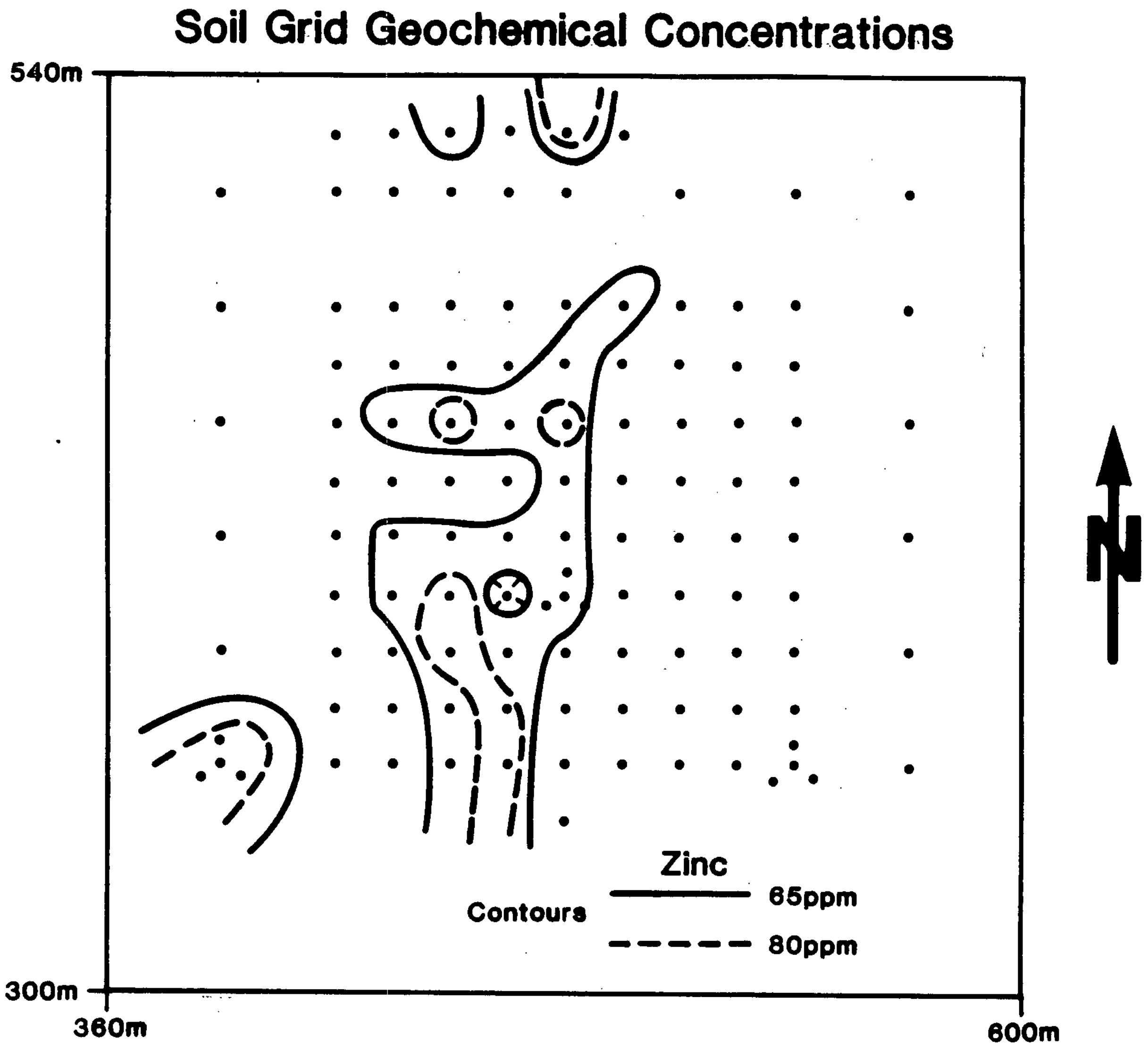

Soil Grid Geochemical Concentrations
540m
300m
360m
600m
Zinc
Contours
65ppm
80ppm
N

Figure 21

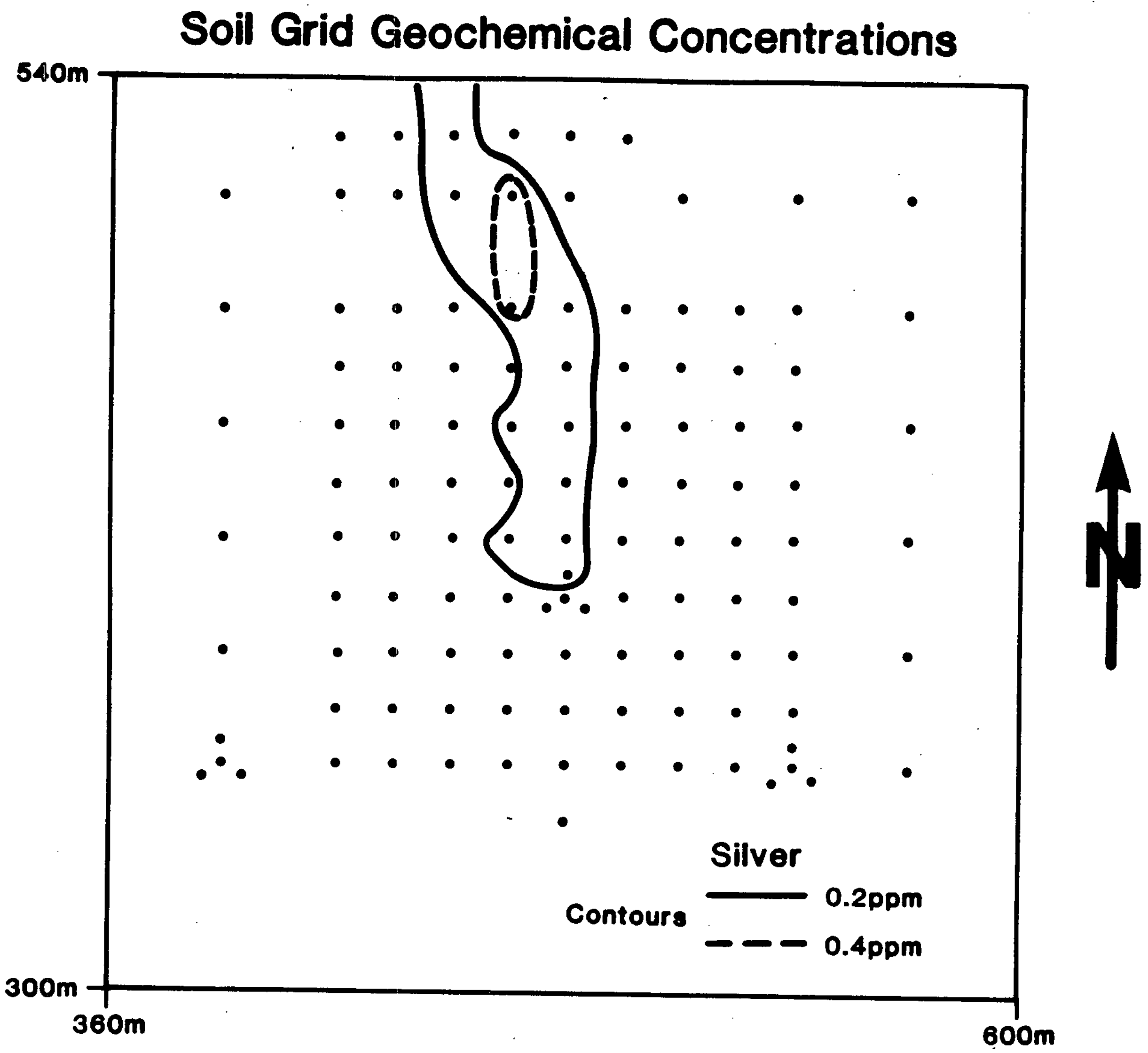

Soil Grid Geochemical Concentrations
540m
300m
360m
600m
N
Silver
Contours
0.2ppm
0.4ppm

Figure 22

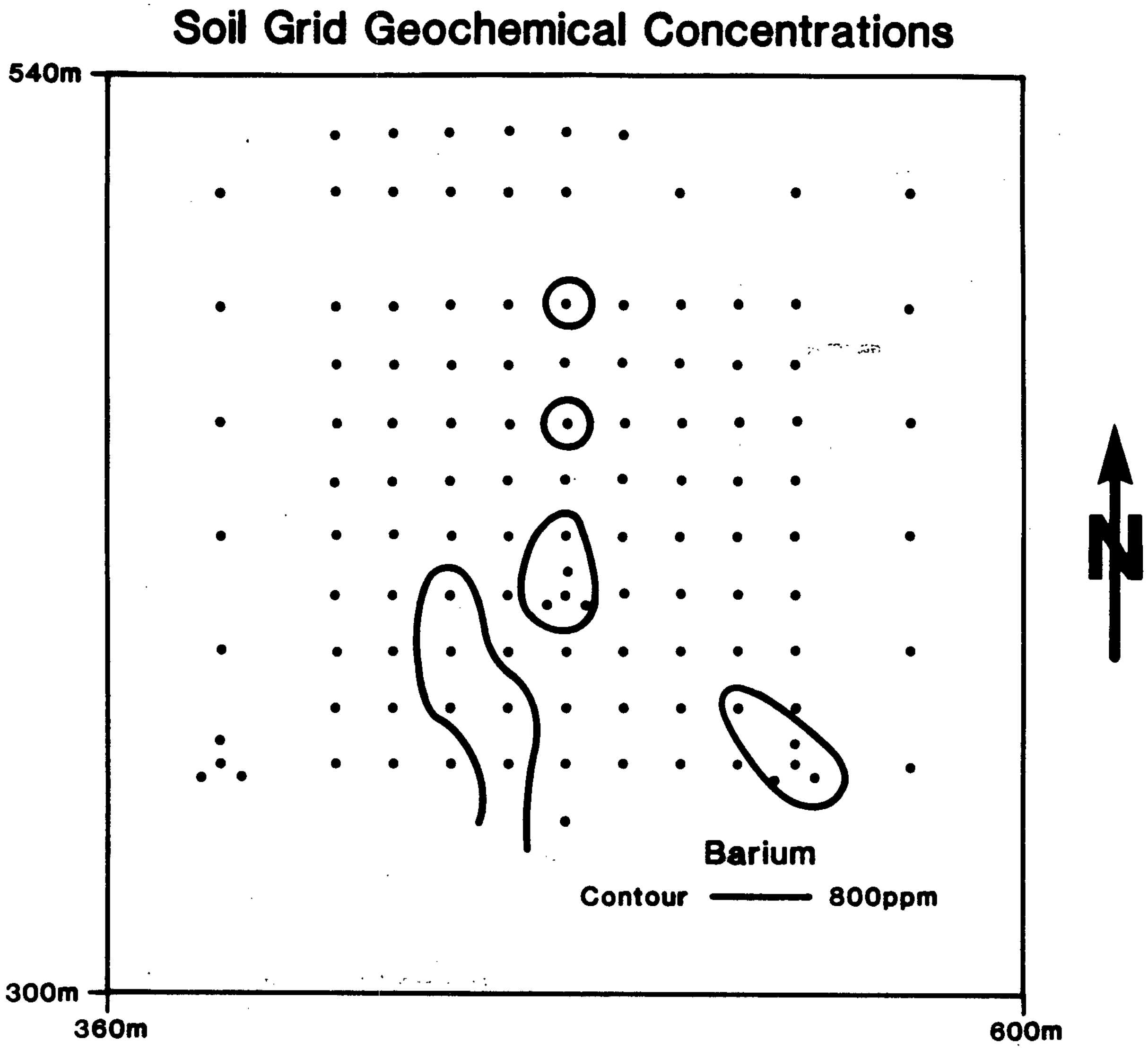

Soil Grid Geochemical Concentrations
540m
300m
360m
600m
N
Barium
Contour 800ppm

Figure 23

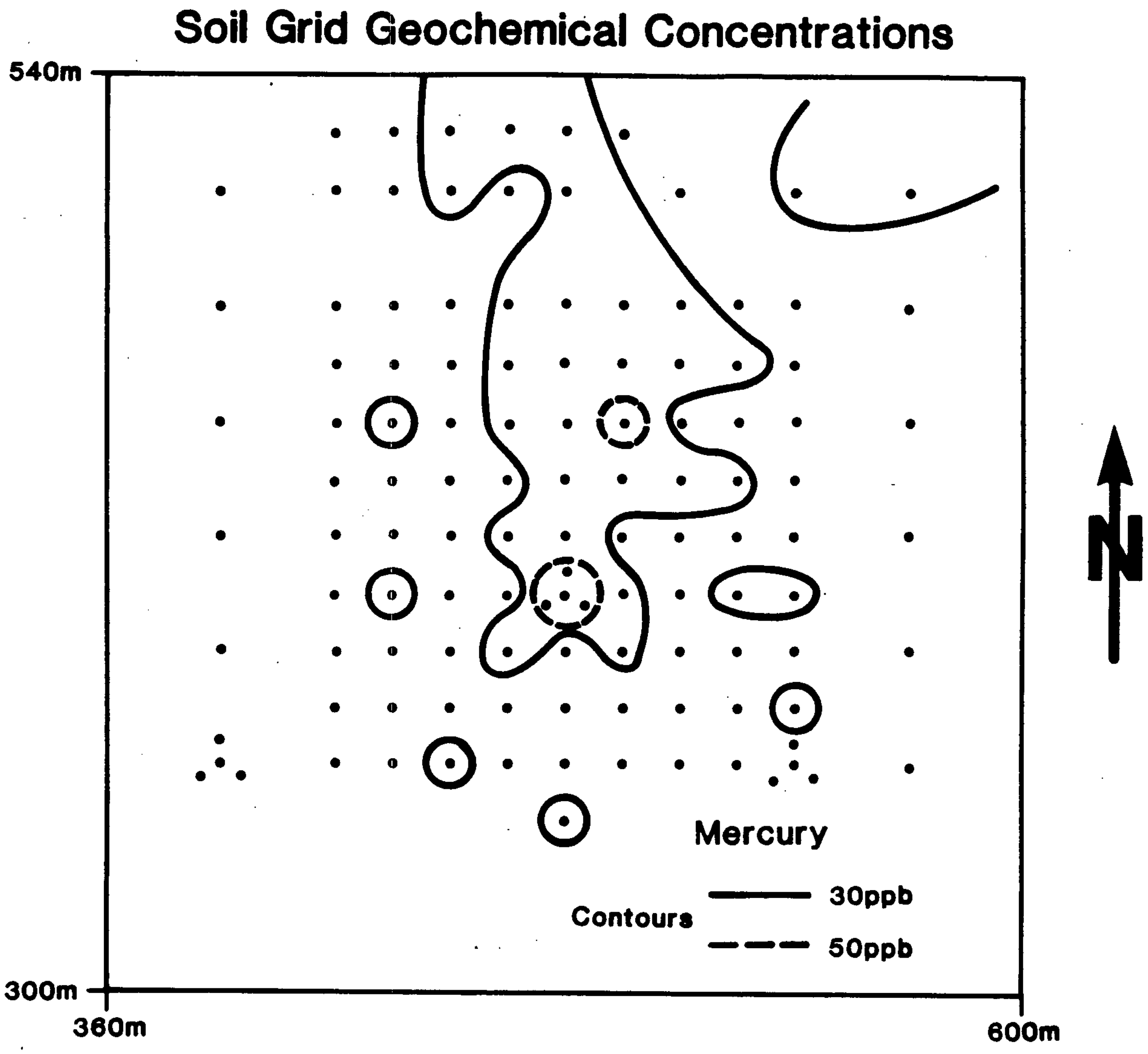

Soil Grid Geochemical Concentrations
540m
300m
360m
600m
Mercury
Contours
30ppb
50ppb
N

Figure 24

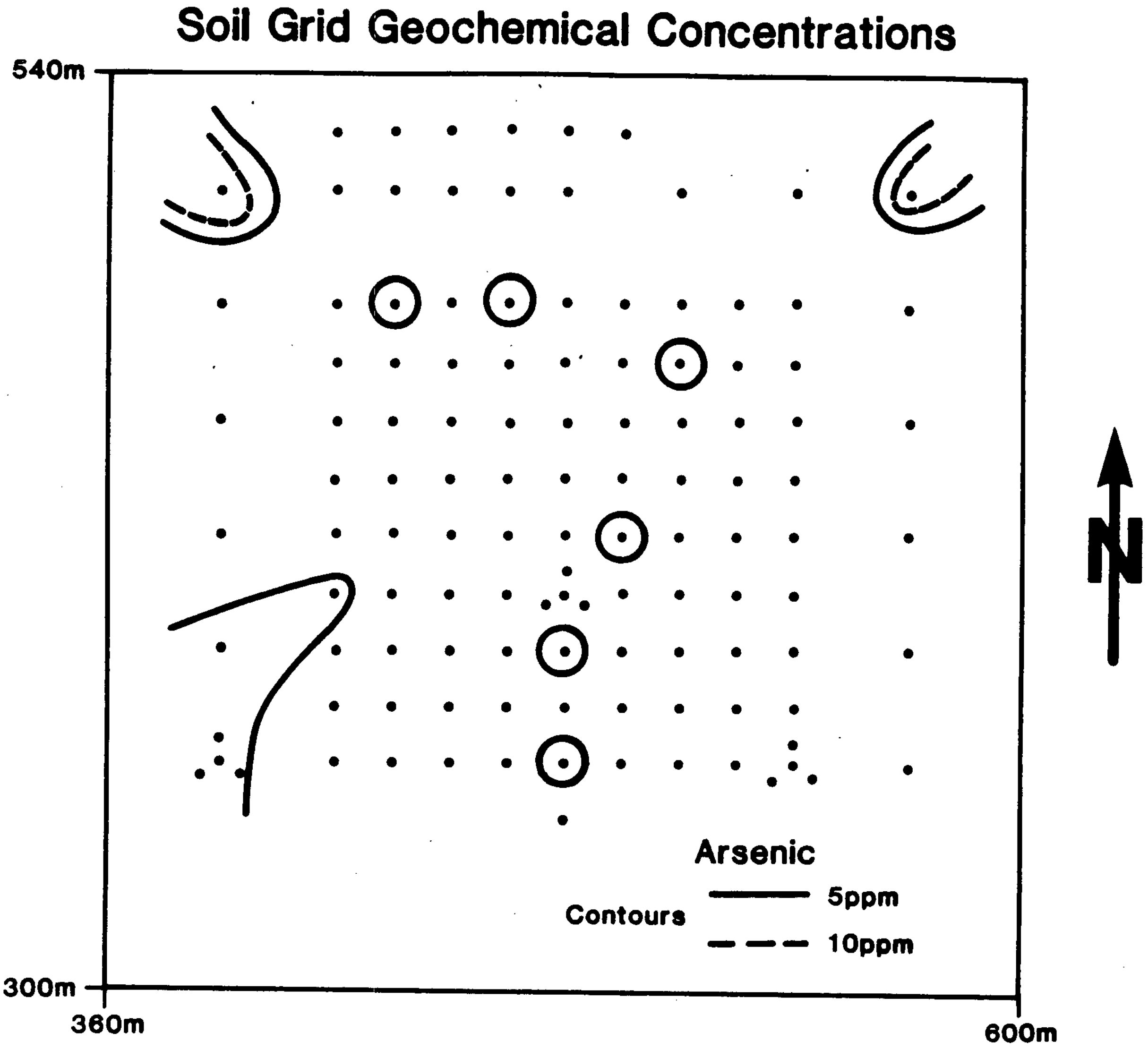

Soil Grid Geochemical Concentrations
540m
300m
360m
600m
Arsenic
Contours
5ppm
10ppm
N

Figure 25

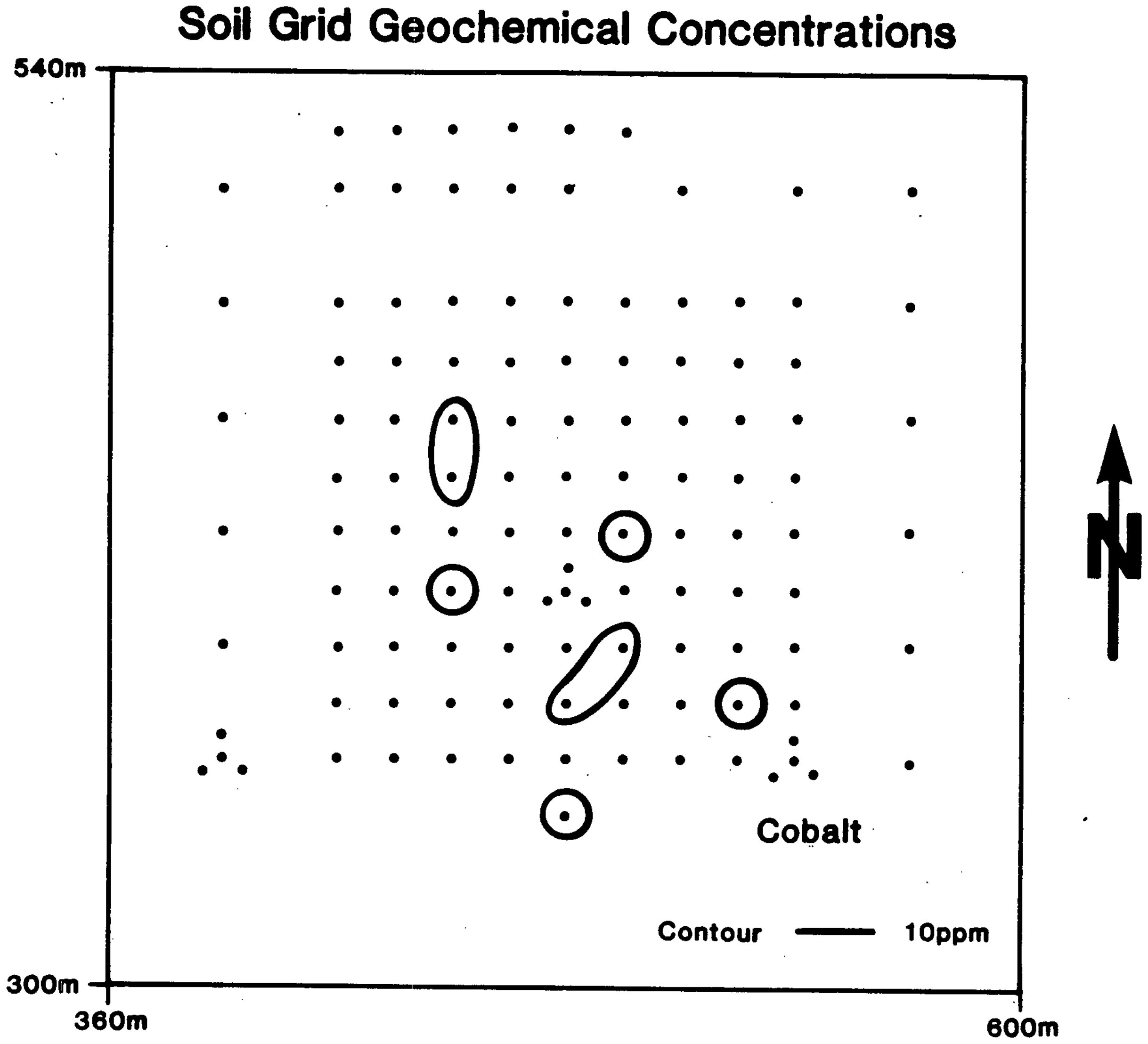

Soil Grid Geochemical Concentrations
540m
300m
360m
600m
N
Cobalt
Contour
10ppm

Figure 26

Zn and Ba all have anomalous values which roughly overlie the Cu anomaly but are less coherent spatially. Careful inspection reveals that these anomalies are actually slightly displaced from one another. Moving from southwest to northeast, the sequence of overlapping anomalies consists of Pb and Ba, Zn, Cu, and finally, Ag (Figure 27). Also note that most of the anomalous Hg concentrations occur to the east of these anomalies and, thus, may also be part of this zonation.

The progrssive displacement of geochemical anomalies seen in the soil data described above, may be a spatial manifestation of the paragenetic relationships and the zonation of gossan types described in Chapter 3. The zonation is similar to geochemical and mineralogical zonations observed at other stratabound Cu deposits (Kupferschiefer, White Pine, Zambian Copperbelt, Troy; Rentzsch, 1974; Brown, 1971, 1974; Annels, 1974, Bartholome, 1974, Van Eden, 1974, Holcombe, 1977; Hamilton and Balla, 1983, Hayes, 1984). The existence of Hg in the zonation sequence has not been reported previously, except for Conner (1980; referring to the influence of nearby intrusions on the geochemical concentrations of Hg, As, and Sb in mineral occurrences in the Spokane Formation, Belt Supergroup). Because there are no intrusions recognized in the Daisy Creek area, the Hg zonation may support the concept of chloride complexation of metals as a transporting species for the ore constituents, since mercury, like Ag and Cu, has a strong chloride complex (Rose, 1976).

If the anomaly zonation observed at the Daisy Creek prospect is actually a manifestation of a migrating redox boundary which

Zoning Relationships for Soil Anomalies at the Daisy Creek Prospect

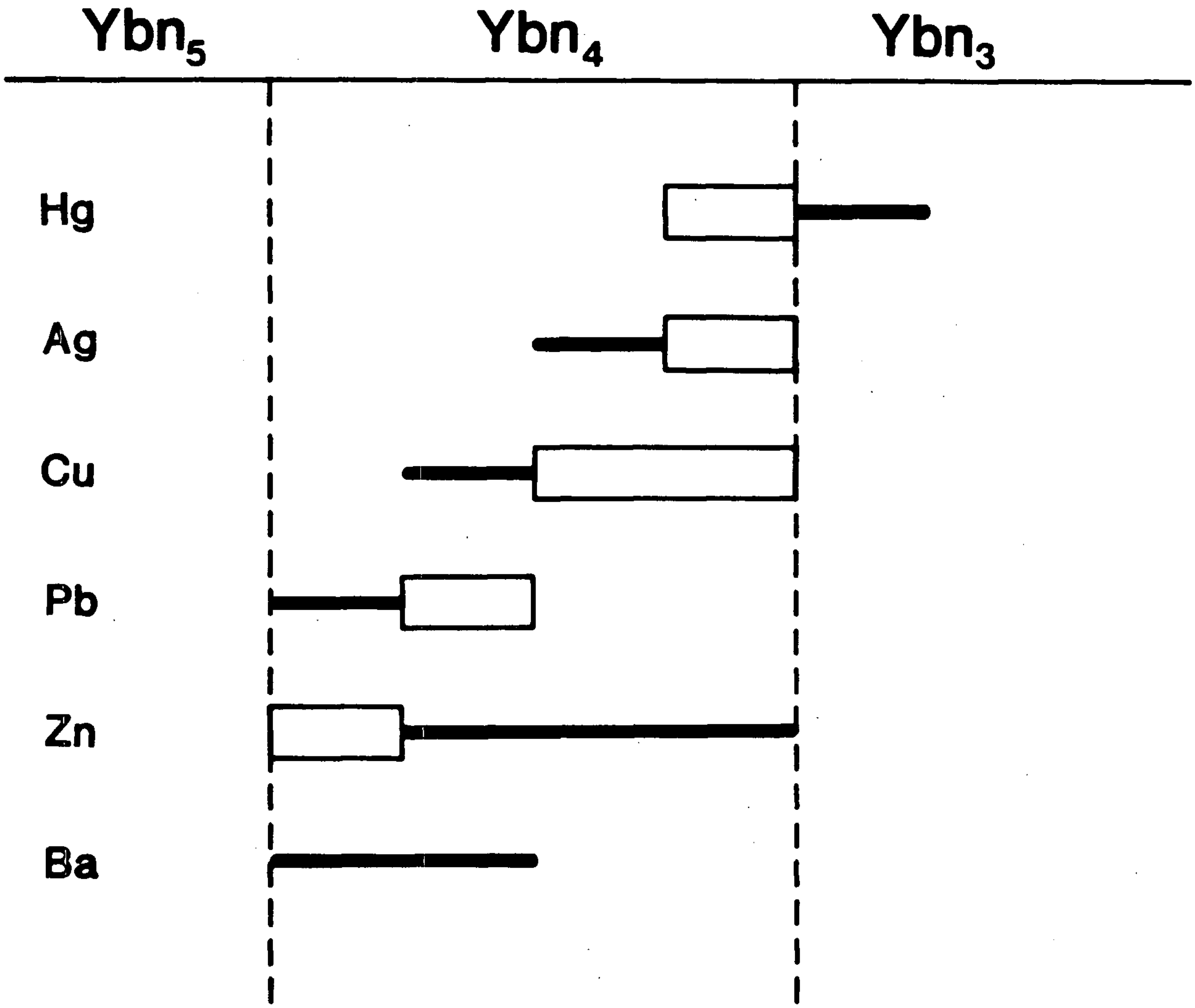


Figure 27

was responsible for the mineralization (Hayes, 1984; Holcombe, 1977), the apparent direction of movement of the oxidized waters would be from NE to SW, based on flow directions recognized at other stratabound Cu deposits referred to above (Brown, 1971; Hayes, 1984). This would correspond to fluids migrating up stratigraphy and toward the south, from the base of the Upper Crossbedded Quartzite Member of the Bonner Formation (Ybn_4; Appendix 1; in the prospect area composed of dominantly coarse to very coarse grained, crossbedded vitreous quartzites), into the top of the member (composed of finer grained, flat laminated quartzites). The base of the Upper Crossbedded Quartzite Member may actually have been an aquifer which allowed the introduction of the oxidized metal bearing waters to diffuse (Brown, 1971) into reducing conditions in the overlying finer grained quartzites.

The zonation observed is also consistent with the zonation of the gossans observed across the deposit (Chapter 3). Red and brown limonite occurs at the north end of the prospect and near the stratigraphic 'base' of the Cu anomaly in the Upper Crossbedded Quartzite Member of the Bonner Formation, along with anomalous Ag concentrations (Figure 22). Orange limonite occurs centered on the Cu anomaly, commonly containing intergrown supergene malachite. Yellow to orange limonite occurs over the Pb and Ba soil anomalies, at the south end of the prospect and at the stratigraphic 'top' of the Cu anomaly.

Therefore, the pedogeochemical data support observations regarding the paragenetic sequence and mineralogic zonation at the Daisy Creek Prospect. In addition, these data give indications of the hydrodynamic and/or diffusion gradient during the time of mineralization and a further understanding of the geochemical constraints which helped form the deposit. Finally, the soil data precisely outline the location of the mineral occurrence and the various constituent mineralogical zones.

CHAPTER 5

CONCLUSION

The Daisy Creek prospect consists of stratabound Cu-Pb-Ag minerals within quartzites of the Bonner Formation, part of the Missoula Group, the uppermost member of the Belt Supergroup. The sedimentary host rocks consist dominantly of quartz- and hematite-cemented feldspathic quartzites and orthoquartzites deposited during the second period of fluvio-deltaic progradation which occurred during Bonner deposition. Copper bearing mineral assemblages are hosted by a reduced, medium to coarse grained, crossbedded member of the Bonner Formation (Ybn_4; Appendix 1) which contains no hematite cement but high amounts of phosphate. The depositional environment for this quartzite was fluvial.

Regional mapping reveals that two phases of deformation affected the area, one with fold axes oriented at 285^{o} with a SSW vergence, and a second, later event (with a fold axis orientation of 164^{o}) related to overthrusting of Precambrian and Paleozoic rocks to the ENE during Mesozoic and Cenozoic time.

Mineral concentrations of economic interest consist of galena, chalcopyrite, bornite, chalcocite, cupriferous goethite, acanthite, barite, cerussite, pyromorphite, hinsdalite, malachite, native silver, and limonite. These minerals are distributed across the prospect in four different mineralogic zones characterized by galena, chalcopyrite, bornite, and chalcocite which are zoned from SW to NE. These zones are recognizable based on the different types of gossans developed over them.

Paragenetic relationships of the Cu-bearing mineral assemblages suggest that the present day mineralogy is a result of four different episodes of mineral reactions. The first occurred during early diagenesis and consisted of the precipitation of authigenic pyrite, probably by sulfur reducing bacteria. The second episode consisted of the sequential replacement of pyrite by more Cu rich sulfides: chalcopyrite, bornite, and chalcocite. The third episode involved the oxidation of these sulfide minerals, forming cupriferous goethite and barite, and releasing silver from the bornite and chalcocite lattice to form acanthite. Both episode two and episode three occurred during middle diagenesis and probably represent a continuum of chemical reactions between oxidized, metal-bearing, migrating ground waters and reducing pore waters or pyrite bearing sediments. Lastly, Holocene supergene oxidation resulted in the precipitation of malachite, cerussite, pyromorphite, and limonite from the metal-bearing phases. The paragenetic relationships are consistent with the mineralogic zones observed across the prospect.

Stream sediment geochemical data was seen to precisely locate the Daisy Creek prospect as well as another stratabound copper prospect located in the field area. Statistical analysis led to the recognition of displaced hydromorphic anomalies and anomalies caused by contamination as different in character from those related to mineralization.

Finally, a soil grid survey over the mineralization clearly defines the limits of the mineralization and correlates well with the different mineralogic zones located at the prospect. Concentrations are lower than those observed in float rock chip samples, probably due to surficial leaching of the economic and pathfinder metals during supergene oxidation and soil development. Careful mapping of soil color and grain size successfully predict the underlying lithologic units and the extent of the mineralization.

Paragenetic mineral relationships, gossan zoning, soil geochemical anomalies, and geochemical evidence suggest that the Daisy Creek prospect formed as a result of the interaction of pyrite-bearing quartzites with reduced pore waters, with migrating, oxygenated, metalliferous, briny ground waters. Diffusion of metals and free oxygen resulted in the replacement of pyrite by Pb- and Cu-sulfides, and then their subsequent oxidation. The apparent direction of flow for this migrating diffusion front appears to have been from the NE to the SW, suggesting that diffusion took place toward the south and upwards stratigraphically.

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APPENDIX 1

DESCRIPTION OF STRATIGRAPHY

Description of Stratigraphy

The following is a description of the stratigraphy from the Daisy Creek Area (Harrison, 1972; Harrison and Campbell, 1963; Winston, 1984-A, 1984-B). Nomenclature and symbols used here is referenced in the text. A stratigraphic column depicting the following description is located in the pocket as Plate ?.

CAMBRIAN SECTION

555 to ? m

Undifferentiated Dolomite - Middle to Upper Cambrian (Cdu) :

Dearborn Dolomite (Formation) occurs at base of this section and consists of a light to medium grey, thick bedded, sandy dolomite with minor shale interbeds and partings; beds commonly 5.0 to 15.0 cm thick; minor cross-cutting calcite veins; top not exposed.

210 to 555 m

Damnation Dolomite (Formation) - Middle Cambrian (Cdd) : light to medium grey, thin bedded, sandy dolomite with abundant shale interbeds and partings; beds commonly 2.0 to 5.0 cm thick; convolute bedding; abundant vuggy cavities are filled with calcite and minor quartz; abundant crosscutting calcite veins.

30 to 210 m

Gordon Shale (Formation) - Middle Cambrian (Cgs) : waxy, olive green, greyish green, and green, highly fissile, phyllitic shale; beds commonly 2.0 to 10.0 mm thick; minor interbedded planar crossbedded sandstone lenses and dolomite cemented beds; orange limonite after pyrite occurs along bedding planes and crossbeds in sandstone lenses.

0 to 30 m

Flathead Sandstone (Formation) - Middle Cambrian (Cfs) : thin bedded, red, reddish grey, and maroon, flat laminated, coarse grained siltstone to fine grained sandstone; abundant scour and fill structures; beds commonly 1.0 to 4.0 cm thick; interbedded and generally overlain by thick bedded, light pink, light orange, and light tan, very coarse grained sandstone, grit, and conglomerate; contains abundant rounded quartz and jasper grains; moderately well sorted; commonly contains trough and epsilon crossbeds as well as heavy mineral lag lamellae; beds commonly 4.0 to 20.0 cm thick; often light colored grit fills scours in the red siltstone.

--------------- Regional Angular Unconformity ---------------

HELIKIAN SECTION - MISSOULA GROUP

-2025 to 0 m

Libby Formation - Helikian (Ylb) : composed of two members;

-690 to 0 m

Upper Member (Ylbu) : thin to very thin bedded, dominantly olive green, medium to very fine grained, thin parting, chloritic siltite with minor medium brown, greyish purple, and dark grey beds; contains abundant muscovite along bedding planes and partings; muscovite also occurs in beds, which weather to medium brown; abundant mud chip breccias, rip up clast conglomerates, and imbricated mud chip lag deposits; mud chips are both siliceous (grey) and argillaceous (green); beds occur as fining upward couplets between 0.2 and 1.5 cm thick; desiccation crack casts are common; abundant oscillation ripple marks with minor asymmetrical tuning fork and undulatory ripple marks; bed forms are commonly nearly planar but scour and fill, pinch and swell, lenticular, and swaly bed forms are also present; exhibits poorly developed joint surfaces; black Fe- and Mn-oxides (as dendritic wad) occur commonly on joint, fracture, and weathering surfaces; lower section from -690 to -180 m contains common dark grey cherts and medium grey cherty siltites interbedded with olive green siltites; syneresis crack casts filled with milky quartz occur commonly in the pure dark grey chert beds; the upper section from -180 to 0 m contains more prevalent greyish purple and medium brown beds and very common mud crack casts; quartz veins cutting this member commonly contain chlorite, minor barite, and hematite, and are bounded by a halo of altered siltite which contains no muscovite and which has been bleached to a pale purplish grey; contact with Lower Member is gradational and based on color change and disappearance of muscovite and chert beds, extent of cleavage developement, abundance of Fe- and Mn-oxide coatings, mud chip composition, and the presence of ripple marks.

-2025 to -690 m

Lower Member (Ylbl) : thin to thick bedded, blueish mint green siltite and fine grained quartzite; color caused by abundance of chlorite; siltite beds occur as fining upward couplets from 0.5 to 2.5 cm thick; quartzites fracture conchoidally and occur as massive, well sorted, unlaminated beds from 3.0 to 30.0 cm thick; thick parting surfaces are not generally micaceous; mud chips, mud chip conglomerates, and imbricated mud chip lag deposits are common; mud chips are commonly argillaceous (green), but minor siliceous (grey) mud chips do occur; minor desiccation crack and syneresis crack casts; exhibits well developed joint surfaces; quartz veins cutting this unit contain chlorite, minor barite and hematite, and are bounded by a halo of altered siltite which has been bleached to a pale purplish grey; marker horizons in the member consist of:

1) a thin to medium bedded, red and purple siltite at -765 to -750 m which appears to be identical to overlying and underlying units except for a different iron valence state (Fe^{III} in hematite as opposed to Fe^{II} in chlorite);
2) a medium to thick bedded, dark mint green siltite at -900 to -870 m is cemented by calcite;
3) four thick bedded to massive, well sorted, fine grained quartzite lenses appear to be semi-continuous across the field area and occur at -1140 to -1110 m, -1410 to -1380 m, -1560 to -1500 m, and -1620 to -1590 m; and
4) a thin bedded, dominantly dark grey to black, carbonaceous, fine to medium grained siltite is interbedded with mint green siltite; often individual beds are 0.2 to 1.0 cm thick and are green in the lower half and black in the upper half of the bed; unit occurs at -1995 to -1915;

Below these marker beds, from -2025 to -1995 m, this unit tends to be thinner bedded, contains more dominant purple to greyish purple beds between 2.0 to 20.0 mm thick, and is gradational with the underlying Bonner Formation; contact with Bonner Formation is marked by the first appearance of muscovite on bedding planes, dominant red color, and increased grain size.

-2565 to -2025 m

Bonner Formation - Helikian (Ybn) : composed of five members;

-2070 to -2025 m

Upper Laminated Quartzite Member (Ybn_5) : mainly red, pink, maroon, and purple, fine to very fine grained, hematitic quartzites and medium to coarse grained siltites; bedding is flat laminated and commonly micaceous; minor ripple, lenticular, swaly, and scour and fill bed forms; parting lineation occurs on micaceous parting surfaces; thin to very thin argillaceous and muscovite partings; occasional asymmetric convolute, undulatory, and tuning fork ripple marks and minor symmetric oscillation ripple marks; common heavy mineral lag deposits; beds occur as fining upward couplets commonly 0.5 to 4.0 cm thick; beds also commonly have argillaceous tops with desiccation crack casts; imbricated matrix supported siliceous mud chip conglomerates occur throughout; occasional orange limonite blebs occur disseminated in the coarser grained beds; crosscutting quartz veins contain minor hematite and do not alter the country rock.

-2100 to -2070 m

Upper Crossbedded Quartzite Member (Ybn_4) : mainly white, tan, light pale green, grey to light grey, pale orange, and cream colored, medium to very coarse grained, thick bedded to massive, thick to flaggy parting quartzite; dominant trough and tabular-tangential crossbeds with minor epsilon crossbeds; beds commonly 5.0 cm to 1.0 m thick; coarser grained quartzites are vitreous; finer grained quartzites have micaceous thin partings and are generally flat laminated and fine upward as couplets; finer grained quartzites predominate in upper half of member; finer grained quartzites commonly exhibit symmetrical oscillation and asymmetrical tuning fork and undulatory ripple marks; some parasitic ripple sets; beds of the finer grained quartzites are generally 0.5 to 3.0 cm thick; coarse grained quartzites contain abundant siliceous and phosphatic (apatite) mud chips as lag deposits along foresets; heavy mineral lag deposits occur in both the crossbedded and flat laminated quartzites as foreset lag deposits and lag lamellae, respectively; abundant red limonite (hematite) blebs occur disseminated throughout the unit and hematite often dusts the insides of cavities in the quartzites; minor to rare white claystone also occurs within the unit; crosscutting quartz veins contain minor hematite and do not alter the country rock.

-2250 to -2100 m

Middle Laminated Quartzite Member (Ybn_3) : mainly red, pink, maroon, and purple, very fine grained quartzites and medium to coarse grained siltites; thin to very thin parting; contains abundant muscovite on bedding planes and siliceous mud chips as lag lamellae which are often imbricated; generally lacks heavy mineral beds; parting lineation; very common red argillaceous bed tops which act as parting surfaces; abundant desiccation crack casts; bedding is generally 0.5 to 3.0 cm thick and occurs as fining upward couplets; occasional orange limonite blebs occur disseminated throughout unit; crosscutting quartz veins contain minor hematite and do not alter the country rock.

-2370 to -2250

Lower Crossbedded Quartzite Member (Ybn_2) : generally tan, light orange, white, and cream colored, thick bedded, thick to flaggy parting, medium to very coarse grained, vitreous quartzite; beds from 10.0 to 100.0 cm thick; common trough and tabular-tangential crossbeds and minor epsilon crossbeds; very abundant heavy mineral accumulations as foreset lag deposits; minor red limonite (hematite) blebs occur disseminated throughout; unit from -2370 to -2310 m has three interbedded 5.0 to 10.0 m thick sequences of light pink, red, maroon, and purple, flat laminated to ripple laminated, fine to very fine grained, micaceous quartzites with parting lineation; ripple marks are dominantly asymmetric tuning fork and undulatory types; beds are 0.5 to 3.0 cm thick and occur as fining upward couplets; most beds contain minor heavy mineral lag deposits along their bases; coarse grained quartzite beds in this section are often pale green immediately (up to 3.0 m) below the finer grained quartzite sequences; crosscutting quartz veins contain minor hematite and do not alter the country rock.

-2565 to -2370

Lower Laminated Quartzite Member (Ybn_1) : gradational with the lower part of the Lower Crossbedded Quartzite Member; consists of light pink, red, maroon, and purple, fine to very fine grained, thin to flaggy parting, thin bedded, flat and ripple laminated, micaceous quartzite; beds consist of fining upward couplets which range from 0.8 to 15.0 cm thick; minor light pink, trough crossbedded, fine grained quartzites occur from -2400 to -2370 m; below -2400 m argillaceous bed tops, partings, and desiccation crack casts are prevalent; minor heavy mineral accumulations occur as foreset lag and bedding plane lag deposits throughout the unit; minor siliceous mud chips occur; from -2490 to -2565 m unit consists of pale green flat laminated micaceous quartzites interbedded with the red micaceous quartzites; green facies are generally 3.0 to 10.0 m thick while interbedded red micaceous quartzites are generally 10.0 to 25.0 cm thick; abundant tuning fork and undulatory ripple marks present only in red micaceous quartzites; minor disseminated orange limonite blebs occur only in the red beds; crosscutting quartz veins contain minor hematite and do not alter the country rock.

-3705 to -2565 m

Mount Shields Formation - Helikian (Yms) : composed of two members;

-3285 to -2565 m

Siltite Member (Ymss) : composed of 6 units;

-2730 to -2565 m

Upper Red Siltite Unit ($Ymss_6$) : dominantly red, purple, and maroon, flat laminated, thin parting, medium to coarse grained, micaceous siltite; common climbing ripple cross stratification and asymmetric tuning fork ripple marks; beds occur as 5.0 to 10.0 mm thick sets of fining upward couplets and often have argillaceous tops with desiccation crack casts.

-2880 to -2730 m

Upper Green Siltite Unit ($Ymss_5$) : pale green, buff, tan, and light grey, medium grained, thin parting, flat laminated siltite with sedimentary structures similar to the Upper Red Siltite Unit; contains fewer desiccation crack casts and ripple marks; tops of beds are argillaceous but are often oxidized to red and purple colors; beds consist of fining upward couplets from 0.5 to 3.5 cm thick and often have micaceous parting surfaces as well as having muscovite disseminated throughout; occasional light grey to grey chert nodules occur up to 5.0 by 10.0 cm in cross section.

-3000 to -2880 m

Purple and Green Argillite Unit ($Ymss_4$) : flat laminated, intercalated, purple and green argillite composed of fining upward couplets from 0.5 to 2.0 cm thick; minor pinch and swell, scour and fill, lenticular, and swaly bed forms; green beds commonly have red argillaceous tops and partings; very minor disseminated orange limonite blebs occur along basal bedding planes in the purple couplets.

-3090 to -3000 m

Purple and Green Siltite Unit ($Ymss_3$) : flat laminated, intercalated, purple and green, medium to fine grained, thin parting siltite and argillite; very micaceous; siltites are dominantly purple while argillites are dominantly green; beds consist of fining upward couplets from 0.2 to 1.2 cm thick; green beds often have argillaceous red tops and parting surfaces; minor calcite cement occurs in some of the coarser siltites from -3090 to -3050 m (lower 40 m).

-3225 to -3090 m

Mixed Clastic Unit ($Ymss_2$) : intercalated, purple and green argillite, siltite, and fine to very fine grained quartzite; very micaceous; fining upward couplets range from 5.0 to 80.0 mm thick; common climbing ripple cross stratification; minor symmetric oscillation ripple marks; siltites and quartzite units are dominantly green while argillite is dominantly purple; scour and fill, and pinch and swell bed forms occur occasionally; green units commonly have red argillaceous tops which exhibit abundant desiccation crack casts; coarser units contain minor siliceous mud chip conglomerates; minor carbonate cement occurs in coarser units from -3115 to -3090 m (upper 25 m).

-3285 to -3225 m

Lower Red Siltite Unit ($Ymss_1$) : dominantly purple and red, flat laminated, medium grained siltite with abundant muscovite along bedding planes; contains climbing ripple cross stratification and siliceous mud chip conglomerates; beds consist of fining upward couplets between 1.0 and 5.0 cm thick; argillaceous tops and desiccation crack casts on bed tops are common; from

-3285 to -3270 m unit grades into pink, very fined grained, flat laminated, and minor symmetric oscillation ripple laminated quartzite.

-3705 to -3285 m

Quartzite Member (Ymsq) : composed of three units;

-3375 to -3285 m

Pyritic Quartzite Unit (Ymsq$_3$) : fine to very fine grained, white, tan, light grey to light green, flat laminated quartzite; minor planar and tabular-tangential crossbeds with low foreset to bedding angles; often appears bleached to milky white; contains bimodal size distribution of authigenic pyrite cubes; one set of pyrite cubes averages 1.0 mm on a side and commonly exhibits red limonite rims; the second set of pyrite cubes averages 5.0 mm on a side and appears to be rimmed with magnetite; beds with large amounts of pyrite which have undergone supergene oxidation are often discolored to red adjacent to the pyrite; unit contains thick, occasionally red argillite partings; siliceous mud chip conglomerates and climbing ripple cross stratification are also present; finer grained beds consist of fining upward sequences from 2.0 to 35.0 cm thick.

-3485 to -3375 m

Lower Green Siltite Unit ($Ymsq_2$) : green to pale grey, medium to coarse grained, flat laminated, thin parting siltite; highly micaceous; contains some climbing ripple cross stratification and siliceous mud chip conglomerates; highly micaceous units weather to medium brown; very minor purple facies occur but are usually confined to argillaceous tops on green beds; beds consist of fining upward couplets from 0.5 to 2.5 cm thick.

-3705 to -3485 m

Hellgate Quartzite Unit ($Ymsq_1$) : pink, and dark pink, very fine to medium grained, medium parting quartzite; flat laminated, fining upward couplets range from 5.0 to 20.0 cm thick; minor tabular-tangential and planar crossbeds with low foreset to bedding angles; contains siliceous mud chip conglomerates, minor heavy mineral lag deposits on foresets and bedding planes, and muscovite on finer grained bed tops.

-4205? to -3705 m

Snowslip Formation - Helikian (Ysn) : composed of two members;

-4055 to -3705 m

Purple and Green Argillite Member (Ysn_2) : purple and green, thin parting, intercalated siltite and argillite;

beds commonly 0.5 to 2.0 cm thick; often green argillite has red argillaceous tops; minor desiccation crack casts occur on red argillaceous tops; bedding is flat laminated with minor pinch and swell, and scour and fill bed forms; some red argillaceous mud chip conglomerates present; coarse grained chlorite occurs on major joint and fracture surfaces.

-4205? to -4055 m

Green Argillite Member (Ysn_1) : grey to green, thin parting argillite and minor siltite and argillite; flat laminated with minor pinch and swell bed forms; beds occur as fining upward couplets from 0.5 to 2.0 cm thick; no mud chip conglomerates occur; minor muscovite on parting surfaces; coarse grained chlorite occurs on major joint and fracture surfaces; minor carbonate cement; possibly equivalent to the Upper Member of the Wallace Formation as described by Harrison (1984).

HELIKIAN SECTION - MIDDLE BELT CARBONATE

? to -4205? m

Wallace Formation - Helikian (Ywl) : medium to thick parting, grey, tan, and black, calcareous siltite with minor black cherty argillite beds; interbedded calcite and dolomite cemented quartzites; distinctive wavy bedding from 3.0 to 10.0 cm thick; abundant syneresis molar tooth type (Eby cycle) structures; minor oscillation ripple marks; probably Middle Member of the Wallace Formation as described by Harrison (1984); base not exposed.

APPENDIX 2

STREAM SEDIMENT SURVEY – GEOCHEMICAL DATA

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Listing of STRSED at 17:33:09 on SEP 24, 1984 for CCid=MZAB Page     1

   1     SAMP  EASTING  NORTHING  REPL  REPL CU(PPM) PB(PPM) ZN(PPM) MO(PPM) AG(PPM) CO(PPM) MN(PPM)  F(PPM) BA(PPM) FE(PCT)
   2     NUM   (FT)     (FT)      NUM   STAT
   3     ----- -------- --------- ----- ---- ------- ------- ------- ------- ------- ------- ------- ------- ------- -------
   4     30675 48493.74 127124.13     .           92      87      56    1.00    0.60      15    1850     370     620    1.75
   5     30701 45764.29 124602.19     .           29      49      82    2.00    0.40      10    1450     680     710    2.15
   6     30702 40043.10  91624.13     .           33      25      69    1.00    0.40      13    1650     680     970    2.00
   7     30703 40651.37  93821.81     .            7       9      35    1.00    0.20       7     640     350     710    1.20
   8     30704 41313.10  92889.06     .           34      20      55    2.00    0.20       9     620     450    1040    1.80
   9     30705 43569.02  93190.88     .           20      18      64    2.00    0.20       7     450     390     850    1.60
  10     30706 44843.59  91746.06     .           17      17      48    2.00    0.30       8     710     320     710    1.25
  11     30707 45703.36  91682.88     .           15      20      55    2.00    0.20       7     690     480     730    1.40
  12     30708 42895.03  94793.44     .           16      22      40    1.00    0.20       6     750     390     980    1.30
  13     30709 42540.07  96134.75     .           10      22      82    1.00    0.30       5     440     390     800    1.20
  14     30710 42124.21  97236.31     .           26      17      63    1.00    0.20      13    2300     480     740    2.10
  15     30711 48086.20  92433.88     .           25      14      57    1.00    0.20       9     600     450     810    1.95
  16     30712 48257.85  95533.25     .           13      11      49    1.00    0.60       6     300     830     800    1.60
  17     30713 47392.82  94196.50     .            3       9     106    1.00    0.20       3     420     300     800    0.95
  18     30714 45873.82  94462.25     .           23      17      57    2.00    0.20       7     265     430     560    1.95
  19     30715 44400.21 101487.81     .           41      24      55    3.00    0.40       7    1250     300     740    1.60
  20     30716 42815.86 100333.75     .           31      41      68    2.00    0.20       7    1100     390     760    1.80
  21     30717 44714.94 110726.69     .           44      33      88    2.00    0.20      10    1200     430     660    2.05
  22     30718 43350.97 109671.81     .           36      27      83    2.00    0.40      11    1300     500     710    2.15
  23     30719 41863.77 107757.38     .           32      26      79    2.00    0.30       8     690     500     780    2.00
  24     30720 42022.94 107536.75     .           44      22      50    1.00    0.40       6     265     270     720    1.30
  25     30721 43784.13 107850.19     .           28      27      76    2.00    0.20       9    1700     430     710    2.20
  26     30722 44474.04 105167.56     .           28      19      67    1.00    0.20       7     630     430     950    1.75
  27     30723 42929.62 103993.31     .           33      23      61    2.00    0.40       7     705     320     770    1.65
  28     30724 40815.35 105521.31     .           38      25      72    2.00    0.40       8     650     430     770    2.05
  29     30725 40728.06 103581.63     .           36      25      71    2.00    0.20       9     800     700     780    2.30
  30     30731 43465.85 124271.50     .           19      18      47    1.00    0.20       7    1000     400     750    1.40
  31     30732 31634.39 132035.50     .           20      19      68    2.00    0.20       8     920     400     850    1.75
  32     30733 31819.64 133274.75     .           56      29      95    2.00    0.30       9    1500     610     950    2.65
  33     30734 33099.04 133129.38     .           49      23     109    2.00    0.20       6    2050     380     680    2.50
  34     30735 34139.11 133144.94     .           19      17      68    1.00    0.20       7     780     700     820    2.05
  35     30738 48158.51 122276.25     .           39      45     102    2.00    0.40      12     915     470     550    2.25
  36     30739 48744.42 124654.75     .           50      55      65    2.00    0.20       9    2000     330     600    1.60
  37     30740 48443.49 124275.56     .           61      43      63    2.00    0.40       9    1200     380     560    1.85
  38     32787 43246.01 124312.31     .           34      20      46    1.00    0.20       8    1050     450    1050    1.60
  39     32801 43692.02 125910.63     .           26      16      49    1.00    0.20       9     890     300     940    1.50
  40     32805 43907.57 125926.75     .           24      32      62    2.00    0.40       9    1250     860     790    2.25
  41     32813 43272.27 126786.25     .           27      29      59    2.00    0.20       9     870     670     770    2.15
  42     32819 43128.82 126428.75     .           39      13      43    2.00    0.20       9     935     400    1100    1.75
  43     32824 42537.61 128049.31     .           44      29      71    1.00    0.20      10    1650     450     760    2.15
  44     32906 42457.27 127969.69     .           26      21      55    2.00    0.20      10    1100     610     860    1.90
  45     32907 40516.46 139468.88     .           18      20      64    1.00    0.30       6     825     860     730    2.15
  46     32910 39826.59 134900.88     .           13       9      44    1.00    0.20       9    1250     380     710    1.00
  47     32917 38910.49 137694.25     .            7      10     127    1.00    0.20       4     660     210    1230    1.15
  48     32921 38949.74 135644.63     .            5       9     126    1.00    0.20       4     460     240     960    1.05
  49     33741 42008.03 130511.63     .           29      27      60    1.00    0.20       5     730     430     820    1.50
  50     33742 42309.04 130750.31     .           47      45     106    1.00    0.20       8     860     430     710    2.25
  51     33743 44603.78 129500.63     .            5      17      53    1.00    0.20       5    1660     350     870    0.75
  52     33744 43017.50 132747.38     .           44      35     425    1.00    0.20       7     835     430     940    1.70
  53     33745 37932.90 131668.88     .           46      34     104    0.50    0.20       7    1240     410     920    2.10
  54     33782 25738.85 114249.00     .           16      15      49    1.00    0.20       7     460     470     740    1.50
  55     33783 20931.70 128130.38 33784 1          9      11      37    2.00    0.20       8     660     230     510    1.70
  56     33803 40099.90 133319.75     .           25      13      85    2.00    0.20       7    1550     350    1020    1.20
  57     33805 40719.64 133257.13 33807 1         33      22      66    2.00    0.30       9    1000     350     950    2.10
  58     33809 21020.45 125309.25     .           13      11      57    2.00    0.20      15     660     500     590    2.50
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Listing of STRSED at 17:33:09 on SEP 24, 1984 for CCid=MZAB Page    2

 59         SAMP EASTING  NORTHING  REPL  REPL CU(PPM) PB(PPM) ZN(PPM) MO(PPM) AG(PPM) CO(PPM) MN(PPM) F(PPM)  BA(PPM) FE(PCT)
 60         NUM  (FT)     (FT)      NUM   STAT
 61        ----- -------- --------- ----- ---- ------- ------- ------- ------- ------- ------- ------- ------- ------- -------
 62        33818 21063.86 107736.13     .            8      14      39    1.00    0.20      10     680     240     760    1.40
 63        33819 22977.58 107288.31     .           21      39      39    2.00    0.20      11     720     100    1310    1.40
 64        33820 24213.08 106970.31     .            7      12      21    1.00    0.20       5     185     230     570    1.00
 65        33822 24285.29 109189.56     .           13       5      19    2.00    0.20       4     300     210     350    0.75
 66        33823 24105.60 109212.19     .           16      15      44    1.00    0.20      10     500     380     690    1.30
 67        33824 20963.34 110457.88     .           32      22      68    2.00    0.20      11     820     520    1100    2.05
 68        33825 23741.04 111657.69     .           14      14      44    3.00    0.20       4     340     380     390    1.10
 69        33827 29523.65  96632.25     .           10      11      71    2.00    0.20       6     335     310     730    1.65
 70        33828 31403.47  97056.63     .           14      32      82    3.00    0.20       6    2400     570     840    2.05
 71        33829 31970.45  98914.50     .           25      14      59    3.00    0.20       8    1450     280     870    3.00
 72        33830 30678.44 101039.38     .           29      14      68    2.00    0.20      10    1250     430    1130    2.40
 73        33831 29413.04 102794.44     .           15       5      60    2.00    0.20      13     685     550     630    2.30
 74        33832 29524.35 103572.94     .           11       9      35    2.00    0.20       6     450     580     650    1.65
 75        33833 27725.46 106419.31     .            8      18      51    2.00    0.20       6     535     450     690    1.75
 76        33834 28296.66 104430.88     .           11      19      65    3.00    0.20       5     450     500     780    1.95
 77        33835 29055.98 102999.69     .            8      26     176    3.00    0.20       5     430     400     800    1.55
 78        33836 29720.71  95049.19     .           11      10      71    2.00    0.20       6     450     240     800    1.60
 79        33837 31151.36  93837.56     .           11      11      38    2.00    0.20       7     183     500     770    1.65
 80        33838 34610.88  93704.56     .           11      14     122    2.00    0.20       9     770     280     820    1.40
 81        33839 37250.56  93614.63     .           14      29      41    1.00    0.20      16    1200     380     960    1.45
 82        33840 35954.18  94579.50     .           11      11      69    2.00    0.20       7     350     230    1080    1.65
 83        33841 33296.69  95249.50     .           15      71     159    2.00    0.20      13     303     430     330    2.05
 84        33842 33198.56  95749.88     .           16      21      75    1.00    0.20      13     640     400     550    2.50
 85        33843 33059.24  95930.38     .            9      51     163    2.00    0.40       8     440     300     750    1.90
 86        33844 35842.53  96799.94 33845 1         20      19      81    2.00    0.20      14     800     520     730    2.50
 87        33846 36523.50  97057.38     .           13      15      46    1.00    0.30       9     530     580    1060    1.40
 88        33847 46932.00 104618.31     .           18      17      58    2.00    0.30       9     430     610     650    1.60
 89        33848 47629.21 103875.69     .           28      25      77    2.00    0.20      10     805     470     530    1.95
 90        33849 49484.62 102648.69     .           17      15      85    3.00    0.20       8     325     280     800    1.60
 91        33850 51170.23 104142.38     .           33      25      52    2.00    0.30      14    1100     450     790    1.60
 92        33878 41622.01 133813.25     .           46      22      63    2.00    0.20       9    1800     520     800    1.90
 93        33879 42564.03 134289.25     .           22      11      50    2.00    0.20       9     735     450     760    1.30
 94        33880 41448.25 137025.75     .           17      16      61    2.00    0.20       6     570     680     720    1.50
 95        33884 50951.07 104363.19     .           21      18      73    1.00    0.20       7     300     800     770    1.70
 96        33885 49254.46 105269.63     .           30      18      61    2.00    0.20       5     305     590     570    1.80
 97        33886 49612.95 104868.25     .           77      40      85    2.00    0.20       9    1250     390     530    2.25
 98        33887 50171.90 104586.13     .           64      37      70    2.00    0.20       9    1200     610     720    2.25
 99        33888 52587.74 103477.00     .           65      30      74    2.00    0.40       9     685     430     760    2.35
100        33889 52458.65 106377.56     .           20      12      99    2.00    0.20       5     630     680     720    1.60
101        33890 52708.65 103716.56     .           20      18      96    2.00    0.20       8    1750     620     610    1.90
102        33891 53205.11 102774.75     .           20      16     128    1.00    0.20       5    1200     880     800    1.85
103        38058 41107.83 103520.19     .           52      31      82    2.00    0.20       8    1200     590     800    2.60
104        38059 41261.21 101759.63     .           34      21      90    2.00    0.20       8     830     680     750    2.15
105        38060 36490.27 104177.56     .           37      25      65    2.00    0.20       8     835     560     700    2.00
106        38061 48398.62 122315.63 30638 1         40      45      99    1.00    0.20       9     835     390     510    2.10
107        38062 49702.18 123752.38     .           65      46      93    2.00    0.20      10    1100     530     720    2.30
108        38063 49662.83 124012.50     .           55      47      82    1.00    0.20       7    1350     590     680    1.90
109        38064 50803.68 124349.69     .           49      36      73    1.00    0.20       8     745     530     750    2.00
110        38065 50864.32 124609.50     .           43      34      78    1.00    0.30       6    1450     430     690    1.60
111        38066 51457.56 121888.00     .           27      28      68    1.00    0.20       8     770     970     690    1.70
112        38067 51732.79 120780.38     .           19      15      63    1.00    0.20       4     615     790     700    1.40
113        38068 52502.85 118137.50     .           36      27      61    1.00    0.30       4     720     300     580    1.60
114        38070 53819.29 122582.19     .           21      15      76    1.00    0.20       4     370    1000     730    1.60
115        38071 53858.30 122182.06     .           22      16      83    0.50    0.30       6     410    1100     690    1.60
116        38072 53903.67 124947.13     .           25      17      67    0.50    0.30       4     315     530     630    1.55
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Listing of STRSED at 17:33:09 on SEP 24, 1984 for CCid=MZAB Page     3

117      SAMP  EASTING   NORTHING   REPL  REPL CU(PPM) PB(PPM) ZN(PPM) MO(PPM) AG(PPM) CO(PPM) MN(PPM) F(PPM)  BA(PPM) FE(PCT)
118      NUM   (FT)      (FT)       NUM   STAT
119      ----- --------- ---------- ----- ---- ------- ------- ------- ------- ------- ------- ------- ------- ------- -------
120      46027  21361.95   99330.94     .           18      24      47    1.00    0.20       8     610     800     860    1.90
121      46049  26642.02   97345.44     .           13      22      35    1.00    0.20       6     420     400     740    1.40
122      46050  21241.33   96532.38     .            4       8      21    1.00    0.20       2     305     230     790    0.60
123      46326  31694.59  105335.63     .           11      11      44    1.00    0.20       5     285     380     720    1.35
124      46327  34117.20  106026.50     .           12      10      42    1.00    0.20       5     280     410     700    1.35
125      46328  36021.18  107079.31     .           14      40      74    1.00    0.20       7     425     580     760    1.60
126      46474  49505.59   97588.56     .           53      30      73    2.00    0.70       8    1300     430     710    2.75
127      46475  50252.35   99385.75     .           17      24     101    2.00    0.20       7    1110     320     850    1.30
128      46476  51685.65   97600.38     .           23      19      55    1.00    0.20       5     865     350     750    1.40
129      46485  27087.56  127722.19     .           12      13     106    2.00    0.20       5     840     120     930    1.20
130      46486  27465.26  129318.06     .            9      13      70    2.00    0.20       8     260     210     860    1.05
131      46502  48105.86  129985.75     .           28      20      63    1.00    0.20       7     715     430     750    1.90
132      46503  49182.81  129261.25     .           11       9      80    1.00    0.40       3     310     230     890    1.15
133      46504  49382.29  129140.38     .           48      36      70    1.00    0.20       7    1250     410     720    1.80
134      46505  51615.58  127550.94     .            3      14     102    0.50    0.20       4    1200     300     850    0.90
135      46506  50910.32  131033.94     .           18      12      83    1.00    0.20       4     500     230     880    1.30
136      46507  53382.76  129243.44     .            4      11      95    1.00    0.20       2     390     220     740    0.90
137      46508  53484.70  129703.00     .           51      24     110    1.00    0.20       7     585     390     780    2.60
138      46509  52175.98  132368.63     .            7       9      87    0.50    0.20       3     350     410     780    1.10
139      46510  49313.18  138479.38     .            8       9      53    0.50    0.20       3     245     390     710    1.10
140      46511  50012.94  136377.75     .            5       8      74    0.50    0.20       3     350     800     700    1.00
141      46512  49026.34  134821.94     .            8       9      56    1.00    0.20       3     360     760     680    1.30
142      46513  50416.84  132576.00     .            9       8      69    0.50    0.20       2     170     530     720    1.10
143      46514  48780.17  133363.00     .           12       7      95    1.00    0.20       2     253     370     850    1.10
144      46515  50695.40  132234.88     .           44      27      85    2.00    0.20       9     780     480     860    2.50
145      46516  49213.21  131721.13     .           57      30      69    1.00    0.40       9     790     480     760    2.25
146      46517  48674.91  132123.38     .           47      24      69    1.00    0.20       8    1100     260     710    2.10
147      46518  48617.62  132763.69     .           47      23      83    1.00    0.20       9     560     370     800    2.35
148      46519  46639.58  133232.00     .           17      16      63    0.50    0.30       3     590     350     780    1.25
149      46520  45822.48  133915.50     .           46      29      79    0.50    0.30       7     930     450     730    2.50
150      46521  45925.35  134595.06     .           44      21      77    0.50    0.20       8     935     450     840    2.30
151      46522  47729.91  135667.44     .           12      11      57    2.00    0.40       4     255     620     730    1.40
152      46523  47404.58  134408.81     .            7      12      67    2.00    0.20       4     295     530     760    1.10
153      46524  45591.54  136056.50     .           15      11      42    1.00    0.30       6     349     350     690    1.25
154      46525  45768.15  135255.75     .           51      21      79    3.00    0.30       8    1200     550     700    3.05
155      46526  24130.37   99890.81 47400 1          4      11      66    2.00    0.20       5     575     270     740    1.20
156      46527  29641.20  106111.50     .           29      13      59    3.00    0.20       8    1050     350     990    2.50
157      46528  30297.91  104501.81     .           23      19      69    2.00    0.40       7     650     480     800    2.40
158      46529  41506.52  142465.63     .           24      17      56    2.00    0.20       6     550     680     750    1.75
159      46530  43489.47  143338.94     .           44      22      61    2.00    0.20       5    1400     300     720    1.50
160      46531  45710.43  143012.19     .           11      11      56    2.00    0.20       3     660     590     730    1.20
161      46532  45731.00  142692.19     .           12      11      66    1.00    0.20       4     360     500     740    1.25
162      46533  47752.16  142055.88     .            9      14      53    2.00    0.20       4    1100     550     720    1.30
163      46534  43841.61  140997.75     .           35      22      38    1.00    0.20       5     415     350     610    1.40
164      46535  43982.01  141117.25     .           50      33      62    2.00    0.20       8    1600     410     660    2.05
165      46536  45308.23  142383.63     .           48      22      81    2.00    0.40       6    1000     480     670    2.80
166      46537  45076.70  139533.56     .           27      20      65    1.00    0.30       8     895     550     700    1.55
167      46538  45061.14  140853.63     .           23       8      71    4.00    0.20       5     895     350     580    2.15
168      46539  45372.74  138352.56 46540 1         41      18      61    3.00    0.60       8     770     480     700    2.15
169      46541  46954.40  138847.25     .           14      12      73    4.00    0.20       6     915     590     700    1.60
170      46542  43590.39  137658.56     .           13      11      86    2.00    0.20       6     660     320     840    1.10
171      46551  49382.29  129140.38     .           27      26      64    2.00    0.20       9    1100     830     740    1.60
172      46602  22708.57  105292.00     .           15       9      81    3.00    0.30       5     240     290     960    1.40
173      46603  21052.21  104175.88     .            6      23      43    2.00    0.20       6     200     390     680    1.30
174      46604  21819.67  104684.88     .           21      29      91    2.00    0.20      11    1200     490     760    1.80
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Listing of STRSED at 17:33:09 on SEP 24, 1984 for CCid=MZAB Page   4

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175      SAMP EASTING  NORTHING  REPL  REPL CU(PPM) PB(PPM) ZN(PPM) MO(PPM) AG(PPM) CO(PPM) MN(PPM) F(PPM)  BA(PPM) FE(PCT)
176       NUM (FT)     (FT)      NUM   STAT
177     ----- -------- --------- ----- ---- ------- ------- ------- ------- ------- ------- ------- ------- ------- -------
178     46605 22274.08 102918.06     .           16       7      30    1.00    0.20       5     294     480     670    1.30
179     46606 25703.26 100768.13     .           10       7      35    1.00    0.20       5     240     460     680    1.25
180     46607 26775.92 101632.56     .           14       8      21    5.00    0.20       5     153     840     770    0.80
181     46608 27136.17 101647.38     .           11      27      97    3.00    0.20       7     684     600     770    1.65
182     46609 49472.28 115328.88     .           16      34     130    3.00    0.20      10    3450     460    1150    1.60
183     46610 49517.17 116628.69     .           23      34     100    2.00    0.20      10    1850     400     720    1.70
184     46611 50256.49 116445.88     .           46      35      77    3.00    0.30       7     825     660     810    2.10
185     46612 51251.14 115022.19     .           29      33      71    2.00    0.20       6     660     770     800    1.80
186     46613 52894.14 115816.00     .           10      11      76    2.00    0.20       5     565     930     710    1.35
187     46616 35641.86 123220.88     .            8      11      44    1.00    0.20       7     905     590     870    1.10
188     46617 34287.28 124666.00     .           24      21      63    2.00    0.20       5     705     800    1030    1.75
189     46618 32390.91 125633.13     .           33      20     130    2.00    0.30       6     695     720    1030    2.05
190     46619 35655.98 127678.44     .           33      23     136    2.00    0.20       8     710     570    1050    2.10
191     46620 35955.98 127677.25 46621 1         37      37      90    2.00    0.20       9    1100     630     860    2.25
192     46622 35941.22 128917.25     .           39      28      80    2.00    0.40       7     590     590     800    1.80
193     46623 35802.50 129217.88     .           47      46     119    2.00    0.20      10    1450     570    1060    2.30
194     46624 35085.89 130020.94     .           46      43     100    2.00    0.20      10    1500     420     730    2.20
195     46625 37090.53 131112.44     .           34      22      84    2.00    0.20       7    1100     550     890    2.10
196     46633 28098.97 101833.44     .           11      11      39    2.00    0.40       3     300     600     690    1.25
197     46634 39728.97 119785.50     .           16      13      72    1.00    0.40       4     840     420     750    1.55
198     46635 41761.96 117917.81     :           44      39     110    2.00    0.30      10    1400     310     550    2.10
199     46636 39483.78 118406.38     .           11      10     158    1.00    0.30       7     600     490     890    1.35
200     46637 38735.37 116169.19     .           32      20      50    3.00    0.60       6     630     210     580    1.60
201     46638 37727.78 114153.00     .           35      21      53    3.00    0.20       5     615     220     720    1.80
202     46639 36979.36 111915.75     .           38      19      56    2.00    0.30       7     720     270     970    2.00
203     46640 37550.64 109593.63     .           43      21      63    3.00    0.30       6     690     360     970    2.40
204     46641 36385.16 108138.00     .           33      20      69    2.00    0.30       5     440     400     740    1.85
205     46642 38802.74 123449.00     .           20      36     121    2.00    0.20      11    1200     240     790    1.55
206     46643 38524.09 123810.06     .           49      29     128    3.00    0.40       9    1350     330     710    2.05
207     46644 39867.24 124645.00     .           37      32      54    3.00    0.20       6     830     380     720    1.90
208     46645 38112.29 125991.63     .           52      36      72    3.00    0.20       9     920     310     700    2.10
209     46646 35469.38 125221.56 46647 1         38      22      77    3.00    0.40       7    1200     540     870    2.10
210     46648 36193.06 126198.88     .           44      42     125    2.00    0.40       9     820     300     590    2.05
211     46649 36193.78 127156.19     .           52      44      99    2.00    0.20      11    1100     310     720    2.25
212     46651 49566.26 125392.75     .            3       5      40    1.00    0.30       1     195     360     780    0.95
213     46654 21176.22 101693.81     .           89      15      60    2.00    0.20       8     930     270    1340    1.90
214     46655 21138.54 101854.38     .           11      10      42    1.00    0.20       5     560     340     820    1.30
215     46656 26599.39 100495.06     .           16       8      29    3.00    0.20       6     540     770     520    1.40
216     46657 27177.27  98966.50     .            5       5      32    3.00    0.20       1     272     250     270    0.90
217     46658 46257.50 116720.94     .           32      42      59    3.00    0.20       9     725     440     690    1.70
218     46659 46202.22 117981.13     .           33      25      72    3.00    0.60       7     710     400     650    2.05
219     46660 46482.53 118060.13     .           35      31      74    2.00    0.40       7     630     520     710    1.95
220     46661 43997.66 116769.44     .           37      29      83    2.00    0.40       8     585     520     710    2.00
221     46662 42995.63 116233.19     .           33      26      78    3.00    0.20       8     800     570     720    2.00
222     46663 42887.59 114093.56     .           37      31     103    3.00    0.30       9     805     660     760    2.40
223     46664 45507.57 114083.69     .           49      43     108    2.00    0.20      12    1000     460     580    2.05
224     46665 41982.49 112737.00     .           25      14      51    6.00    0.20       3     395     250     470    0.70
225     46666 40680.39 112181.88     .           41      25      81    3.00    0.60       9     785     490     830    2.10
226     46667 37850.94 109672.44     .           35      22      72    2.00    0.20       9     665     460     790    2.05
227     46676 49894.38 121207.25     .           11      12      64    1.00    0.30       2     470     280     730    1.25
228     46677 30767.84 119499.19     .           46      29      43    1.00    0.30       7     570     440     750    1.25
229     46678 34430.44 120185.44     .           93      32      72    3.00    0.30       7     805     160    1300    2.40
230     46679 34130.51 120206.50     .           62      24      84    2.00    1.00      10    1700     520     950    2.00
231     46680 33838.18 118078.63     .           69      20      90    2.00    0.20       9     520     230     850    1.75
232     46681 31479.03 117156.50     .           60      19      72    1.00    0.20       7     445     300     870    1.60
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Listing of STRSED at 17:33:09 on SEP 24, 1984 for CCid=MZAB Page    5

 SAMP  EASTING   NORTHING  REPL  REPL CU(PPM) PB(PPM) ZN(PPM) MO(PPM) AG(PPM) CD(PPM) MN(PPM) F(PPM)  BA(PPM) FE(PCT)
 NUM   (FT)      (FT)      NUM   STAT
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46689 30692.56 126879.50      .         39      52     108    2.00    0.40      10    1250     380     970    1.85
46690 31236.44 127797.19      .         33      34      75    2.00    0.20       7     910     350    1060    1.60
46691 32042.11 129133.75      .         25      10      61    2.00    0.20       6     575     400    1020    1.40
46692 30353.28 130026.13      .         21      18      65    2.00    0.20       7    1500     400     710    1.45
46693 33770.31 131066.50 46694 1        22      16      64    2.00    0.20       8     865     420    1010    1.55
46695 35797.15 132677.94      .         18      14      57    2.00    0.20       8     565     440     910    1.45
46696 35797.91 132857.94      .         17      15      70    2.00    0.20       8     525     730     850    2.00
46697 33747.42 135106.63      .         28      11      46    2.00    0.20      10    1200     500     630    1.70
46698 31328.03 135256.88      .         14      14     110    2.00    0.20       7     350     700    1130    1.25
46699 29714.98 133793.44      .         65      26      77    2.00    0.40       9    2800     670    1000    2.05
46700 31495.58 132316.13      .         17      14      68    2.00    0.20       9     405     780     980    2.00
46701 35710.81 114960.56      .          9       7      38    1.00    0.20       7     440     330     740    1.05
46705 21655.98 124902.19      .         13      28     324    3.00    0.30       7     800     310     720    1.80
46706 22888.60 124228.44      .         14      10      71    2.00    0.30       9     400     500     610    2.05
46726 34272.39 115386.00      .        163      10      87    3.00    0.20       9     440     210     920    1.40
46727 34283.22 112945.88      .         96      15      51    3.00    0.30      13     680     210    1170    1.80
46728 34003.82 113107.00      .         43      46      66    2.00    0.20       9     805     330     870    1.35
46729 31042.57 112778.13      .         15      20     180    3.00    0.20      10    1000     400    1060    1.55
46731 32614.06 110512.19      .         89      29      64    3.00    0.20      10     930     280     920    1.60
46733 31935.87 105674.69      .         31      12      49    3.00    0.20      14    1350     540     560    2.20
46735 37441.11 140859.25      .          4       7      87    1.00    0.20       6     425     210     940    0.90
46736 37156.54 139500.19      .        136       7      47    2.00    0.30       7     430     360     710    1.05
46737 34414.74 138969.38      .         14      13      67    1.00    0.20       7     750     440     700    1.30
46738 33255.42 139173.31      .         28      33      66    2.00    0.20       8    1550     420     600    1.85
46739 32658.72 140155.31      .         20      21      67    2.00    0.20       6    1050     470     640    1.60
46740 33921.32 140931.06      .          9       8      46    1.00    0.20       7     240     280     780    0.90
46741 34520.85 140789.06      .         18      12      58    2.00    0.20       7     655     300     770    1.35
46780 28887.05 133082.56      .          5       5      75    1.00    0.20       3     430     230     790    0.80
46781 28029.10 133272.06      .         14       7      53    1.00    0.20       4     340     320     670    1.00
46782 26716.99 132186.50      .         39      17     166    2.00    0.20      31    5200     120    1400    6.00
46783 24267.17 131313.63      .         16      12      58    2.00    0.20       4     470     180     990    1.50
46784 24224.73 131094.13      .         13      15      50    2.00    0.20       2     365     400     720    1.70
46785 22643.56 129191.50      .         20      16      66    1.00    0.20       7     735     470     980    1.90
46796 25615.38 115797.75      .         21      65      59    2.00    0.20       5     360     500     710    1.80
46797 22013.20 121038.00      .         19      20      82    2.00    0.20       4     330     290     480    1.20
46798 22025.49 125758.13      .         20      19      73    2.00    0.20      10     440     370     750    2.20
46799 27230.50 137853.69      .         12      14      36    1.00    0.20       6     280     320     760    1.30
46800 29384.59 139960.50      .         48      37      78    2.00    0.30       7    1120     390     760    2.55
46808 23133.98 115685.25      .         10      16     116    2.00    0.30       7     425     520     720    1.60
46809 21917.44 114198.63      .         14      10      62    2.00    0.20       7     305     350     700    1.30
46810 20989.46 115288.94      .         12      11      58    2.00    0.30       5     650     270     750    1.55
46811 22461.11 116332.75      .         10      14      94    2.00    0.20       6     139     320     790    1.60
46826 38587.82 142855.38      .         31      20      61    2.00    0.40      11    1200     260     720    2.30
46827 38016.28 145377.38      .         60      34      81    2.00    0.40      11    1300     380     700    2.95
46828 35280.25 140606.50      .          8      11      52    0.50    0.20       4     235     440     750    1.00
46829 35219.44 140366.69      .         20      11     131    1.00    0.20       5     380     200     870    1.30
46830 33746.98 142611.69      .         20      18      69    2.00    0.20       5     375     440     720    1.45
46831 34008.46 143050.75      .         50      25     132    3.00    0.20       9     850     320     870    3.05
46832 35767.63 142804.88      .          8       9      53    1.00    0.20       4     650     260     770    0.85
46833 36909.98 143501.00      .         75      23      88    3.00    0.60       8     740     440     730    2.80
46834 35975.70 145204.19      .         47      19      74    2.00    0.20       8    1050     280     750    2.50
46835 35834.89 144964.69      .         44      16      73    3.00    0.20       7     925     330     710    2.35
46836 33339.48 146333.00 46837 1        15      14      45    2.00    0.20       7     540     270     780    1.25
46838 32486.04 142335.88      .         22      20     138    3.00    0.20       6    1100     300     830    1.75
46839 32129.74 143437.13      .         16      17      51    2.00    0.20      11     840     370     750    1.70
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Listing of STRSED at 17:33:09 on SEP 24, 1984 for CCid=MZAB Page    6

291        SAMP EASTING  NORTHING  REPL  REPL CU(PPM) PB(PPM) ZN(PPM) MO(PPM) AG(PPM) CO(PPM) MN(PPM) F(PPM)  BA(PPM) FE(PCT)
292        NUM  (FT)     (FT)      NUM   STAT
293       ----- -------- --------- ----- ---- ------- ------- ------- ------- ------- ------- ------- ------- ------- -------
294       46840 34461.82 147029.25     .           44      24      94    4.00    0.30       7     730     170     760    2.40
295       46841 34646.38 148388.69     .           15      13      44    2.00    0.20       6     405     280     680    1.20
296       46842 25854.06 108330.81 46843 1         10      11      75    3.00    0.20       6     258     400     770    1.65
297       46844 28764.00 111824.88 46847 1         37      15      62    2.00    0.30      11    1200     460     970    2.40
298       46845 26322.48 110360.13     .            5      13      90    1.00    0.20       4     338     270     720    1.00
299       46846 28630.93 109546.50     .            7      12      89    2.00    0.20       7     750     270     750    1.55
300       46848 27714.56 112560.13     .           35      14      85    2.00    0.20       8    1400     310     910    2.20
301       46904 38016.62 132548.50     .           19      21     180    1.00    0.20       6     470     440     810    1.45
302       46905 35000.12 133381.31     .            9      22     143    1.00    0.20       3     950     330     790    1.00
303       46943 28969.58 139555.38     .           13      14      68    0.50    0.20       6     530     450     780    1.75
304       46944 28970.02 141135.50     .           23      15      52    0.50    0.20       4    1020     290     810    1.10
305       46978 30150.86 115045.06     .           44      51      83    2.00    0.20       8     550     380     850    1.65
306       46979 24897.19 115965.69     .           28      39      75    1.00    0.20      10    1170     420     780    2.30
307       46980 24213.13 119213.50     .           23      23      76    2.00    0.20      10     690     450     770    2.05
308       46981 22239.51 117995.25     .           31      51     101    2.00    0.20       6     590     340     870    1.90
309       46982 27372.48 137695.44     .           14      12      60    0.50    0.20       3     690     310     710    1.20
310       46983 27925.00 138302.31     .           29      27      68    1.00    0.20      10    2200     390     720    1.70
311       46984 28634.55 139151.19     .           33      12      52    0.50    0.20       5    1050     290     740    1.25
312       46985 28851.51 141014.00     .            8       8      98    0.50    0.20       2     400     210     800    1.00
313       47150 43106.56 134887.00     .           26      21      58    2.00    0.20       6     500     500     750    1.80
314       47162 43745.12 134544.25     .           37      20      65    3.00    0.20       7     805     380     830    2.05
315       47326 25386.41 118600.44     .           25      31      72    2.00    0.20       8    1000     570     670    1.95
316       47327 25402.58 120060.31     .           34      18      58    2.00    0.20       8     630     460     660    1.80
317       47328 25510.99 120819.25     .           28      22      91    2.00    0.20       4     630     480     890    1.95
318       47330 27586.82 122236.31     .           36      27      78    2.00    0.30       9    1200     270    1150    2.10
319       47331 24760.56 121687.56     .           26      22      67    3.00    0.20       7    1000     600     860    2.00
320       47332 23506.40 122221.50     .           13       8      49    2.00    0.20       5     395     380     750    1.40
321       47333 26001.04 125334.06     .           15      11     190    3.00    0.20       5    1800     220    1410    1.50
322       47334 26042.58 125473.63     .           17      19      86    2.00    0.20       8     950     520    1110    1.95
323       47335 24123.36 125554.88     .           20      25      85    3.00    0.20       8     605     670     950    2.10
324       47351 22551.74 102754.00     .           13      14      55    2.00    0.20       8     445     330     760    1.70
325       47352 22268.84 101177.94     .           10       6      39    2.00    0.20       5     320     280     580    1.15
326       47353 23198.59 100464.38     .           13       8      46    2.00    0.20       6     400     300     780    1.35
327       47354 26506.70 103756.75     .            6       8      43    3.00    0.20       5     340     170     640    1.35
328       47355 41356.40 121759.38     .           12      15     136    3.00    0.20      10     965     140     700    1.60
329       47356 42829.70 119973.81     .           28      25      81    3.00    0.20      12     925     470     990    2.20
330       47357 43069.54 119932.94     .           41      14      49    2.00    0.20       7    1200     320    1000    1.70
331       47358 43500.29 117471.25     .           27      18      71    1.00    0.20       5     645     290     980    1.70
332       47359 42708.80 114414.25     .           42      26      97    2.00    0.20       9     805     340     880    2.60
333       47360 40792.65 115441.50     .           21      28      90    1.00    0.50       9    1225     320     780    1.75
334       47361 41724.66 113317.94     .           49      38     103    3.00    0.60       7     820     320     570    1.95
335       47362 41762.94 112857.81     .           49      27     100    2.00    0.30       9    1000     390     920    2.35
336       47363 39375.44 110866.75     .           40      24      83    2.00    0.20       9     840     340     820    2.20
337       47364 49744.98 113387.75     .           28      22      88    2.00    0.20       7    1800     350     830    1.60
338       47365 49335.14 110769.31     .           26      15     107    2.00    0.20       7    1160     320    1000    1.80
339       47366 49575.66 110908.38     .           33      14      61    2.00    0.20       8     380     480     800    1.70
340       47367 46565.83 108299.69     .           18      19     223    2.00    0.20       6    1900     480    1190    1.65
341       47368 46619.82 106699.50     .           12      10     105    1.00    0.20       3     825     460     820    1.40
342       47369 49037.70 106130.38     .           56      44     124    2.00    0.20      15    1900     370     750    2.40
343       47370 49338.37 106309.25     .           46      25     136    2.00    0.20       7     980     390     740    2.00
344       47371 49338.37 106309.25     .           45      23     135    2.00    0.20       9    1600     390     720    2.00
345       47372 48763.64 107711.44     .           22      17      73    2.00    0.20       5    1000     390     660    2.00
346       47373 48925.14 108110.88     .           36      13     125    2.00    0.20       6     750     440     750    1.70
347       47374 48908.98 109130.94     .           13      14      81    3.00    0.20       7     475     270     840    1.30
348       47375 27476.30 117677.25     .           25      23      66    3.00    0.20       7     560     620     680    2.00
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Listing of STRSED at 17:33:09 on SEP 24, 1984 for CCid=MZAB Page    7

349        SAMP   EASTING  NORTHING  REPL  REPL CU(PPM) PB(PPM) ZN(PPM) MO(PPM) AG(PPM) CO(PPM) MN(PPM) F(PPM)  BA(PPM) FE(PCT)
350        NUM    (FT)      (FT)       NUM   STAT
351        -----  -------- --------- ----- ---- ------- ------- ------- ------- ------- ------- ------- ------- ------- -------
352        47377  38235.86 132367.63     .           51      28      74    4.00    0.20      11    1400     340    1000    2.30
353        47390  24736.36  98921.88     .            7       6      23    5.00    0.20       3     177     220     270    0.75
354        47391  24373.50  98727.13     .            9      15      65    2.00    0.20       5     415     270     560    1.40
355        47392  23259.40  97763.25     .           19       8      44    2.00    0.20       6     395     320     810    1.50
356        47393  23895.56  97494.00     .           56      26      56    3.00    0.20      11    1400     230    1080    1.85
357        47394  26324.63  98088.56     .            6       5      80    1.00    0.20       5     298     250     750    1.15
358        47395  25135.41  96095.81     .           13      18      77    2.00    0.20       8    1400     120     880    1.70
359        47396  23531.80  95859.06     .           30      19      48    2.00    0.20       6     640     240     900    1.50
360        47397  22976.51  96187.13     .           17      65      49    2.00    0.20       6     305     250     710    1.35
361        47398  23486.66  99640.13     .           14       9      32    2.00    0.20       5     410     250     840    1.35
362        47399  24215.29 100229.63     .           23      19      59    3.00    0.20       9     655     510     840    1.90
363        47401  28019.77  97754.19     .           15      11      81    3.00    0.20       7     460     300     760    1.80
364        47402  29220.54  99176.88     .           15      18      74    3.00    0.20       5     930     460     850    1.95
365        47403  29446.31  99573.69     .           20      24      73    3.00    0.20       7     360     400     780    1.80
366        47404  29765.71  99529.00     .           12      22      93    3.00    0.20       5     236     300     710    1.55
367        47406  28114.08 104253.50     .           11      10      43    2.00    0.20       5     319     530     700    1.45
368        47407  26192.85 105561.50     .           31      12      55    3.00    0.50      10     850     320     720    2.05
369        47408  31735.80 121615.56     .           22      13      32    1.00    0.20       8     720     260     740    1.10
370        47409  33016.08 121690.75     .           14       8      63    2.00    0.20       7     425     220     900    1.45
371        47410  33723.38 118308.06     .           62      55     152    1.00    0.20       8     865     240    1090    2.00
372        47411  31060.31 117498.06     .           80      32      65    3.00    0.30      11     855     250     850    2.15
373        47412  28419.12 112869.94     .           62      24      74    3.00    0.20       6     285     130     800    1.30
374        47413  40516.11 127697.88     .           69      20      75    3.00    0.20       9    1700     340    1250    2.30
375        47414  39787.54 130401.00     .           61      14      66    3.00    0.20       6     685     300    1160    1.55
376        47416  40078.04 132879.81     .           73      16      78    3.00    0.20       6     310     320    1160    1.70
377        47417  40018.97 133100.06 47378 1         64      21      65    2.00    0.20       9    1000     460     930    2.05
378        47418  37883.40 134149.13     .           44      10      53    1.00    0.20       7     860     480     820    1.30
379        47419  37603.57 134190.25     .           44      24      74    3.00    0.20       9    2200     380     870    2.20
380        47420  35729.68 135638.25 47421 1         55      40      57    2.00    0.20      10    1400     360     750    1.80
381        47422  33574.10 136687.38     .           13      11      71    2.00    0.20       8     290     310     780    1.10
382        47423  35991.80 136137.13     .           54      34     115    2.00    0.20      13    1800     460     730    2.55
383        47424  37510.02 137559.00     .          780      12      58    2.00    0.20       9    2000     260     800    1.50
384        47425  32848.12 119571.31     .           13       7      51    2.00    0.20       5     349     180     820    1.20
385        47469  45435.13 127457.06     .           38      71      69    1.00    0.20      14    1700     310     780    1.40
386        61129  20930.32  99234.50 61130 1         19      26      56    1.00    0.20       9     660     570     860    1.80
387        61240  22979.86  99671.94     .           20      24      55    1.00    0.20       8     650     480     850    1.90
388        68050  51746.32  97780.19     .           46      37      83    1.00    0.20      12    1325     280     670    1.85
389        68095  36954.33  99935.75     .           29      20      82    2.00    0.20       8    1560     520     800    1.60
390        68096  34660.50 101584.38     .           59      41      65    2.00    0.40       9     845     340     740    2.05
391        68097  36540.72 101637.31     .           34      24      68    3.00    0.30       9     620     540     990    2.00
392        68098  39139.73 101367.63     .           15      19      54    0.50    0.20       6     640     280     710    1.30
393        68099  39080.33 101527.81     .           30      29      59    1.00    0.20      10     660     540     750    1.95
394        68131  47539.82 101376.00     .           24      10      48    1.00    0.20       5     430     390     880    1.10
395        68132  45636.07 100383.13     .           30      21      59    1.00    0.20      14    1320     590     920    2.00
396        68133  45476.97 100623.75     .           20      18      64    1.00    0.20       7     505     410     930    1.85
397        68134  44343.37  97008.00     .           27      32     185    1.00    0.20       8    1700     220    1250    2.10
398        68154  37666.35  97813.06     .           17      22      51    1.00    0.20       6     555     400    1120    1.50
399        68155  37506.95  97973.69     .           29      21      69    1.00    0.20      11     555     500     830    2.10
400        68156  40128.21  98303.81     .           16      18      90    1.00    0.20       8     980     300     930    1.55
401        68157  39968.82  98464.44     .          119      31      58    1.00    0.20      13     730     270    1030    2.40
402        68158  40149.12  98543.75     .           27      17      58    1.00    0.20       9     505     440     710    1.50
403        68159  42369.48  98635.44     .           37      24      71    1.00    0.20      10     690     440     890    2.10
404        68175  49232.81  99509.63     .           52      28      99    1.00    0.40       8    2650     300     710    2.40
405        68180  50272.43  99405.69     .           14      15      46    0.50    0.20       4     120     410     760    1.30
406        68200  47548.53  98375.94     .           32      17      59    1.00    0.20       5     400     300     600    1.85
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Listing of STRSED at 17:33:09 on SEP 24, 1984 for CCid=MZAB Page    8

 SAMP EASTING  NORTHING  REPL  REPL CU(PPM) PB(PPM) ZN(PPM) MO(PPM) AG(PPM) CO(PPM) MN(PPM) F(PPM)  BA(PPM) FE(PCT)
 NUM  (FT)     (FT)      NUM   STAT
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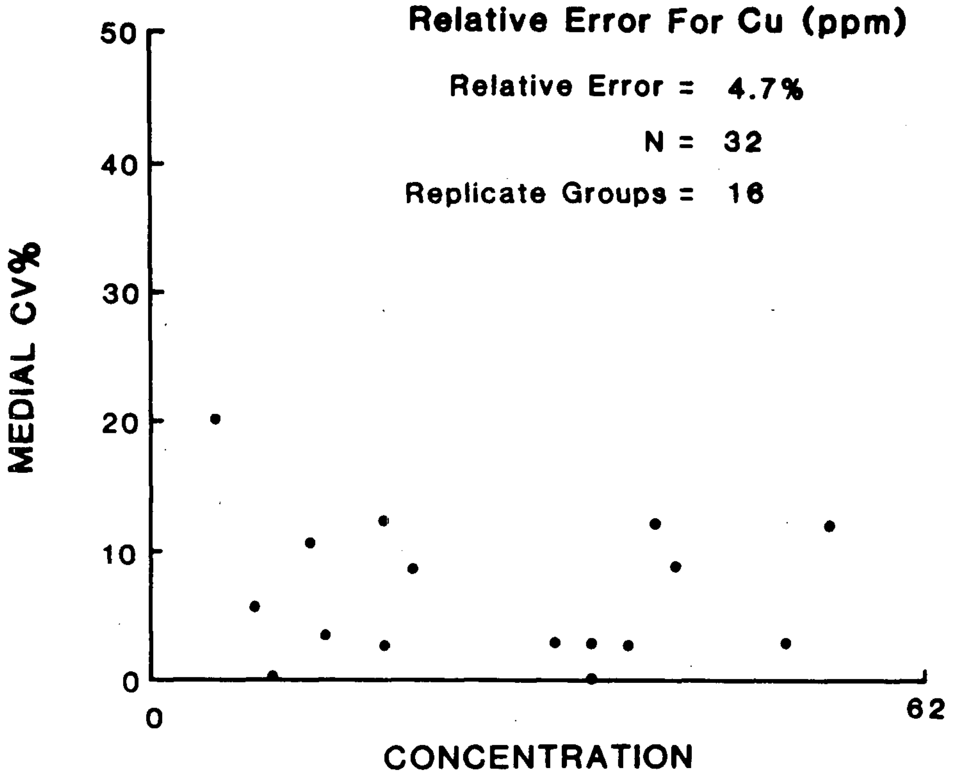
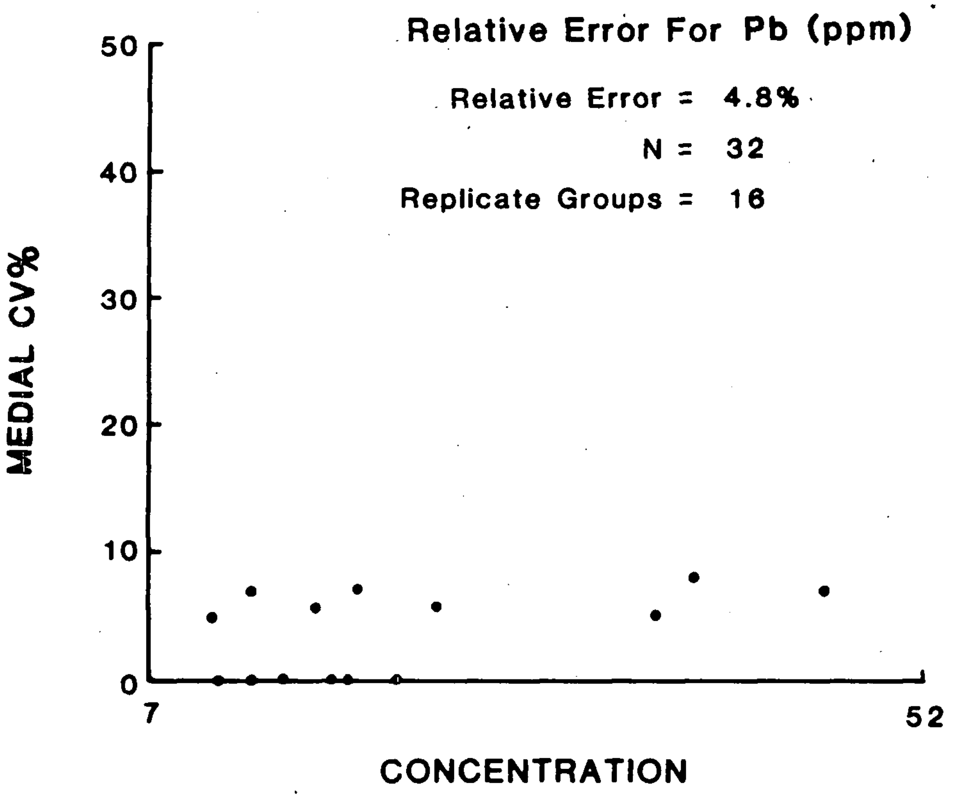
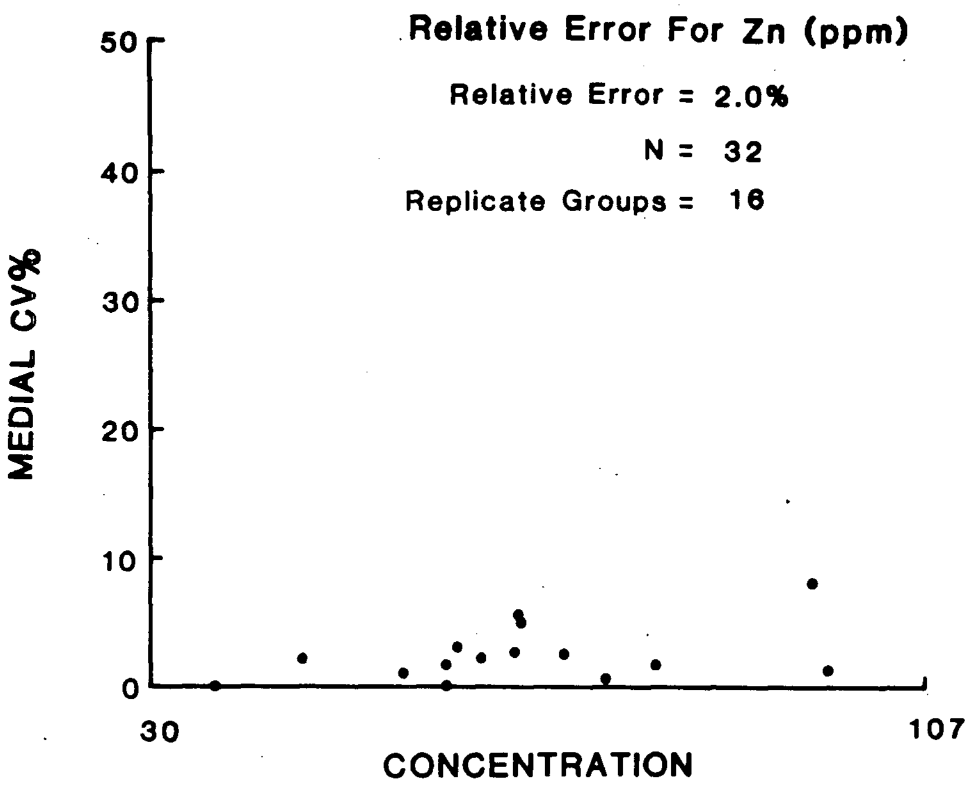
68201 46083.28  96981.44     .           37      15      60    1.00    0.20       6     670     320     780    1.90
68202 44719.23  95906.56     .           25      11      47    1.00    0.20       5     302     370     710    1.45
68663 37988.38 119632.00 68664 1         12      13      72    1.00    0.20       7     770     330     950    1.35
68665 36443.28 118277.81     .          123      25      70    0.50    0.30       7     945     420     740    2.55
68666 34348.26 119605.69     .           12      10      90    0.50    0.20       4    1550     250    1000    1.20
68667 31176.48 116477.63     .           40      17      96    1.00    0.20       6     710     340    1000    1.60
68668 47492.62 150225.50     .           20      19      79    0.50    0.20       4     555     410     740    1.45
68680 20922.00 148196.38     .           21      17      52    1.00    0.30       5     410     380     730    2.40
68681 21805.75 144667.06     .           27      22      52    1.00    0.30       8     775     460     840    2.55
68682 24116.02 142235.50     .           40      50      98    1.00    0.40       6    1875     350    1140    2.00
68683 24909.63 139525.06     .           24      22      63    2.00    0.40       7     480     500     890    2.15
68684 26092.56 137679.63     .           14      16      42    1.00    0.30       7     405     420     710    1.70
68685 41013.31 144487.25     .           34      22      63    1.00    0.40       7     780     320     660    1.85
68686 43278.14 145919.69     .           54      30      62    1.00    0.30      10    1320     350     750    1.90
68687 45837.99 145871.06     .            9       9      72    1.00    0.20       3     410     280     760    1.00
68688 44706.40 148374.88     .           59      18     107    1.00    0.30       4     373     270     720    2.45
68689 44666.80 148495.00     .           13      12      82    1.00    0.20       4     105     270     820    1.30
68690 46791.56 149907.88     .           14      14     129    1.00    0.20       3    1100     670     880    1.20
68691 40006.02 148270.69     .            6       8      20    0.50    0.20       1     165     260     430    0.60
68692 39412.81 150292.69     .           47      22      89    1.00    0.20       3     970     280     760    1.75
68694 24830.72 144284.50     .           30      26      93    1.00    0.50       8     880     550     820    2.40
68695 27285.08 144754.88     .           26      17      96    0.50    0.30       7     710     280     850    1.80
68696 27906.82 143002.44     .            5       6     100    0.50    0.20       2     390     190     730    0.75
68697 29948.90 142847.75     .           12       9      89    1.00    0.20       2     530     210     750    1.00
68698 30085.42 143129.38     .           15      11      48    0.50    0.20       4     435     270     730    1.30
68759 26692.90 148967.88     .           12      17      68    0.50    0.20       5     800     290     730    1.25
68760 26477.37 148605.19     .           17      15      45    0.50    0.20       4     339     420     780    1.40
68761 27909.08 149282.94     .           14      17      51    0.50    0.20       6     780     480     860    1.50
68762 29302.35 148220.13     .           14      16     147    1.00    0.20       4     760     290     890    1.20
68979 25655.56 130258.19     .           20      26      66    1.00    0.20       7     590     300     950    1.40
68980 24332.38 128172.75     .           36      34      76    1.00    0.30       7     610     430     970    2.00
```

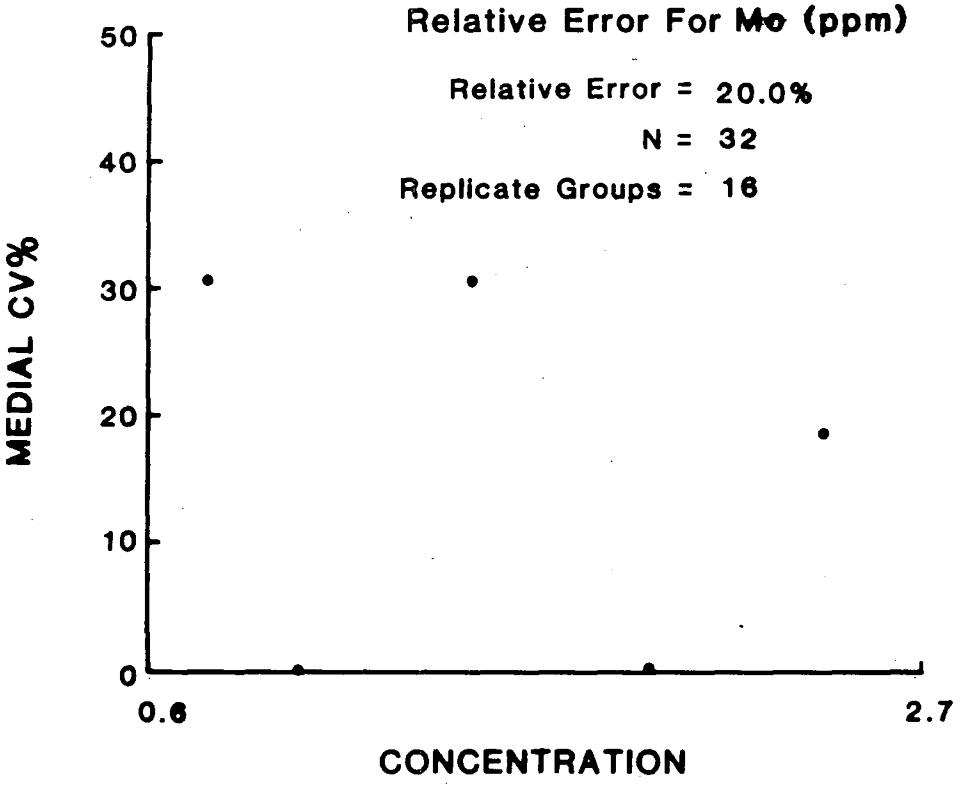
APPENDIX 3

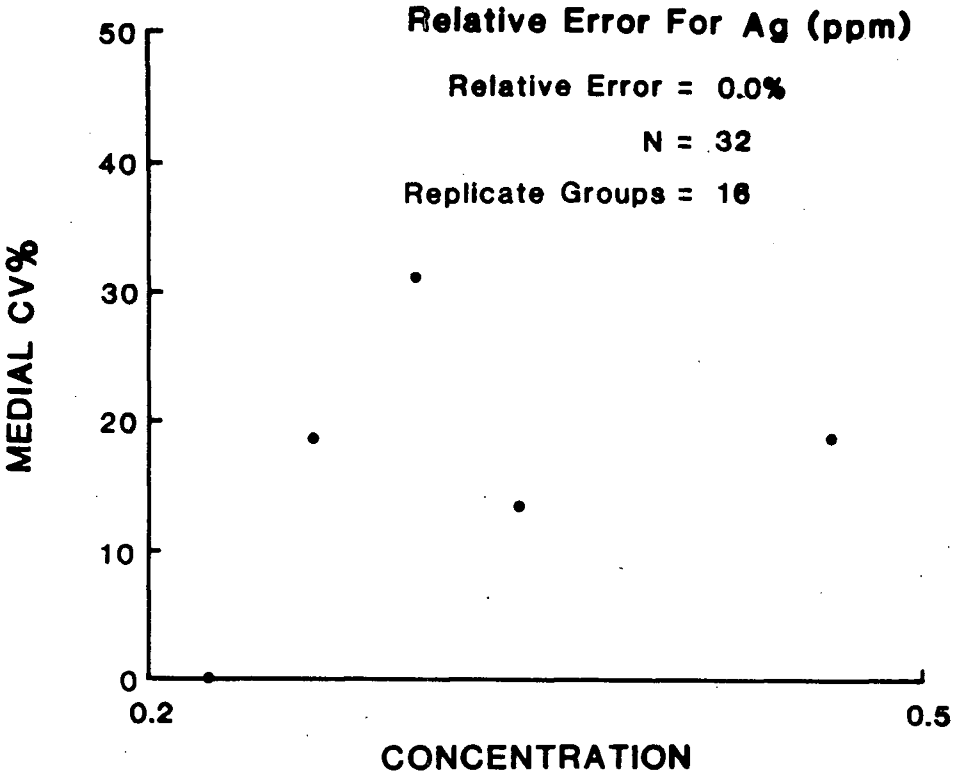
STREAM SEDIMENT SURVEY – RELATIVE ERROR PLOTS

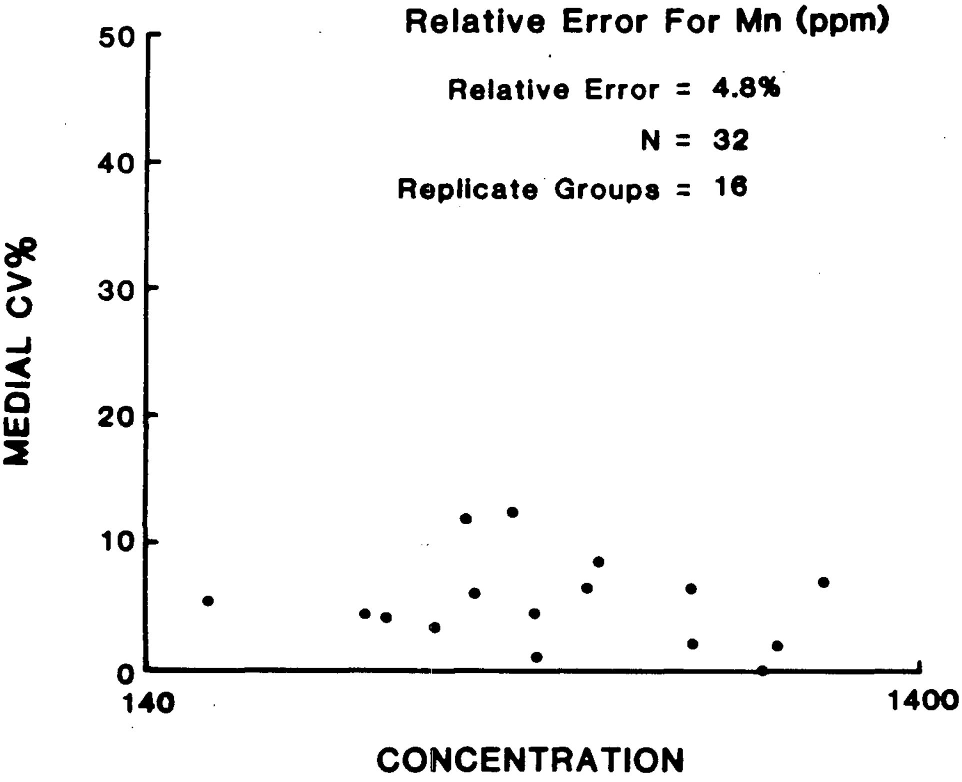

Relative Error For Cu (ppm)
Relative Error = 4.7%
N = 32
Replicate Groups = 16
MEDIAL CV%
50
40
30
20
10
0
0
62
CONCENTRATION

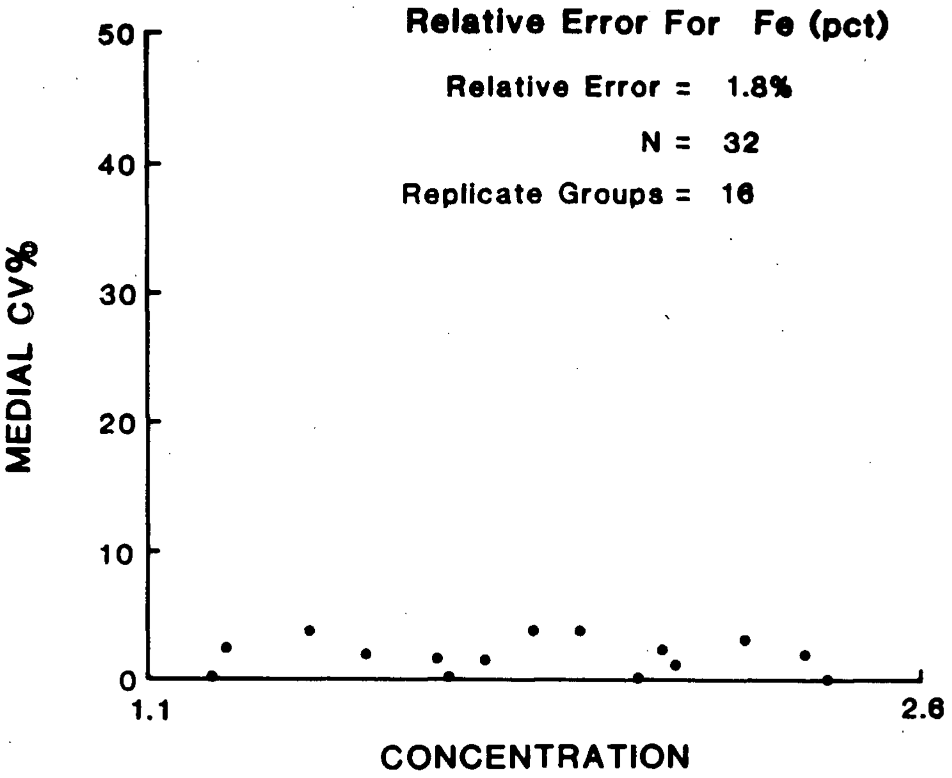

Relative Error For Pb (ppm)
Relative Error = 4.8%
N = 32
Replicate Groups = 16
MEDIAL CV%
50
40
30
20
10
0
7
52
CONCENTRATION

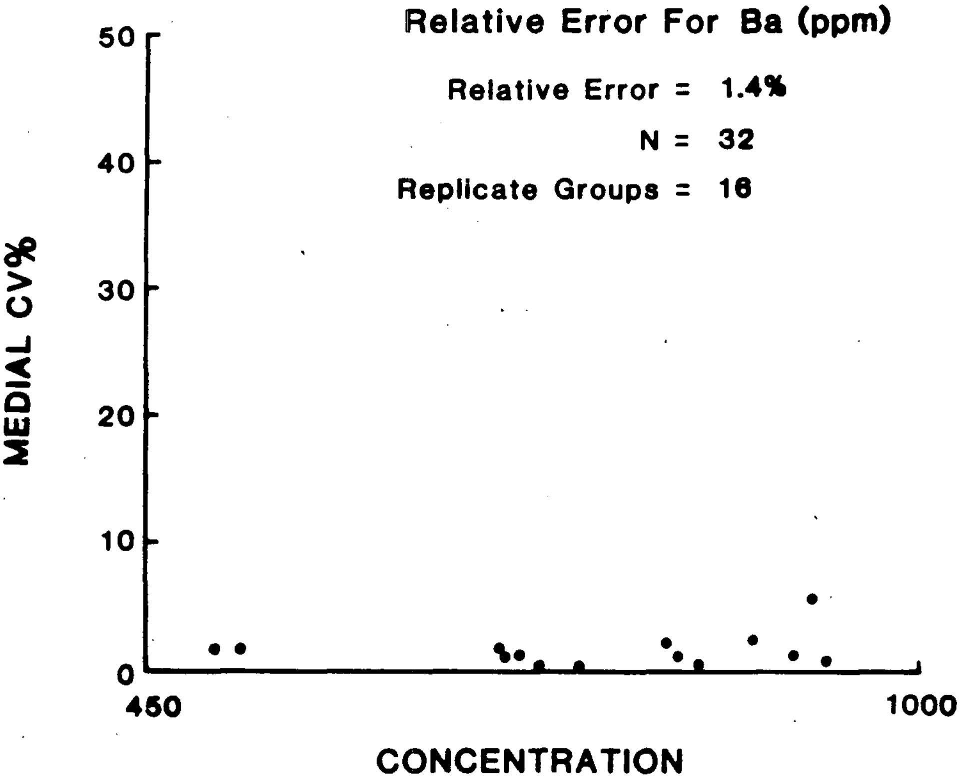

Relative Error For Zn (ppm)
Relative Error = 2.0%
N = 32
Replicate Groups = 16
MEDIAL CV%
50
40
30
20
10
0
30
107
CONCENTRATION

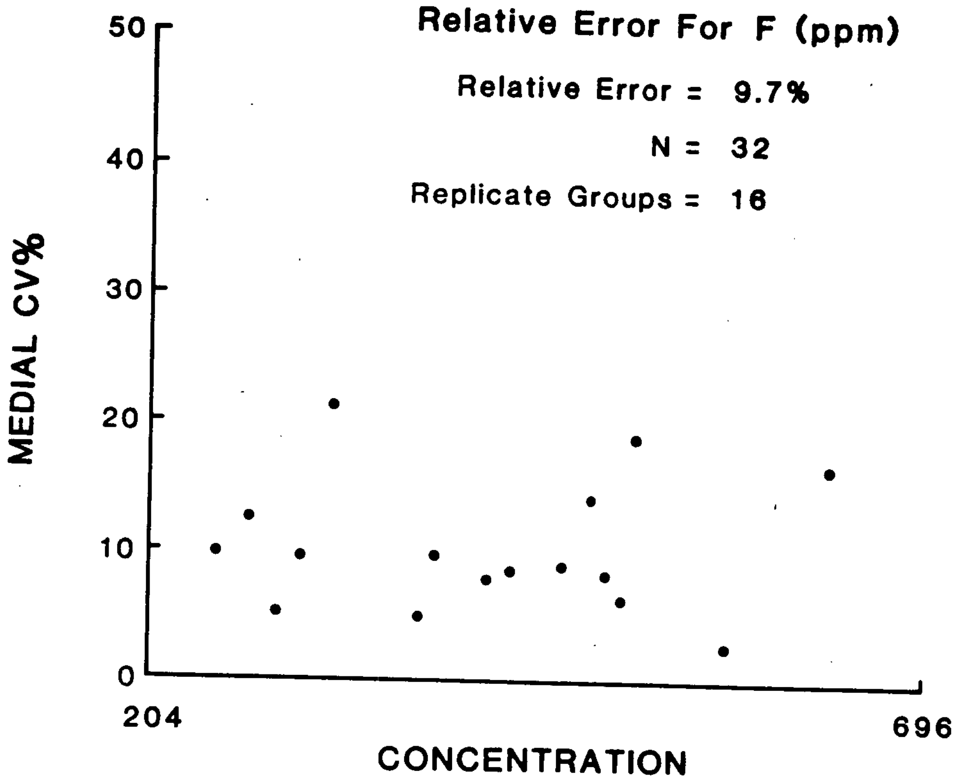

Relative Error For ~~Mo~~ (ppm)
Relative Error = 20.0%
N = 32
Replicate Groups = 16
MEDIAL CV%
50
40
30
20
10
0
0.6
2.7
CONCENTRATION

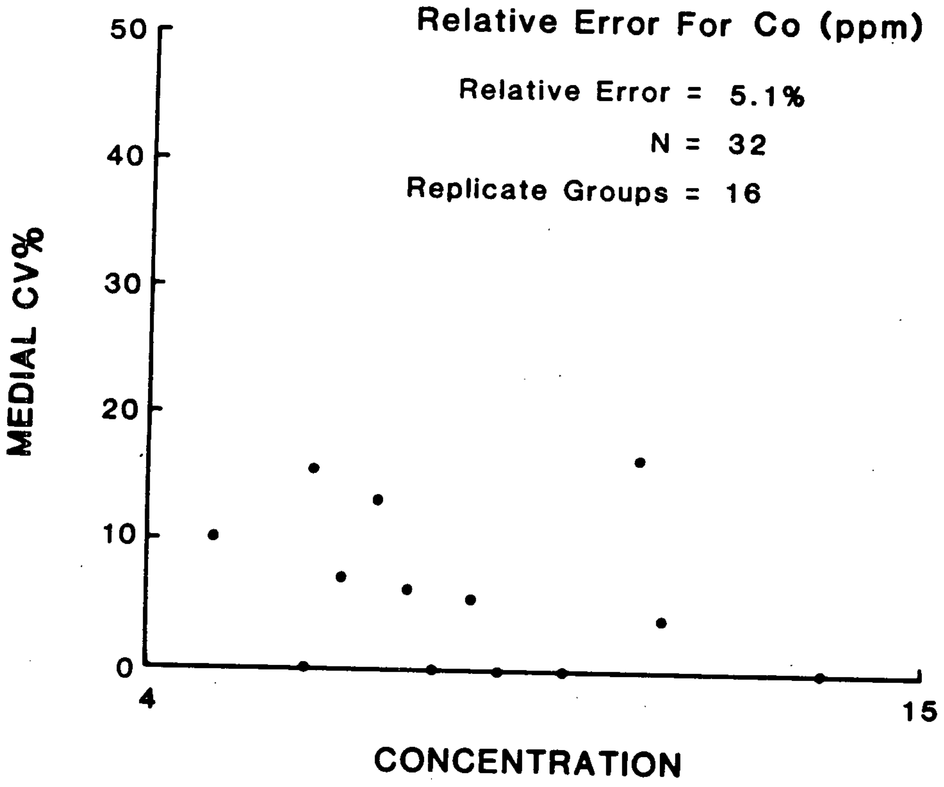

Relative Error For Ag (ppm)
Relative Error = 0.0%
N = 32
Replicate Groups = 16
MEDIAL CV%
50
40
30
20
10
0
0.2
0.5
CONCENTRATION


Relative Error For Mn (ppm)
Relative Error = 4.8%
N = 32
Replicate Groups = 16
MEDIAL CV%
50
40
30
20
10
0
140
1400
CONCENTRATION


Relative Error For Fe (pct)
Relative Error = 1.8%
N = 32
Replicate Groups = 16
MEDIAL CV%
50
40
30
20
10
0
1.1
2.6
CONCENTRATION


Relative Error For Ba (ppm)
Relative Error = 1.4%
N = 32
Replicate Groups = 16
MEDIAL CV%
50
40
30
20
10
0
450
1000
CONCENTRATION


Relative Error For F (ppm)
Relative Error = 9.7%
N = 32
Replicate Groups = 16
MEDIAL CV%
50
40
30
20
10
0
204
696
CONCENTRATION


Relative Error For Co (ppm)
Relative Error = 5.1%
N = 32
Replicate Groups = 16
MEDIAL CV%
50
40
30
20
10
0
4
15
CONCENTRATION

APPENDIX 4

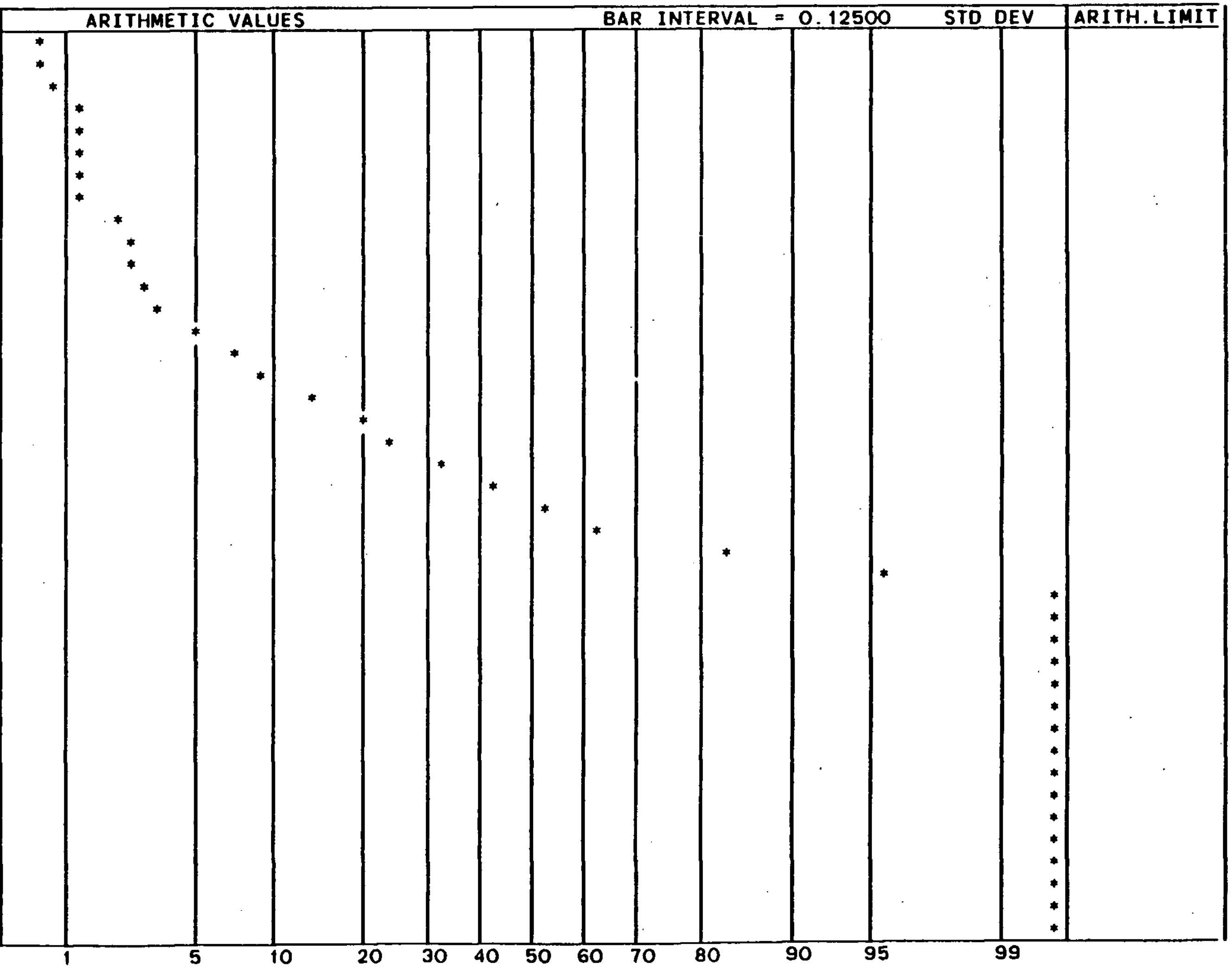
STREAM SEDIMENT PROBABILITY PLOTS

```
T
I   PROGRAM:          PERCENTAGE HISTOGRAMS                              NAME       CU
T
L   DATA:    DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY              N                 416
E   RUN:                                                                 X BAR        30.377
S   TIME:    25/03/83 11:55:33                                           STD DEV      42.122

CELL LOWER LIMIT NMBR    %   ARITHMETIC VALUES           BAR INTERVAL = 0.25000   STD DEV  ARITH.LIMIT
   1                0   0.0
   2  -175.0        0   0.0
   3  -164.4        0   0.0
   4  -153.9        0   0.0
   5  -143.4        0   0.0
   6  -132.8        0   0.0
   7  -122.3        0   0.0
   8  -111.8        0   0.0
   9  -101.3        0   0.0
  10  -90.72        0   0.0
  11  -80.19        0   0.0
  12  -69.66        0   0.0
  13  -59.13        0   0.0
  14  -48.60        0   0.0
  15  -38.07        0   0.0
  16  -27.54        0   0.0
  17  -17.01        0   0.0
  18  -6.480        7   1.7 **
  19   4.051      111  26.7 ***************************
  20   14.58      103  24.8 *************************
  21   25.11       72  17.3 *****************
  22   35.64       59  14.2 **************
  23   46.17       33   7.9 ********
  24   56.70       15   3.6 ****
  25   67.23        5   1.2 *
  26   77.76        1   0.2
  27   88.30        5   1.2 *
  28   98.83        0   0.0
  29   109.4        1   0.2
  30   119.9        1   0.2
  31   130.4        1   0.2
  32   140.9        0   0.0
  33   151.5        0   0.0
  34   162.0        1   0.2
  35   172.5        0   0.0
  36   183.1        0   0.0
  37   193.6        0   0.0
  38   204.1        0   0.0
  39   214.7        0   0.0
  40   225.2        0   0.0
  41   235.7        1   0.2
```

TITLES			
PROGRAM:	PERCENTAGE CUMULATIVE FREQUENCY PLOTS	NAME	CU
DATA:	DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY	N	416
RUN:		X BAR	30.377
TIME:	25/03/83 11:55:33	STD DEV	42.122

CELL	LOWER LIMIT	NMBR	%
1	133.1	3	0.7
2	127.8	0	0.7
3	122.5	1	1.0
4	117.3	1	1.2
5	112.0	0	1.2
6	106.7	0	1.2
7	101.5	0	1.2
8	96.19	0	1.2
9	90.93	3	1.9
10	85.66	2	2.4
11	80.40	0	2.4
12	75.13	2	2.9
13	69.87	2	3.4
14	64.60	5	4.6
15	59.34	9	6.7
16	54.07	8	8.7
17	48.81	19	13.2
18	43.54	32	20.9
19	38.28	17	25.0
20	33.01	31	32.5
21	27.74	45	43.3
22	22.48	37	52.2
23	17.21	46	63.2
24	11.95	86	83.9
25	6.684	49	95.7
26	1.418	18	100.0
27	-3.847	0	100.0
28	-9.112	0	100.0
29	-14.38	0	100.0
30	-19.64	0	100.0
31	-24.91	0	100.0
32	-30.17	0	100.0
33	-35.44	0	100.0
34	-40.70	0	100.0
35	-45.97	0	100.0
36	-51.23	0	100.0
37	-56.50	0	100.0
38	-61.76	0	100.0
39	-67.03	0	100.0
40	-72.30	0	100.0
41		0	100.0

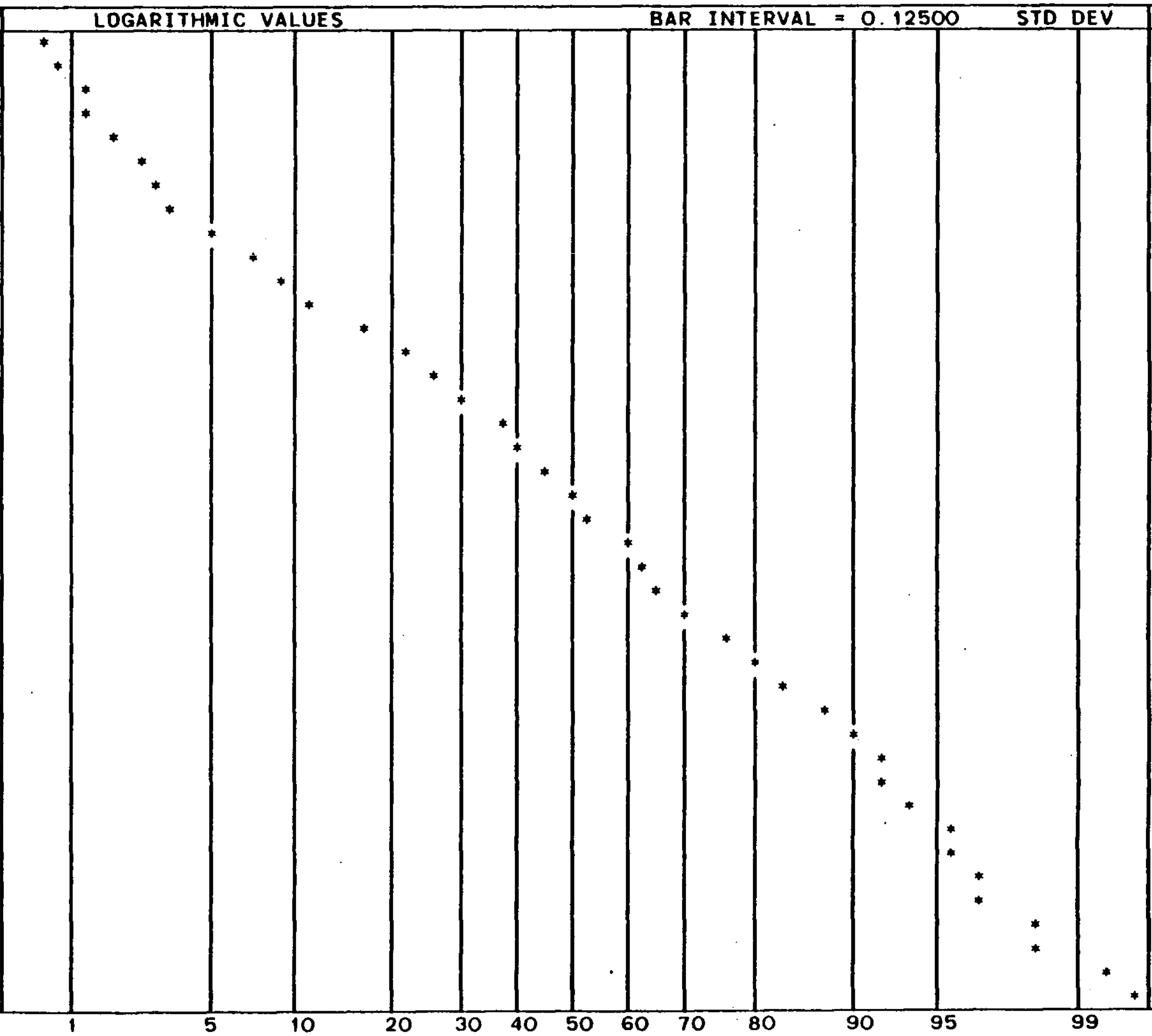


```
 T |                                                              |  |            |
 I | PROGRAM:          PERCENTAGE HISTOGRAMS                      |  | NAME       |  CU
 T |                                                              |  |            |
 L | DATA:    DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY      |  | N          |        416
 E | RUN:                                                         |  | X BAR      |    1.3589
 S | TIME:    25/03/83 11:55:33                                   |  | STD DEV    |   0.31414

CELL|LOWER LIMIT|NMBR|   %  |     LOGARITHMIC VALUES                    BAR INTERVAL = 0.25000    STD DEV  |ARITH.LIMIT
   1|           |   0|  0.0 |                                                                                 |
   2|-0.1725    |   0|  0.0 |                                                                                 |  0.6722
   3|-0.9397E-01|   0|  0.0 |                                                                                 |  0.8054
   4|-0.1543E-01|   0|  0.0 |                                                                                 |  0.9651
   5| 0.6310E-01|   0|  0.0 |                                                                                 |   1.156
   6| 0.1416    |   0|  0.0 |                                                                                 |   1.386
   7| 0.2202    |   0|  0.0 |                                                                                 |   1.660
   8| 0.2987    |   0|  0.0 |                                                                                 |   1.989
   9| 0.3772    |   0|  0.0 |                                                                                 |   2.384
  10| 0.4558    |   3|  0.7 |*                                                                                |   2.856
  11| 0.5343    |   4|  1.0 |*                                                                                |   3.422
  12| 0.6128    |   0|  0.0 |                                                                                 |   4.101
  13| 0.6914    |   7|  1.7 |**                                                                               |   4.913
  14| 0.7699    |  11|  2.6 |***                                                                              |   5.887
  15| 0.8485    |   9|  2.2 |**                                                                               |   7.054
  16| 0.9270    |  18|  4.3 |****                                                                             |   8.453
  17|   1.006   |  29|  7.0 |*******                                                                          |   10.13
  18|   1.084   |  37|  8.9 |*********                                                                        |   12.14
  19|   1.163   |  35|  8.4 |********                                                                         |   14.54
  20|   1.241   |  32|  7.7 |********                                                                         |   17.42
  21|   1.320   |  36|  8.7 |*********                                                                        |   20.88
  22|   1.398   |  33|  7.9 |********                                                                         |   25.01
  23|   1.477   |  39|  9.4 |*********                                                                        |   29.97
  24|   1.555   |  36|  8.7 |*********                                                                        |   35.91
  25|   1.634   |  44| 10.6 |***********                                                                      |   43.03
  26|   1.712   |  19|  4.6 |*****                                                                            |   51.56
  27|   1.791   |  11|  2.6 |***                                                                              |   61.78
  28|   1.869   |   3|  0.7 |*                                                                                |   74.03
  29|   1.948   |   5|  1.2 |*                                                                                |   88.70
  30|   2.026   |   2|  0.5 |                                                                                 |   106.3
  31|   2.105   |   1|  0.2 |                                                                                 |   127.4
  32|   2.184   |   1|  0.2 |                                                                                 |   152.6
  33|   2.262   |   0|  0.0 |                                                                                 |   182.8
  34|   2.341   |   0|  0.0 |                                                                                 |   219.1
  35|   2.419   |   0|  0.0 |                                                                                 |   262.5
  36|   2.498   |   0|  0.0 |                                                                                 |   314.5
  37|   2.576   |   0|  0.0 |                                                                                 |   376.9
  38|   2.655   |   0|  0.0 |                                                                                 |   451.6
  39|   2.733   |   0|  0.0 |                                                                                 |   541.1
  40|   2.812   |   0|  0.0 |                                                                                 |   648.3
  41|   2.890   |   1|  0.2 |                                                                                 |   776.9
```

TITLES			
PROGRAM: PERCENTAGE CUMULATIVE FREQUENCY PLOTS		NAME	CU
DATA: DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY		N	416
RUN:		X BAR	1.3589
TIME: 25/03/83 11:55:33		STD DEV	0.31414

CELL	LOWER LIMIT	NMBR	%	ARITH.LIMIT
1	2.125	3	0.7	133.2
2	2.085	1	1.0	121.7
3	2.046	1	1.2	111.2
4	2.007	0	1.2	101.6
5	1.968	2	1.7	92.80
6	1.928	3	2.4	84.78
7	1.889	1	2.6	77.45
8	1.850	3	3.4	70.75
9	1.810	5	4.6	64.64
10	1.771	9	6.7	59.05
11	1.732	10	9.1	53.95
12	1.693	11	11.8	49.28
13	1.653	23	17.3	45.02
14	1.614	19	21.9	41.13
15	1.575	17	26.0	37.57
16	1.536	20	30.8	34.33
17	1.496	24	36.5	31.36
18	1.457	18	40.9	28.65
19	1.418	18	45.2	26.17
20	1.379	21	50.2	23.91
21	1.339	14	53.6	21.84
22	1.300	26	59.9	19.95
23	1.261	7	61.5	18.23
24	1.221	18	65.9	16.65
25	1.182	11	68.5	15.21
26	1.143	32	76.2	13.90
27	1.104	18	80.5	12.70
28	1.064	14	83.9	11.60
29	1.025	15	87.5	10.60
30	0.9859	8	89.4	9.680
31	0.9466	10	91.8	8.843
32	0.9074	0	91.8	8.079
33	0.8681	9	94.0	7.380
34	0.8288	7	95.7	6.742
35	0.7896	0	95.7	6.160
36	0.7503	4	96.6	5.627
37	0.7110	0	96.6	5.141
38	0.6717	7	98.3	4.696
39	0.6325	0	98.3	4.290
40	0.5932	4	99.3	3.919
41		3	100.0	

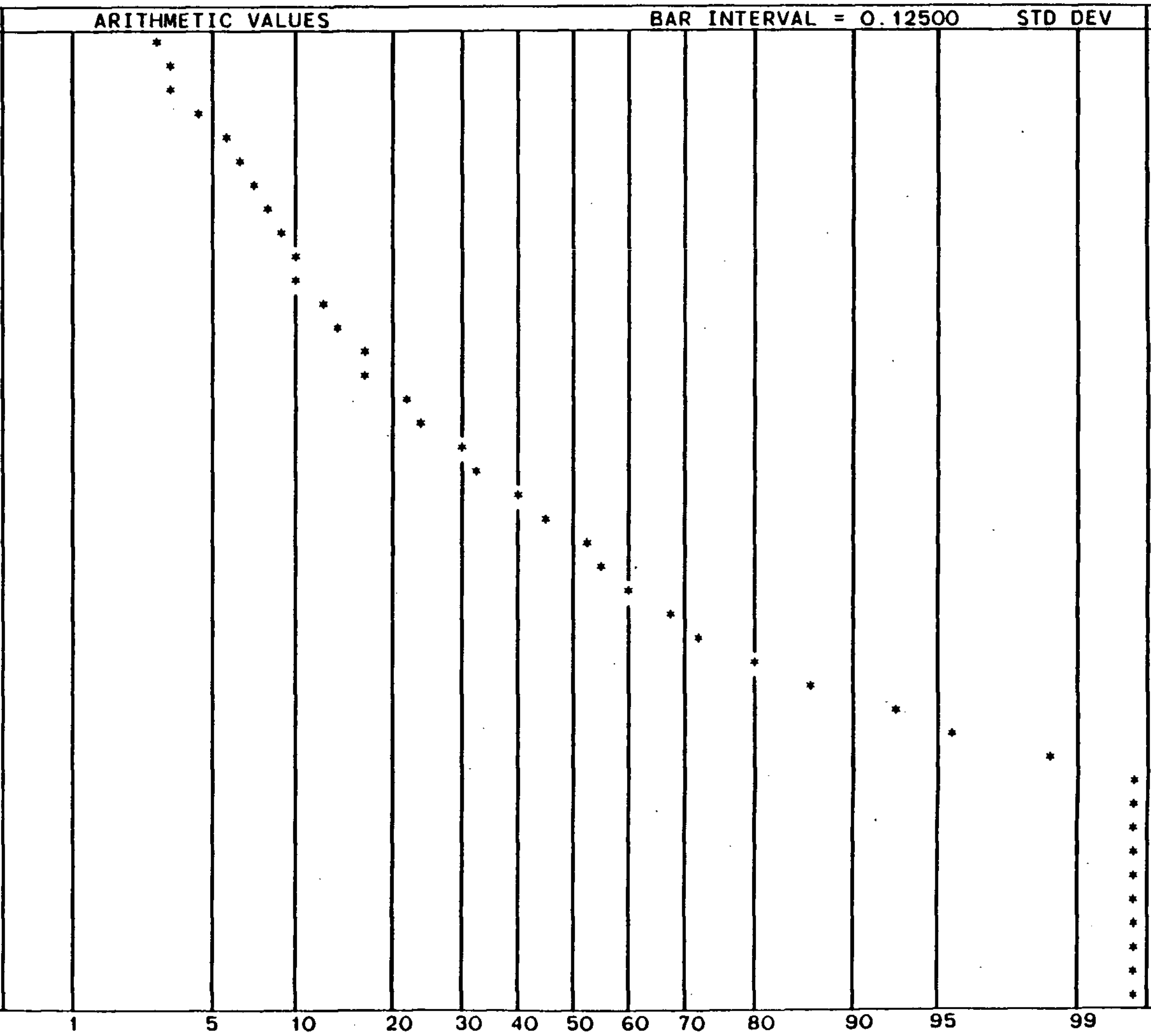


```
T
I  PROGRAM:          PERCENTAGE HISTOGRAMS                          NAME        PB
T
L  DATA:    DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY          N              416
E  RUN:                                                             X BAR       21.130
S  TIME:    25/03/83 11:55:33                                       STD DEV     11.680

CELL LOWER LIMIT NMBR    %    ARITHMETIC VALUES          BAR INTERVAL = 0.25000     STD DEV   ARITH.LIMIT
   1                0   0.0
   2   -35.81       0   0.0
   3   -32.89       0   0.0
   4   -29.97       0   0.0
   5   -27.05       0   0.0
   6   -24.13       0   0.0
   7   -21.21       0   0.0
   8   -18.29       0   0.0
   9   -15.37       0   0.0
  10   -12.45       0   0.0
  11   -9.531       0   0.0
  12   -6.611       0   0.0
  13   -3.691       0   0.0
  14  -0.7708       0   0.0
  15    2.149       6   1.4 *
  16    5.069      11   2.6 ***
  17    7.989      42  10.1 ***********
  18    10.91      55  13.2 **************
  19    13.83      53  12.7 **************
  20    16.75      50  12.0 *************
  21    19.67      54  13.0 **************
  22    22.59      36   8.7 **********
  23    25.51      25   6.0 ******
  24    28.43      20   4.8 *****
  25    31.35      18   4.3 ****
  26    34.27      10   2.4 **
  27    37.19       7   1.7 **
  28    40.11       7   1.7 **
  29    43.03       5   1.2 *
  30    45.95       4   1.0 *
  31    48.87       5   1.2 *
  32    51.79       1   0.2
  33    54.71       2   0.5
  34    57.63       0   0.0
  35    60.55       0   0.0
  36    63.47       2   0.5
  37    66.39       0   0.0
  38    69.31       2   0.5
  39    72.23       0   0.0
  40    75.15       0   0.0
  41    78.07       1   0.2
```

TITLES			
PROGRAM:	PERCENTAGE CUMULATIVE FREQUENCY PLOTS	NAME	PB
DATA:	DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY	N	416
RUN:		X BAR	21.130
TIME:	25/03/83 11:55:33	STD DEV	11.680

CELL	LOWER LIMIT	NMBR	%
1	49.60	12	2.9
2	48.14	1	3.1
3	46.68	1	3.4
4	45.22	3	4.1
5	43.76	5	5.3
6	42.30	3	6.0
7	40.84	4	7.0
8	39.38	3	7.7
9	37.92	4	8.7
10	36.46	4	9.6
11	35.00	4	10.6
12	33.54	10	13.0
13	32.08	4	13.9
14	30.62	11	16.6
15	29.16	4	17.5
16	27.70	17	21.6
17	26.24	9	23.8
18	24.78	23	29.3
19	23.32	14	32.7
20	21.86	32	40.4
21	20.40	14	43.8
22	18.94	33	51.7
23	17.48	16	55.5
24	16.02	18	59.9
25	14.56	30	67.1
26	13.10	23	72.6
27	11.64	27	79.1
28	10.18	28	85.8
29	8.719	28	92.5
30	7.259	14	95.9
31	5.799	11	98.6
32	4.339	6	100.0
33	2.879	0	100.0
34	1.419	0	100.0
35	-0.4087E-01	0	100.0
36	-1.501	0	100.0
37	-2.961	0	100.0
38	-4.421	0	100.0
39	-5.881	0	100.0
40	-7.341	0	100.0
41		0	100.0



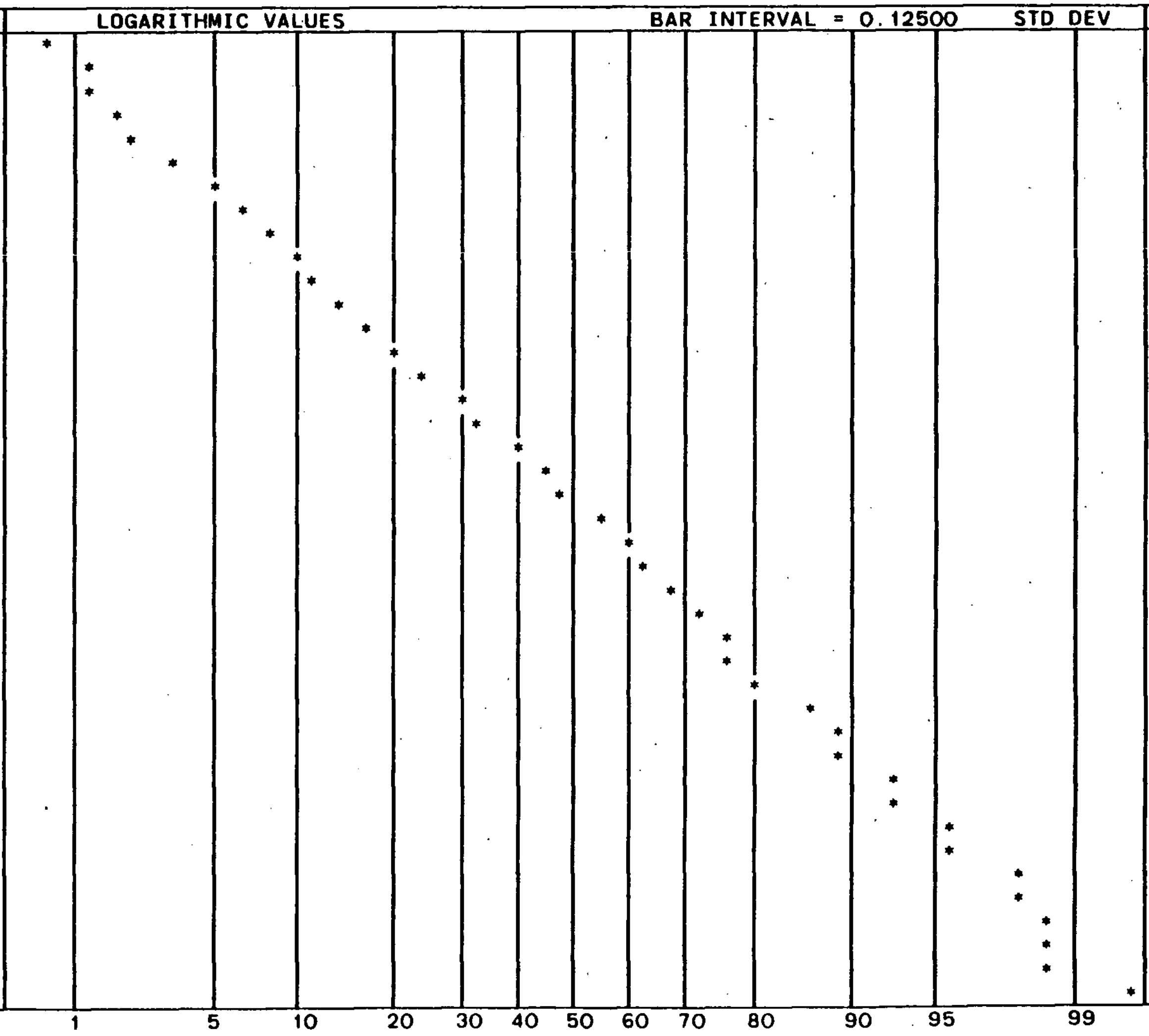
ARITH.LIMIT

```
T
I   PROGRAM:          PERCENTAGE HISTOGRAMS                          NAME       PB
T
L   DATA:    DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY          N              416
E   RUN:                                                             X BAR       1.2655
S   TIME:    25/03/83 11:55:33                                       STD DEV    0.22849

CELL LOWER LIMIT NMBR   %     LOGARITHMIC VALUES                 BAR INTERVAL = 0.25000   STD DEV   ARITH.LIMIT
   1                0   0.0
   2   0.1516       0   0.0                                                                              1.418
   3   0.2087       0   0.0                                                                              1.617
   4   0.2658       0   0.0                                                                              1.844
   5   0.3229       0   0.0                                                                              2.103
   6   0.3800       0   0.0                                                                              2.399
   7   0.4372       0   0.0                                                                              2.736
   8   0.4943       0   0.0                                                                              3.121
   9   0.5514       0   0.0                                                                              3.560
  10   0.6085       0   0.0                                                                              4.060
  11   0.6657       6   1.4  *                                                                           4.631
  12   0.7228       3   0.7  *                                                                           5.282
  13   0.7799       0   0.0                                                                              6.024
  14   0.8370       8   1.9  **                                                                          6.871
  15   0.8942      14   3.4  ***                                                                         7.837
  16   0.9513      28   6.7  *******                                                                     8.939
  17    1.008      28   6.7  *******                                                                     10.20
  18    1.066      27   6.5  ******                                                                      11.63
  19    1.123      41   9.9  **********                                                                  13.26
  20    1.180      30   7.2  *******                                                                     15.13
  21    1.237      32   7.7  ********                                                                    17.25
  22    1.294      54  13.0  *************                                                               19.68
  23    1.351      36   8.7  *********                                                                   22.45
  24    1.408      36   8.7  *********                                                                   25.60
  25    1.465      19   4.6  *****                                                                       29.20
  26    1.523      18   4.3  ****                                                                        33.30
  27    1.580      14   3.4  ***                                                                         37.99
  28    1.637      10   2.4  **                                                                          43.33
  29    1.694       7   1.7  **                                                                          49.42
  30    1.751       0   0.0                                                                              56.36
  31    1.808       4   1.0  *                                                                           64.29
  32    1.865       0   0.0                                                                              73.32
  33    1.922       1   0.2                                                                              83.63
  34    1.979       0   0.0                                                                              95.38
  35    2.037       0   0.0                                                                              108.8
  36    2.094       0   0.0                                                                              124.1
  37    2.151       0   0.0                                                                              141.5
  38    2.208       0   0.0                                                                              161.4
  39    2.265       0   0.0                                                                              184.1
  40    2.322       0   0.0                                                                              210.0
  41    2.379       0   0.0                                                                              239.5
```

TITLES			
PROGRAM:	PERCENTAGE CUMULATIVE FREQUENCY PLOTS	NAME	PB
DATA:	DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY	N	416
RUN:		X BAR	1.2655
TIME:	25/03/83 11:55:33	STD DEV	0.22849

CELL	LOWER LIMIT	NMBR	%	ARITH.LIMIT
1	1.822	3	0.7	66.43
2	1.794	2	1.2	62.20
3	1.765	0	1.2	58.24
4	1.737	2	1.7	54.54
5	1.708	1	1.9	51.07
6	1.680	5	3.1	47.82
7	1.651	7	4.8	44.77
8	1.622	7	6.5	41.92
9	1.594	5	7.7	39.25
10	1.565	8	9.6	36.76
11	1.537	6	11.1	34.42
12	1.508	12	13.9	32.23
13	1.480	11	16.6	30.18
14	1.451	15	20.2	28.25
15	1.423	15	23.8	26.46
16	1.394	23	29.3	24.77
17	1.365	14	32.7	23.20
18	1.337	32	40.4	21.72
19	1.308	14	43.8	20.34
20	1.280	17	47.8	19.04
21	1.251	32	55.5	17.83
22	1.223	18	59.9	16.70
23	1.194	12	62.7	15.63
24	1.165	18	67.1	14.64
25	1.137	23	72.6	13.71
26	1.108	12	75.5	12.83
27	1.080	0	75.5	12.02
28	1.051	15	79.1	11.25
29	1.023	28	85.8	10.54
30	0.9941	14	89.2	9.865
31	0.9656	0	89.2	9.238
32	0.9370	14	92.5	8.650
33	0.9084	0	92.5	8.099
34	0.8799	14	95.9	7.584
35	0.8513	0	95.9	7.101
36	0.8228	8	97.8	6.649
37	0.7942	0	97.8	6.226
38	0.7656	3	98.6	5.829
39	0.7371	0	98.6	5.458
40	0.7085	0	98.6	5.111
41		6	100.0	

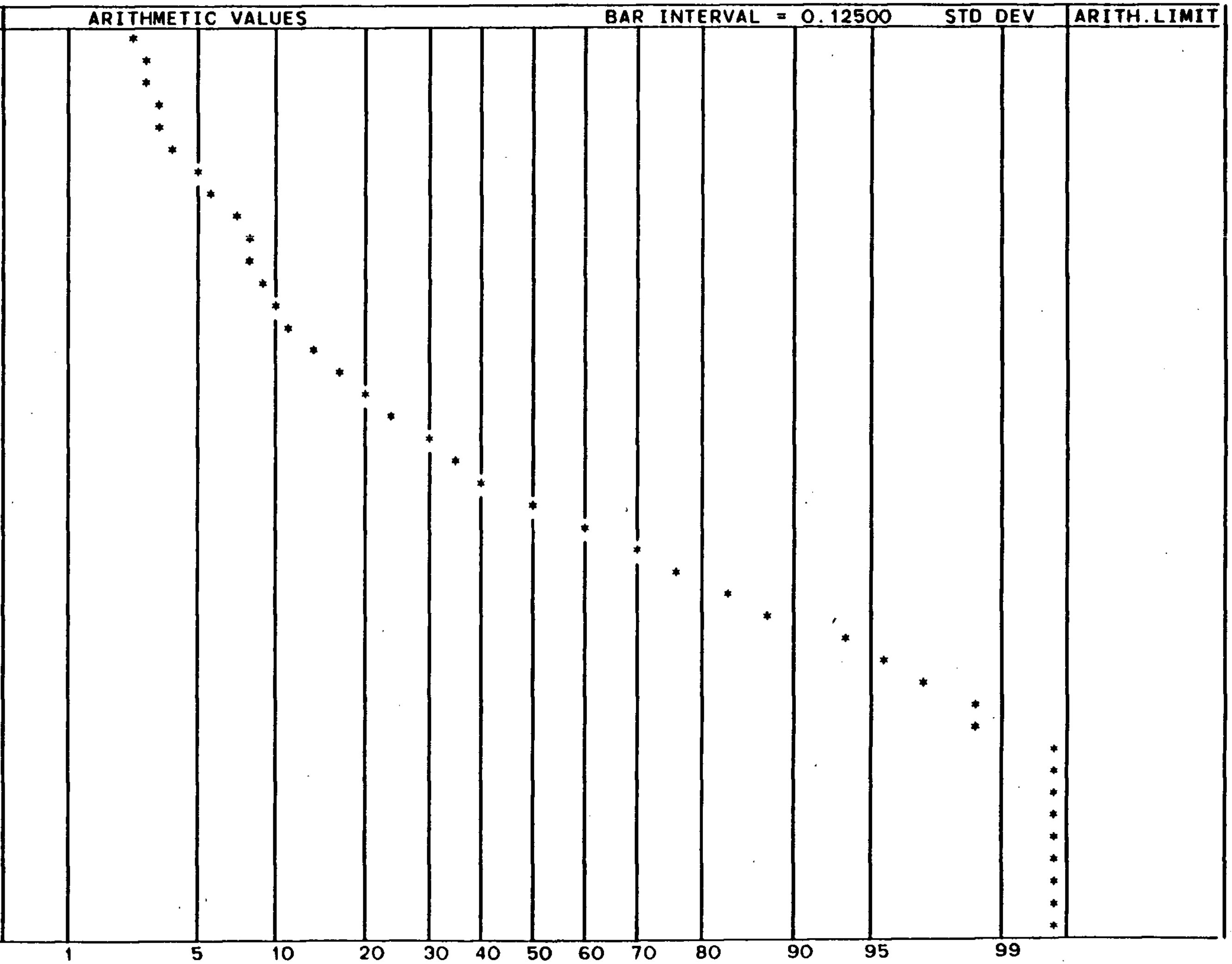


```
T
I  PROGRAM:          PERCENTAGE HISTOGRAMS                          NAME      ZN
T
L  DATA:    DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY          N              416
E  RUN:                                                             X BAR     75.305
S  TIME:    25/03/83 11:55:33                                       STD DEV   35.611

CELL|LOWER LIMIT|NMBR|  %  |        ARITHMETIC VALUES                  BAR INTERVAL = 0.25000    STD DEV |ARITH.LIMIT
   1|           |   0|  0.0|
   2|  -98.30   |   0|  0.0|
   3|  -89.39   |   0|  0.0|
   4|  -80.49   |   0|  0.0|
   5|  -71.59   |   0|  0.0|
   6|  -62.69   |   0|  0.0|
   7|  -53.78   |   0|  0.0|
   8|  -44.88   |   0|  0.0|
   9|  -35.98   |   0|  0.0|
  10|  -27.08   |   0|  0.0|
  11|  -18.17   |   0|  0.0|
  12|  -9.270   |   0|  0.0|
  13| -0.3673   |   0|  0.0|
  14|   8.535   |   0|  0.0|
  15|   17.44   |   6|  1.4|*
  16|   26.34   |   9|  2.2|**
  17|   35.24   |  28|  6.7|*******
  18|   44.15   |  47| 11.3|***********
  19|   53.05   |  55| 13.2|*************
  20|   61.95   |  74| 17.8|******************
  21|   70.85   |  63| 15.1|***************
  22|   79.76   |  43| 10.3|**********
  23|   88.66   |  25|  6.0|******
  24|   97.56   |  21|  5.0|*****
  25|   106.5   |   9|  2.2|**
  26|   115.4   |   5|  1.2|*
  27|   124.3   |  11|  2.6|***
  28|   133.2   |   5|  1.2|*
  29|   142.1   |   2|  0.5|
  30|   151.0   |   3|  0.7|*
  31|   159.9   |   2|  0.5|
  32|   168.8   |   1|  0.2|
  33|   177.7   |   3|  0.7|*
  34|   186.6   |   1|  0.2|
  35|   195.5   |   0|  0.0|
  36|   204.4   |   0|  0.0|
  37|   213.3   |   0|  0.0|
  38|   222.2   |   1|  0.2|
  39|   231.1   |   0|  0.0|
  40|   240.0   |   0|  0.0|
  41|   248.9   |   2|  0.5|
```

TITLES		NAME	ZN
PROGRAM:	PERCENTAGE CUMULATIVE FREQUENCY PLOTS		
DATA:	DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY	N	416
RUN:		X BAR	75.305
TIME:	25/03/83 11:55:33	STD DEV	35.611

CELL	LOWER LIMIT	NMBR	%
1	162.1	10	2.4
2	157.7	2	2.9
3	153.2	0	2.9
4	148.8	1	3.1
5	144.3	1	3.4
6	139.8	1	3.6
7	135.4	4	4.6
8	130.9	3	5.3
9	126.5	6	6.7
10	122.0	4	7.7
11	117.6	3	8.4
12	113.1	2	8.9
13	108.7	4	9.9
14	104.2	8	11.8
15	99.79	11	14.4
16	95.34	11	17.1
17	90.88	10	19.5
18	86.43	16	23.3
19	81.98	26	29.6
20	77.53	20	34.4
21	73.08	26	40.6
22	68.63	43	51.0
23	64.18	36	59.6
24	59.73	37	68.5
25	55.27	31	76.0
26	50.82	30	83.2
27	46.37	19	87.7
28	41.92	24	93.5
29	37.47	10	95.9
30	33.02	6	97.4
31	28.57	5	98.6
32	24.11	0	98.6
33	19.66	5	99.8
34	15.21	1	100.0
35	10.76	0	100.0
36	6.310	0	100.0
37	1.858	0	100.0
38	-2.593	0	100.0
39	-7.044	0	100.0
40	-11.50	0	100.0
41		0	100.0

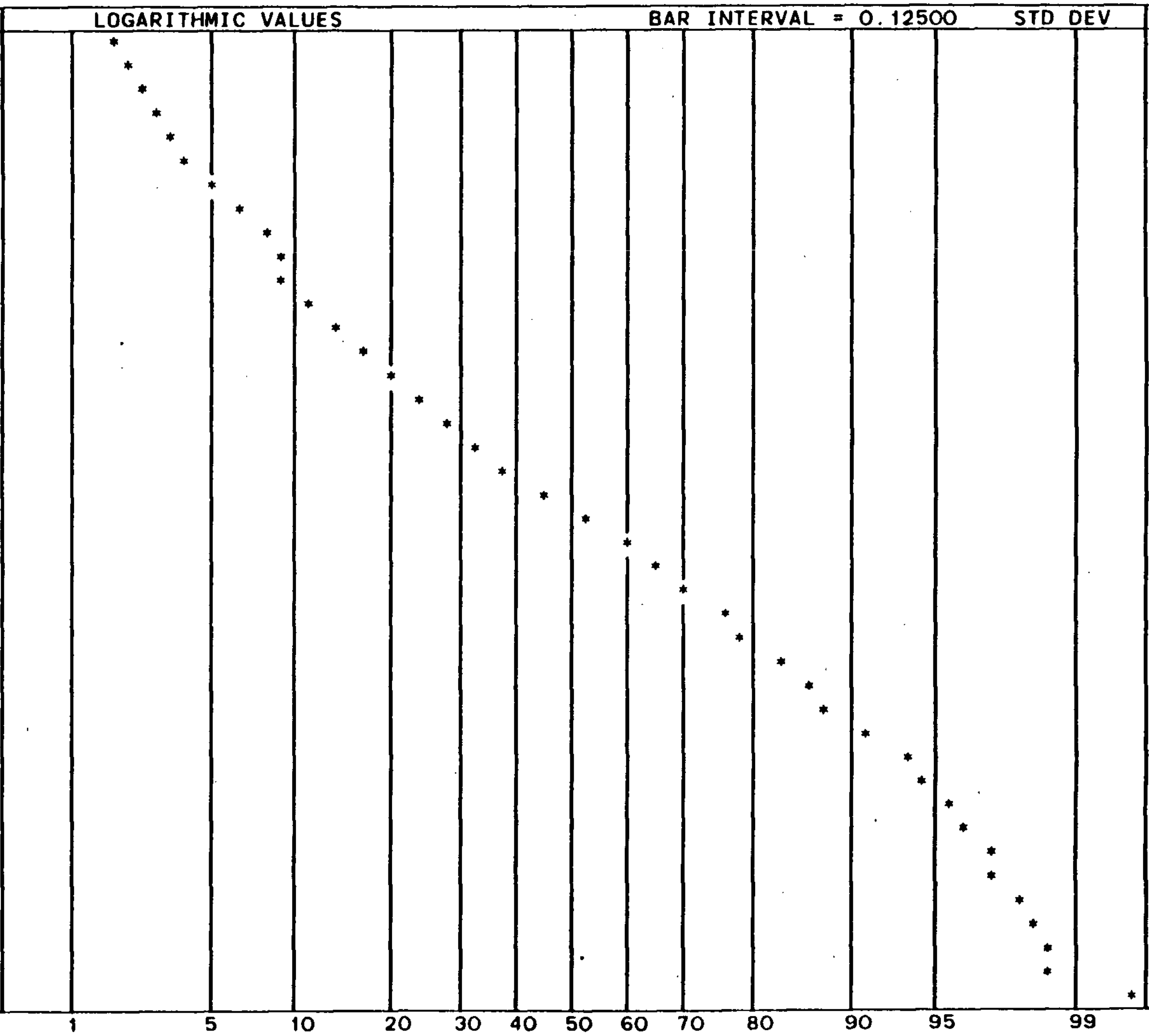


```
T
I   PROGRAM:          PERCENTAGE HISTOGRAMS                                  NAME        ZN
T
L   DATA:    DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY                  N                416
E   RUN:                                                                     X BAR       1.8422
S   TIME:    25/03/83 11:55:33                                               STD DEV     0.16888

CELL LOWER LIMIT NMBR    %         LOGARITHMIC VALUES                        BAR INTERVAL = 0.25000   STD DEV   ARITH.LIMIT
   1                0   0.0
   2   1.019        0   0.0                                                                                        10.45
   3   1.061        0   0.0                                                                                        11.51
   4   1.103        0   0.0                                                                                        12.69
   5   1.146        0   0.0                                                                                        13.98
   6   1.188        0   0.0                                                                                        15.41
   7   1.230        0   0.0                                                                                        16.98
   8   1.272        2   0.5                                                                                        18.72
   9   1.314        3   0.7 *                                                                                      20.63
  10   1.357        1   0.2                                                                                        22.73
  11   1.399        0   0.0                                                                                        25.06
  12   1.441        2   0.5                                                                                        27.61
  13   1.483        3   0.7 *                                                                                      30.43
  14   1.526        5   1.2 *                                                                                      33.54
  15   1.568       10   2.4 **                                                                                     36.96
  16   1.610       17   4.1 ****                                                                                   40.74
  17   1.652       23   5.5 ******                                                                                 44.90
  18   1.694       26   6.3 ******                                                                                 49.48
  19   1.737       44  10.6 ***********                                                                            54.53
  20   1.779       51  12.3 ************                                                                           60.10
  21   1.821       52  12.5 *************                                                                          66.23
  22   1.863       46  11.1 ***********                                                                            73.00
  23   1.906       40   9.6 **********                                                                             80.45
  24   1.948       25   6.0 ******                                                                                 88.66
  25   1.990       23   5.5 ******                                                                                 97.71
  26   2.032        8   1.9 **                                                                                     107.7
  27   2.074       13   3.1 ***                                                                                    118.7
  28   2.117        8   1.9 **                                                                                     130.8
  29   2.159        3   0.7 *                                                                                      144.2
  30   2.201        3   0.7 *                                                                                      158.9
  31   2.243        5   1.2 *                                                                                      175.1
  32   2.285        0   0.0                                                                                        193.0
  33   2.328        1   0.2                                                                                        212.7
  34   2.370        0   0.0                                                                                        234.4
  35   2.412        0   0.0                                                                                        258.3
  36   2.454        0   0.0                                                                                        284.7
  37   2.497        1   0.2                                                                                        313.7
  38   2.539        0   0.0                                                                                        345.8
  39   2.581        0   0.0                                                                                        381.1
  40   2.623        1   0.2                                                                                        420.0
  41   2.665        0   0.0                                                                                        462.9
```

```
T
I  PROGRAM:         PERCENTAGE CUMULATIVE FREQUENCY PLOTS          NAME       ZN
T
L  DATA:   DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY          N              416
E  RUN:                                                            X BAR       1.8422
S  TIME:   25/03/83 11:55:33                                       STD DEV    0.16888
```

```
CELL LOWER LIMIT NMBR    %    LOGARITHMIC VALUES   BAR INTERVAL = 0.12500   STD DEV   ARITH.LIMIT
   1     2.254      7    1.7                                                             179.4
   2     2.233      1    1.9                                                             170.9
   3     2.212      2    2.4                                                             162.8
   4     2.190      2    2.9                                                             155.1
   5     2.169      1    3.1                                                             147.7
   6     2.148      2    3.6                                                             140.7
   7     2.127      5    4.8                                                             134.0
   8     2.106      7    6.5                                                             127.7
   9     2.085      6    7.9                                                             121.6
  10     2.064      3    8.7                                                             115.8
  11     2.043      1    8.9                                                             110.3
  12     2.022     11   11.5                                                             105.1
  13     2.001      8   13.5                                                             100.1
  14     1.979     15   17.1                                                             95.37
  15     1.958     10   19.5                                                             90.84
  16     1.937     16   23.3                                                             86.53
  17     1.916     18   27.6                                                             82.43
  18     1.895     23   33.2                                                             78.52
  19     1.874     22   38.5                                                             74.79
  20     1.853     27   45.0                                                             71.24
  21     1.832     36   53.6                                                             67.86
  22     1.811     25   59.6                                                             64.64
  23     1.789     23   65.1                                                             61.58
  24     1.768     23   70.7                                                             58.66
  25     1.747     22   76.0                                                             55.87
  26     1.726     10   78.4                                                             53.22
  27     1.705     20   83.2                                                             50.70
  28     1.684     11   85.8                                                             48.29
  29     1.663      8   87.7                                                             46.00
  30     1.642     15   91.3                                                             43.82
  31     1.621      9   93.5                                                             41.74
  32     1.599      3   94.2                                                             39.76
  33     1.578      7   95.9                                                             37.87
  34     1.557      1   96.2                                                             36.08
  35     1.536      5   97.4                                                             34.36
  36     1.515      0   97.4                                                             32.73
  37     1.494      3   98.1                                                             31.18
  38     1.473      1   98.3                                                             29.70
  39     1.452      1   98.6                                                             28.29
  40     1.431      0   98.6                                                             26.95
  41                6  100.0
```

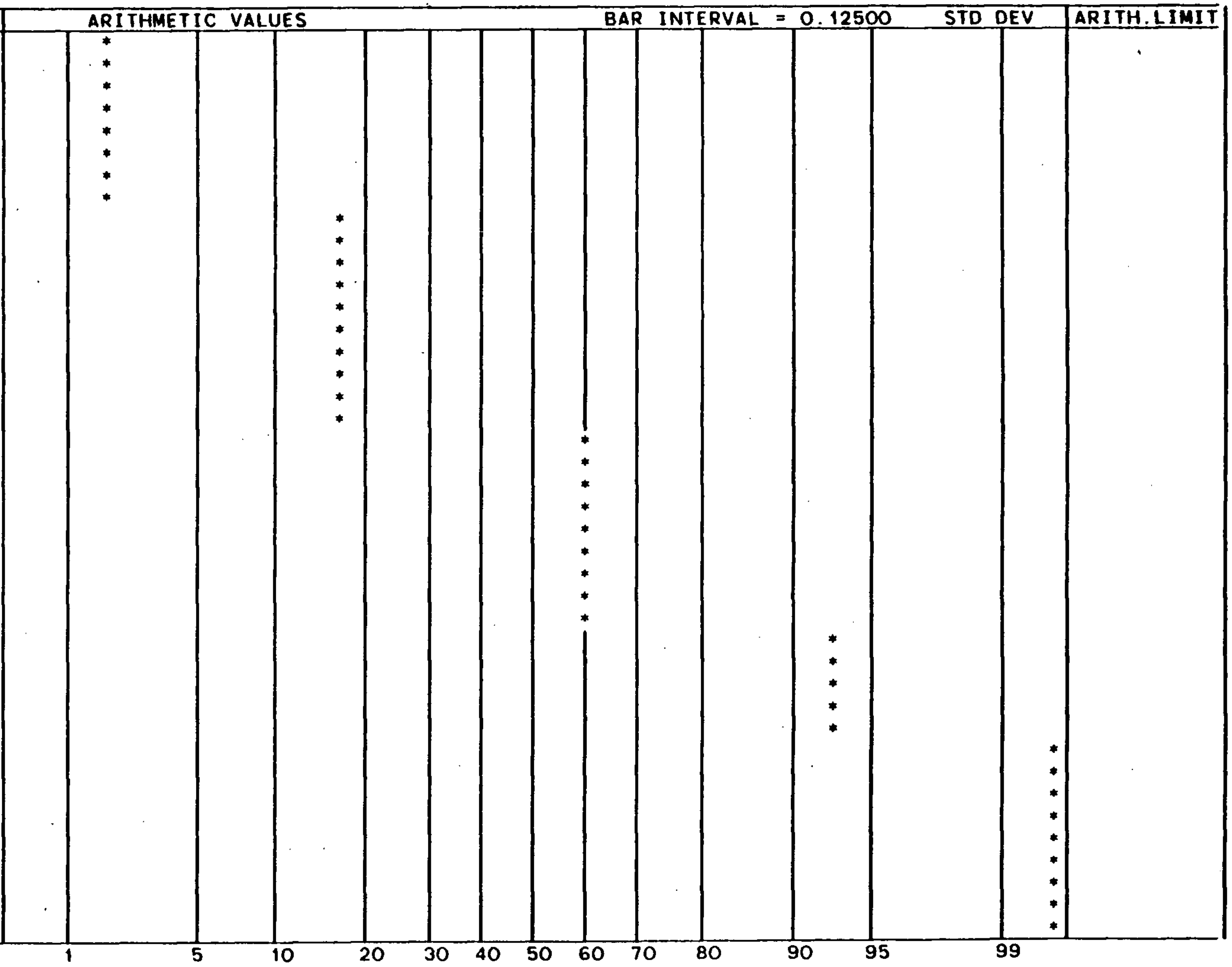


```
T
I  PROGRAM:          PERCENTAGE HISTOGRAMS                                        NAME        MO
T
L  DATA:    DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY                        N                416
E  RUN:                                                                           X BAR        1.7752
S  TIME:    25/03/83 11:55:33                                                     STD DEV     0.83628

CELL LOWER LIMIT NMBR    %    ARITHMETIC VALUES                  BAR INTERVAL = 0.25000    STD DEV  ARITH.LIMIT
   1                0   0.0
   2   -2.302       0   0.0
   3   -2.093       0   0.0
   4   -1.883       0   0.0
   5   -1.674       0   0.0
   6   -1.465       0   0.0
   7   -1.256       0   0.0
   8   -1.047       0   0.0
   9 -0.8381        0   0.0
  10 -0.6291        0   0.0
  11 -0.4200        0   0.0
  12 -0.2109        0   0.0
  13 -0.1847E-02    0   0.0
  14  0.2072        0   0.0
  15  0.4163       29   7.0 *******
  16  0.6254        0   0.0
  17  0.8344      132  31.7 ********************************
  18   1.043        0   0.0
  19   1.253        0   0.0
  20   1.462        0   0.0
  21   1.671        0   0.0
  22   1.880      184  44.2 ********************************************
  23   2.089        0   0.0
  24   2.298        0   0.0
  25   2.507        0   0.0
  26   2.716        0   0.0
  27   2.925       64  15.4 ***************
  28   3.134        0   0.0
  29   3.343        0   0.0
  30   3.552        0   0.0
  31   3.761        0   0.0
  32   3.970        4   1.0 *
  33   4.180        0   0.0
  34   4.389        0   0.0
  35   4.598        0   0.0
  36   4.807        2   0.5
  37   5.016        0   0.0
  38   5.225        0   0.0
  39   5.434        0   0.0
  40   5.643        0   0.0
  41   5.852        1   0.2
```

TITLES			
PROGRAM:	PERCENTAGE CUMULATIVE FREQUENCY PLOTS	NAME	MO
DATA:	DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY	N	416
RUN:		X BAR	1.7752
TIME:	25/03/83 11:55:33	STD DEV	0.83628

CELL	LOWER LIMIT	NMBR	%
1	3.814	7	1.7
2	3.709	0	1.7
3	3.605	0	1.7
4	3.500	0	1.7
5	3.396	0	1.7
6	3.291	0	1.7
7	3.186	0	1.7
8	3.082	0	1.7
9	2.977	64	17.1
10	2.873	0	17.1
11	2.768	0	17.1
12	2.664	0	17.1
13	2.559	0	17.1
14	2.455	0	17.1
15	2.350	0	17.1
16	2.246	0	17.1
17	2.141	0	17.1
18	2.037	0	17.1
19	1.932	184	61.3
20	1.828	0	61.3
21	1.723	0	61.3
22	1.618	0	61.3
23	1.514	0	61.3
24	1.409	0	61.3
25	1.305	0	61.3
26	1.200	0	61.3
27	1.096	0	61.3
28	0.9912	132	93.0
29	0.8867	0	93.0
30	0.7822	0	93.0
31	0.6776	0	93.0
32	0.5731	0	93.0
33	0.4686	29	100.0
34	0.3640	0	100.0
35	0.2595	0	100.0
36	0.1550	0	100.0
37	0.5042E-01	0	100.0
38	-0.5412E-01	0	100.0
39	-0.1587	0	100.0
40	-0.2632	0	100.0
41		0	100.0



```
T
I   PROGRAM:            PERCENTAGE HISTOGRAMS                                     NAME        MO
T
L   DATA:    DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY                        N                416
E   RUN:                                                                           X BAR       0.19658
S   TIME:    25/03/83 11:55:33                                                     STD DEV     0.22402

CELL LOWER LIMIT NMBR    %    LOGARITHMIC VALUES                    BAR INTERVAL = 0.25000   STD DEV  ARITH.LIMIT
   1                0    0.0
   2 -0.8955        0    0.0                                                                            0.1272
   3 -0.8395        0    0.0                                                                            0.1447
   4 -0.7835        0    0.0                                                                            0.1646
   5 -0.7275        0    0.0                                                                            0.1873
   6 -0.6715        0    0.0                                                                            0.2131
   7 -0.6155        0    0.0                                                                            0.2424
   8 -0.5595        0    0.0                                                                            0.2758
   9 -0.5035        0    0.0                                                                            0.3137
  10 -0.4475        0    0.0                                                                            0.3569
  11 -0.3915        0    0.0                                                                            0.4060
  12 -0.3355       29    7.0 *******                                                                    0.4619
  13 -0.2794        0    0.0                                                                            0.5255
  14 -0.2234        0    0.0                                                                            0.5978
  15 -0.1674        0    0.0                                                                            0.6801
  16 -0.1114        0    0.0                                                                            0.7737
  17 -0.5543E-01  132   31.7 ********************************                                           0.8802
  18  0.5705E-03    0    0.0                                                                             1.001
  19  0.5657E-01    0    0.0                                                                             1.139
  20  0.1126        0    0.0                                                                             1.296
  21  0.1686        0    0.0                                                                             1.474
  22  0.2246        0    0.0                                                                             1.677
  23  0.2806      184   44.2 ********************************************                               1.908
  24  0.3366        0    0.0                                                                             2.171
  25  0.3926        0    0.0                                                                             2.469
  26  0.4486       64   15.4 ***************                                                             2.809
  27  0.5046        0    0.0                                                                             3.196
  28  0.5606        4    1.0 *                                                                           3.636
  29  0.6166        0    0.0                                                                             4.136
  30  0.6726        2    0.5                                                                             4.706
  31  0.7286        1    0.2                                                                             5.353
  32  0.7846        0    0.0                                                                             6.090
  33  0.8406        0    0.0                                                                             6.928
  34  0.8966        0    0.0                                                                             7.882
  35  0.9526        0    0.0                                                                             8.967
  36   1.009        0    0.0                                                                             10.20
  37   1.065        0    0.0                                                                             11.60
  38   1.121        0    0.0                                                                             13.20
  39   1.177        0    0.0                                                                             15.02
  40   1.233        0    0.0                                                                             17.09
  41   1.289        0    0.0                                                                             19.44
```

TITLES

PROGRAM: PERCENTAGE CUMULATIVE FREQUENCY PLOTS

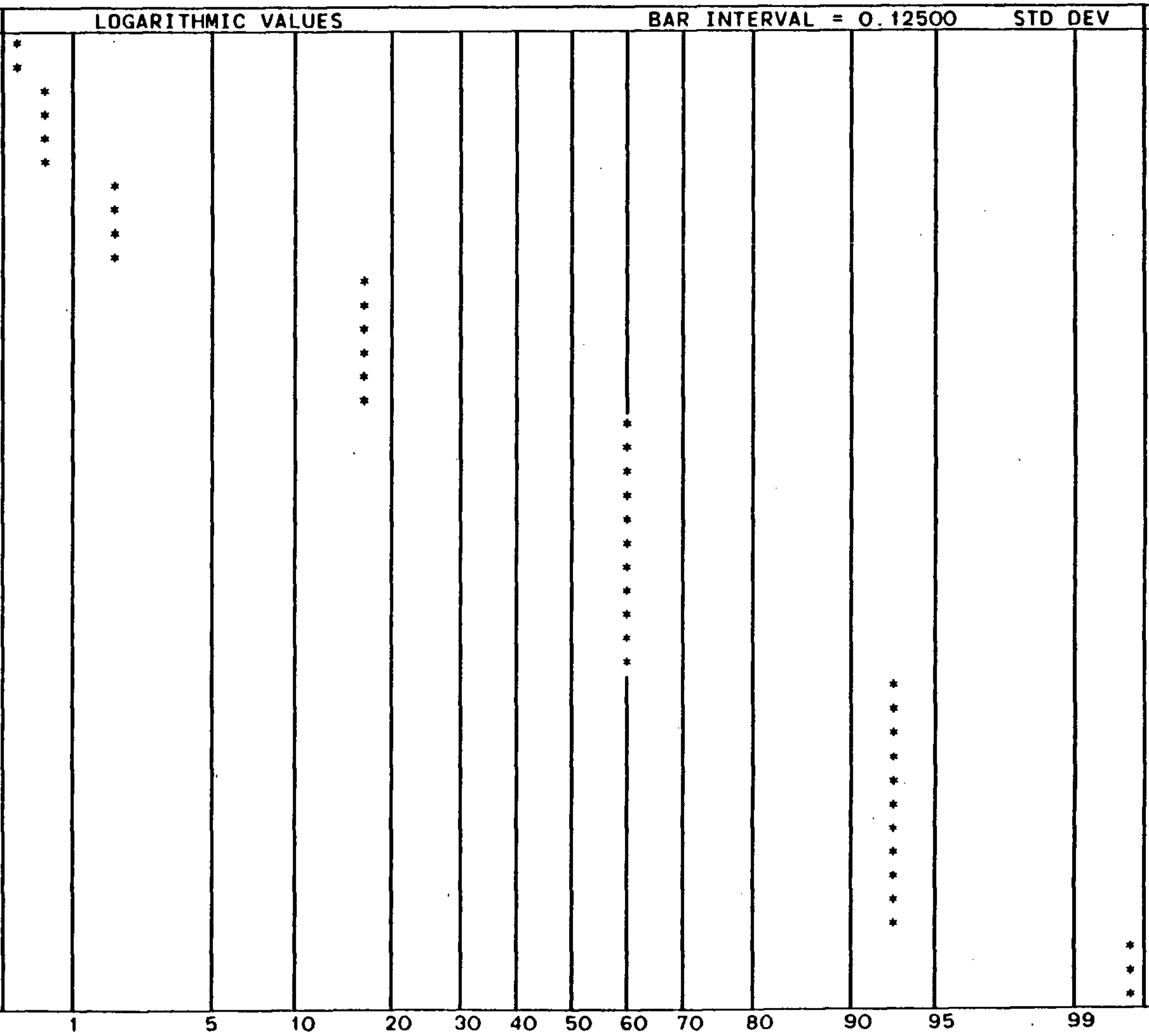
DATA: DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY

RUN:

TIME: 25/03/83 11:55:33

NAME	MO
N	416
X BAR	0.19658
STD DEV	0.22402

CELL	LOWER LIMIT	NMBR	%	ARITH.LIMIT
1	0.7426	1	0.2	5.529
2	0.7146	0	0.2	5.183
3	0.6866	2	0.7	4.860
4	0.6586	0	0.7	4.556
5	0.6306	0	0.7	4.272
6	0.6026	0	0.7	4.005
7	0.5746	4	1.7	3.755
8	0.5466	0	1.7	3.521
9	0.5186	0	1.7	3.301
10	0.4906	0	1.7	3.095
11	0.4626	64	17.1	2.901
12	0.4346	0	17.1	2.720
13	0.4066	0	17.1	2.550
14	0.3786	0	17.1	2.391
15	0.3506	0	17.1	2.242
16	0.3226	0	17.1	2.102
17	0.2946	184	61.3	1.971
18	0.2666	0	61.3	1.848
19	0.2386	0	61.3	1.732
20	0.2106	0	61.3	1.624
21	0.1826	0	61.3	1.523
22	0.1546	0	61.3	1.428
23	0.1266	0	61.3	1.338
24	0.9858E-01	0	61.3	1.255
25	0.7057E-01	0	61.3	1.176
26	0.4257E-01	0	61.3	1.103
27	0.1457E-01	0	61.3	1.034
28	-0.1343E-01	132	93.0	0.9695
29	-0.4143E-01	0	93.0	0.9090
30	-0.6943E-01	0	93.0	0.8522
31	-0.9744E-01	0	93.0	0.7990
32	-0.1254	0	93.0	0.7491
33	-0.1534	0	93.0	0.7024
34	-0.1814	0	93.0	0.6585
35	-0.2094	0	93.0	0.6174
36	-0.2374	0	93.0	0.5788
37	-0.2654	0	93.0	0.5427
38	-0.2934	0	93.0	0.5088
39	-0.3215	29	100.0	0.4770
40	-0.3495	0	100.0	0.4472
41		0	100.0	



```
T
I  PROGRAM:          PERCENTAGE HISTOGRAMS                                  NAME       AG
T
L  DATA:    DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY                  N                416
E  RUN:                                                                     X BAR      0.24182
S  TIME:    25/03/83 11:55:33                                               STD DEV    0.93040E-01

CELL LOWER LIMIT NMBR    %            ARITHMETIC VALUES                BAR INTERVAL = 0.25000    STD DEV   ARITH.LIMIT
   1                0   0.0
   2 -0.2117        0   0.0
   3 -0.1885        0   0.0
   4 -0.1652        0   0.0
   5 -0.1420        0   0.0
   6 -0.1187        0   0.0
   7 -0.9545E-01    0   0.0
   8 -0.7219E-01    0   0.0
   9 -0.4893E-01    0   0.0
  10 -0.2567E-01    0   0.0
  11 -0.2406E-02    0   0.0
  12  0.2085E-01    0   0.0
  13  0.4411E-01    0   0.0
  14  0.6737E-01    0   0.0
  15  0.9063E-01    0   0.0
  16  0.1139        0   0.0
  17  0.1372        0   0.0
  18  0.1604        0   0.0
  19  0.1837      317  76.2 ****************************************************************************
  20  0.2069        0   0.0
  21  0.2302        0   0.0
  22  0.2535        0   0.0
  23  0.2767        0   0.0
  24  0.3000       52  12.5 *************
  25  0.3232        0   0.0
  26  0.3465        0   0.0
  27  0.3698        0   0.0
  28  0.3930       34   8.2 ********
  29  0.4163        0   0.0
  30  0.4395        0   0.0
  31  0.4628        0   0.0
  32  0.4861        3   0.7 *
  33  0.5093        0   0.0
  34  0.5326        0   0.0
  35  0.5558        0   0.0
  36  0.5791        8   1.9 **
  37  0.6024        0   0.0
  38  0.6256        0   0.0
  39  0.6489        0   0.0
  40  0.6721        0   0.0
  41  0.6954        2   0.5
```

```
T
I   PROGRAM:          PERCENTAGE CUMULATIVE FREQUENCY PLOTS            NAME        AG
T
L   DATA:   DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY              N                  416
E   RUN:                                                                X BAR       0.24182
S   TIME:   25/03/83 11:55:33                                           STD DEV     0.93040E-01

CELL  LOWER LIMIT   NMBR      % |    ARITHMETIC VALUES             BAR INTERVAL = 0.12500   STD DEV |ARITH.LIMIT
   1  0.4686          13    3.1 |         *
   2  0.4570           0    3.1 |         *
   3  0.4453           0    3.1 |         *
   4  0.4337           0    3.1 |         *
   5  0.4221           0    3.1 |         *
   6  0.4105           0    3.1 |         *
   7  0.3988          34   11.3 |                 *
   8  0.3872           0   11.3 |                 *
   9  0.3756           0   11.3 |                 *
  10  0.3639           0   11.3 |                 *
  11  0.3523           0   11.3 |                 *
  12  0.3407           0   11.3 |                 *
  13  0.3290           0   11.3 |                 *
  14  0.3174           0   11.3 |                 *
  15  0.3058           0   11.3 |                 *
  16  0.2942          52   23.8 |                       *
  17  0.2825           0   23.8 |                       *
  18  0.2709           0   23.8 |                       *
  19  0.2593           0   23.8 |                       *
  20  0.2476           0   23.8 |                       *
  21  0.2360           0   23.8 |                       *
  22  0.2244           0   23.8 |                       *
  23  0.2127           0   23.8 |                       *
  24  0.2011           0   23.8 |                       *
  25  0.1895         317  100.0 |                                                              *
  26  0.1779           0  100.0 |                                                              *
  27  0.1662           0  100.0 |                                                              *
  28  0.1546           0  100.0 |                                                              *
  29  0.1430           0  100.0 |                                                              *
  30  0.1313           0  100.0 |                                                              *
  31  0.1197           0  100.0 |                                                              *
  32  0.1081           0  100.0 |                                                              *
  33  0.9645E-01       0  100.0 |                                                              *
  34  0.8482E-01       0  100.0 |                                                              *
  35  0.7319E-01       0  100.0 |                                                              *
  36  0.6156E-01       0  100.0 |                                                              *
  37  0.4993E-01       0  100.0 |                                                              *
  38  0.3830E-01       0  100.0 |                                                              *
  39  0.2667E-01       0  100.0 |                                                              *
  40  0.1504E-01       0  100.0 |                                                              *
  41                   0  100.0 |                                                              *
                                   1       5    10   20  30 40 50 60 70  80    90  95      99
```

```
T
I   PROGRAM:            PERCENTAGE HISTOGRAMS                                   NAME        AG
T
L   DATA:     DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY                    N                  416
E   RUN:                                                                        X BAR       -0.63730
S   TIME:     25/03/83 11:55:33                                                 STD DEV      0.12226

CELL LOWER LIMIT NMBR   %             LOGARITHMIC VALUES               BAR INTERVAL = 0.25000   STD DEV  ARITH.LIMIT
   1                0   0.0
   2   -1.233       0   0.0                                                                               0.5844E-01
   3   -1.203       0   0.0                                                                               0.6270E-01
   4   -1.172       0   0.0                                                                               0.6727E-01
   5   -1.142       0   0.0                                                                               0.7218E-01
   6   -1.111       0   0.0                                                                               0.7744E-01
   7   -1.080       0   0.0                                                                               0.8308E-01
   8   -1.050       0   0.0                                                                               0.8914E-01
   9   -1.019       0   0.0                                                                               0.9564E-01
  10  -0.9888       0   0.0                                                                               0.1026
  11  -0.9582       0   0.0                                                                               0.1101
  12  -0.9277       0   0.0                                                                               0.1181
  13  -0.8971       0   0.0                                                                               0.1267
  14  -0.8665       0   0.0                                                                               0.1360
  15  -0.8360       0   0.0                                                                               0.1459
  16  -0.8054       0   0.0                                                                               0.1565
  17  -0.7748       0   0.0                                                                               0.1679
  18  -0.7443       0   0.0                                                                               0.1802
  19  -0.7137     317  76.2 ****************************************************************************  0.1933
  20  -0.6831       0   0.0                                                                               0.2074
  21  -0.6526       0   0.0                                                                               0.2225
  22  -0.6220       0   0.0                                                                               0.2388
  23  -0.5914       0   0.0                                                                               0.2562
  24  -0.5609       0   0.0                                                                               0.2749
  25  -0.5303      52  12.5 *************                                                                 0.2949
  26  -0.4998       0   0.0                                                                               0.3164
  27  -0.4692       0   0.0                                                                               0.3395
  28  -0.4386       0   0.0                                                                               0.3642
  29  -0.4081      34   8.2 ********                                                                      0.3908
  30  -0.3775       0   0.0                                                                               0.4193
  31  -0.3469       0   0.0                                                                               0.4499
  32  -0.3164       3   0.7 *                                                                             0.4827
  33  -0.2858       0   0.0                                                                               0.5178
  34  -0.2552       0   0.0                                                                               0.5556
  35  -0.2247       8   1.9 **                                                                            0.5961
  36  -0.1941       0   0.0                                                                               0.6396
  37  -0.1635       1   0.2                                                                               0.6862
  38  -0.1330       0   0.0                                                                               0.7362
  39  -0.1024       0   0.0                                                                               0.7899
  40  -0.7185E-01   0   0.0                                                                               0.8475
  41  -0.4129E-01   1   0.2                                                                               0.9093
```

```
T
I  PROGRAM:           PERCENTAGE CUMULATIVE FREQUENCY PLOTS                       NAME        AG
T
L  DATA:    DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY                        N                 416
E  RUN:                                                                           X BAR       -0.63730
S  TIME:    25/03/83 11:55:33                                                     STD DEV      0.12226

CELL|LOWER LIMIT |NMBR|   %  |      LOGARITHMIC VALUES                BAR INTERVAL = 0.12500    STD DEV |ARITH.LIMIT|
   1|-0.3393     |  13|   3.1|     | *      |     |      |   |   |   |   |   |    |     |     |         |     | 0.4578    |
   2|-0.3546     |   0|   3.1|     | *      |     |      |   |   |   |   |   |    |     |     |         |     | 0.4420    |
   3|-0.3699     |   0|   3.1|     | *      |     |      |   |   |   |   |   |    |     |     |         |     | 0.4267    |
   4|-0.3851     |   0|   3.1|     | *      |     |      |   |   |   |   |   |    |     |     |         |     | 0.4120    |
   5|-0.4004     |  34|  11.3|     |        |     |*     |   |   |   |   |   |    |     |     |         |     | 0.3977    |
   6|-0.4157     |   0|  11.3|     |        |     |*     |   |   |   |   |   |    |     |     |         |     | 0.3840    |
   7|-0.4310     |   0|  11.3|     |        |     |*     |   |   |   |   |   |    |     |     |         |     | 0.3707    |
   8|-0.4463     |   0|  11.3|     |        |     |*     |   |   |   |   |   |    |     |     |         |     | 0.3579    |
   9|-0.4616     |   0|  11.3|     |        |     |*     |   |   |   |   |   |    |     |     |         |     | 0.3455    |
  10|-0.4768     |   0|  11.3|     |        |     |*     |   |   |   |   |   |    |     |     |         |     | 0.3336    |
  11|-0.4921     |   0|  11.3|     |        |     |*     |   |   |   |   |   |    |     |     |         |     | 0.3220    |
  12|-0.5074     |   0|  11.3|     |        |     |*     |   |   |   |   |   |    |     |     |         |     | 0.3109    |
  13|-0.5227     |   0|  11.3|     |        |     |*     |   |   |   |   |   |    |     |     |         |     | 0.3001    |
  14|-0.5380     |  52|  23.8|     |        |     |      |*  |   |   |   |   |    |     |     |         |     | 0.2898    |
  15|-0.5532     |   0|  23.8|     |        |     |      |*  |   |   |   |   |    |     |     |         |     | 0.2797    |
  16|-0.5685     |   0|  23.8|     |        |     |      |*  |   |   |   |   |    |     |     |         |     | 0.2701    |
  17|-0.5838     |   0|  23.8|     |        |     |      |*  |   |   |   |   |    |     |     |         |     | 0.2607    |
  18|-0.5991     |   0|  23.8|     |        |     |      |*  |   |   |   |   |    |     |     |         |     | 0.2517    |
  19|-0.6144     |   0|  23.8|     |        |     |      |*  |   |   |   |   |    |     |     |         |     | 0.2430    |
  20|-0.6297     |   0|  23.8|     |        |     |      |*  |   |   |   |   |    |     |     |         |     | 0.2346    |
  21|-0.6449     |   0|  23.8|     |        |     |      |*  |   |   |   |   |    |     |     |         |     | 0.2265    |
  22|-0.6602     |   0|  23.8|     |        |     |      |*  |   |   |   |   |    |     |     |         |     | 0.2187    |
  23|-0.6755     |   0|  23.8|     |        |     |      |*  |   |   |   |   |    |     |     |         |     | 0.2111    |
  24|-0.6908     |   0|  23.8|     |        |     |      |*  |   |   |   |   |    |     |     |         |     | 0.2038    |
  25|-0.7061     | 317| 100.0|     |        |     |      |   |   |   |   |   |    |     |     |         |   * | 0.1968    |
  26|-0.7214     |   0| 100.0|     |        |     |      |   |   |   |   |   |    |     |     |         |   * | 0.1900    |
  27|-0.7366     |   0| 100.0|     |        |     |      |   |   |   |   |   |    |     |     |         |   * | 0.1834    |
  28|-0.7519     |   0| 100.0|     |        |     |      |   |   |   |   |   |    |     |     |         |   * | 0.1770    |
  29|-0.7672     |   0| 100.0|     |        |     |      |   |   |   |   |   |    |     |     |         |   * | 0.1709    |
  30|-0.7825     |   0| 100.0|     |        |     |      |   |   |   |   |   |    |     |     |         |   * | 0.1650    |
  31|-0.7978     |   0| 100.0|     |        |     |      |   |   |   |   |   |    |     |     |         |   * | 0.1593    |
  32|-0.8130     |   0| 100.0|     |        |     |      |   |   |   |   |   |    |     |     |         |   * | 0.1538    |
  33|-0.8283     |   0| 100.0|     |        |     |      |   |   |   |   |   |    |     |     |         |   * | 0.1485    |
  34|-0.8436     |   0| 100.0|     |        |     |      |   |   |   |   |   |    |     |     |         |   * | 0.1433    |
  35|-0.8589     |   0| 100.0|     |        |     |      |   |   |   |   |   |    |     |     |         |   * | 0.1384    |
  36|-0.8742     |   0| 100.0|     |        |     |      |   |   |   |   |   |    |     |     |         |   * | 0.1336    |
  37|-0.8895     |   0| 100.0|     |        |     |      |   |   |   |   |   |    |     |     |         |   * | 0.1290    |
  38|-0.9047     |   0| 100.0|     |        |     |      |   |   |   |   |   |    |     |     |         |   * | 0.1245    |
  39|-0.9200     |   0| 100.0|     |        |     |      |   |   |   |   |   |    |     |     |         |   * | 0.1202    |
  40|-0.9353     |   0| 100.0|     |        |     |      |   |   |   |   |   |    |     |     |         |   * | 0.1161    |
  41|            |   0| 100.0|     |        |     |      |   |   |   |   |   |    |     |     |         |   * |           |
                                   1        5     10     20  30  40  50  60  70   80    90    95        99
```

```
T
I  PROGRAM:          PERCENTAGE HISTOGRAMS                        NAME       CO
T
L  DATA:    DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY        N              416
E  RUN:                                                           X BAR      7.2188
S  TIME:    25/03/83 11:55:33                                     STD DEV    2.8518

CELL|LOWER LIMIT|NMBR|  %  |       ARITHMETIC VALUES                 BAR INTERVAL = 0.25000     STD DEV |ARITH.LIMIT
   1|           |   0|  0.0|
   2|  -6.684   |   0|  0.0|
   3|  -5.971   |   0|  0.0|
   4|  -5.258   |   0|  0.0|
   5|  -4.545   |   0|  0.0|
   6|  -3.832   |   0|  0.0|
   7|  -3.119   |   0|  0.0|
   8|  -2.406   |   0|  0.0|
   9|  -1.693   |   0|  0.0|
  10| -0.9802   |   0|  0.0|
  11| -0.2672   |   0|  0.0|
  12|  0.4457   |   3|  0.7|*
  13|   1.159   |   0|  0.0|
  14|   1.872   |   9|  2.2|**
  15|   2.585   |  18|  4.3|****
  16|   3.298   |  31|  7.5|*******
  17|   4.010   |   0|  0.0|
  18|   4.723   |  49| 11.8|************
  19|   5.436   |  53| 12.7|*************
  20|   6.149   |   0|  0.0|
  21|   6.862   |  77| 18.5|*******************
  22|   7.575   |  55| 13.2|*************
  23|   8.288   |  56| 13.5|*************
  24|   9.001   |   0|  0.0|
  25|   9.714   |  29|  7.0|*******
  26|   10.43   |  14|  3.4|***
  27|   11.14   |   0|  0.0|
  28|   11.85   |   4|  1.0|*
  29|   12.57   |   8|  1.9|**
  30|   13.28   |   0|  0.0|
  31|   13.99   |   5|  1.2|*
  32|   14.70   |   3|  0.7|*
  33|   15.42   |   1|  0.2|
  34|   16.13   |   0|  0.0|
  35|   16.84   |   0|  0.0|
  36|   17.56   |   0|  0.0|
  37|   18.27   |   0|  0.0|
  38|   18.98   |   0|  0.0|
  39|   19.70   |   0|  0.0|
  40|   20.41   |   0|  0.0|
  41|   21.12   |   1|  0.2|
```

TITLES

PROGRAM: PERCENTAGE CUMULATIVE FREQUENCY PLOTS

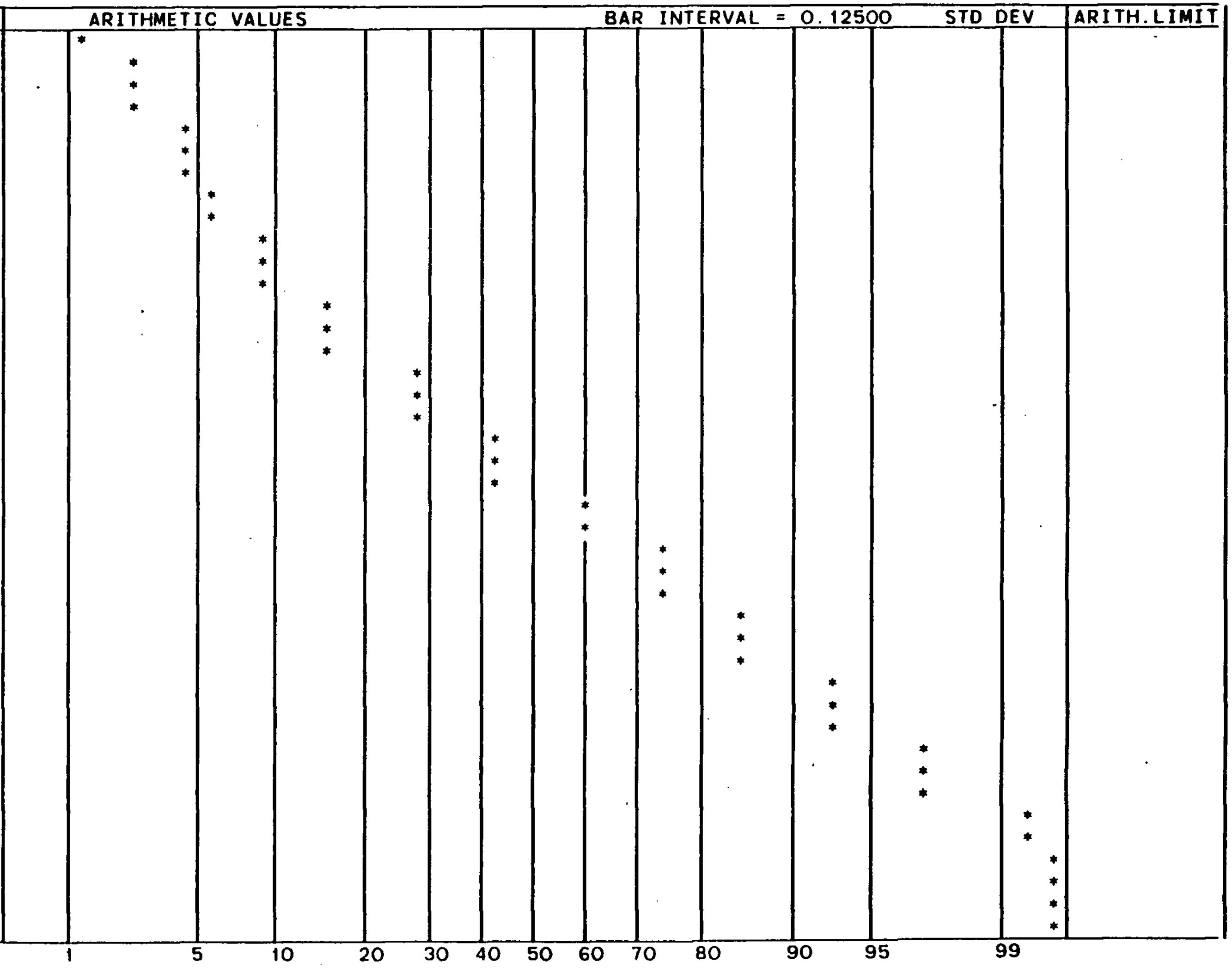
DATA: DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY

RUN:

TIME: 25/03/83 11:55:33

NAME	CO
N	416
X BAR	7.2188
STD DEV	2.8518

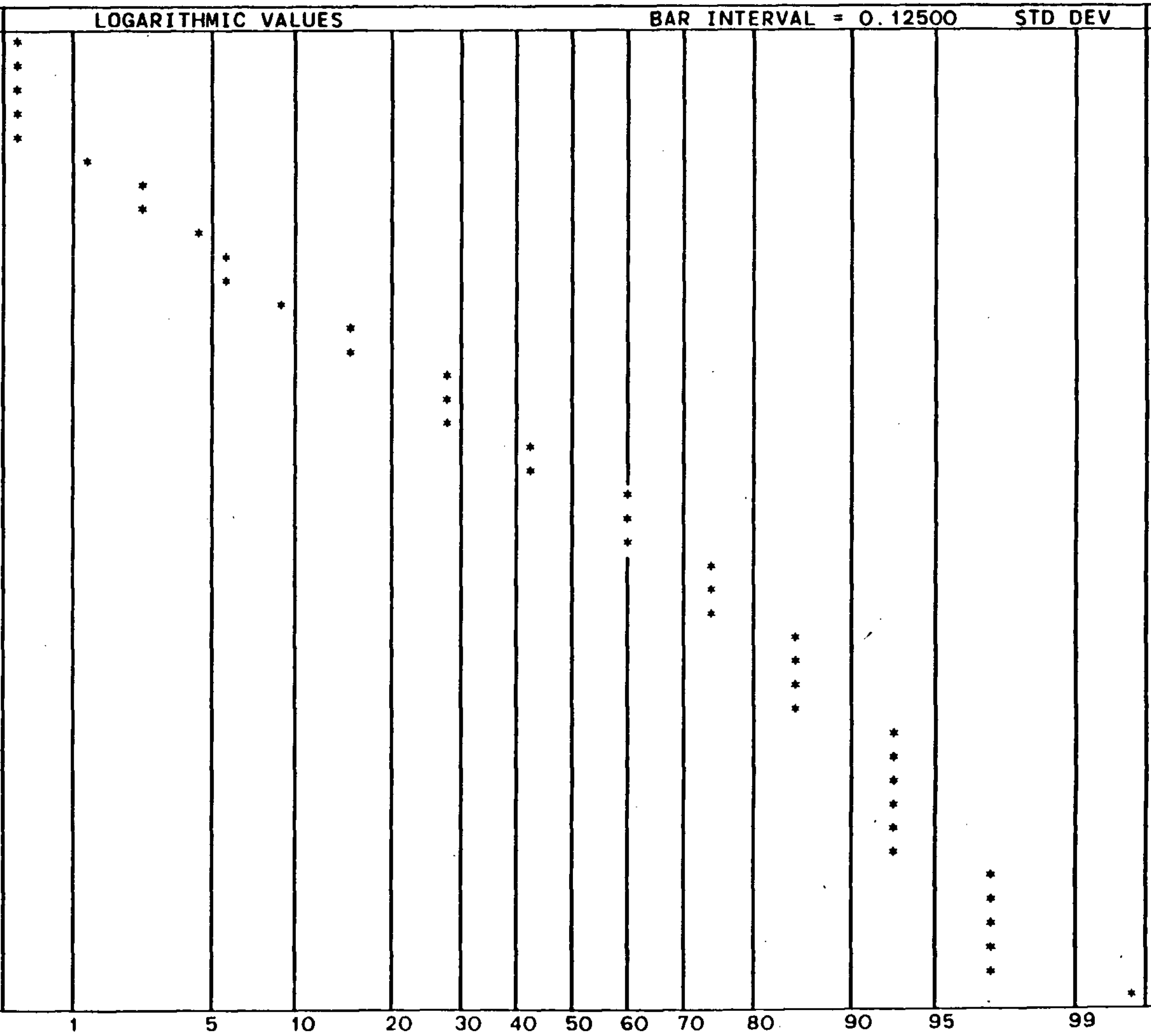
CELL	LOWER LIMIT	NMBR	%
1	14.17	5	1.2
2	13.81	5	2.4
3	13.46	0	2.4
4	13.10	0	2.4
5	12.74	8	4.3
6	12.39	0	4.3
7	12.03	0	4.3
8	11.67	4	5.3
9	11.32	0	5.3
10	10.96	14	8.7
11	10.61	0	8.7
12	10.25	0	8.7
13	9.892	29	15.6
14	9.536	0	15.6
15	9.179	0	15.6
16	8.823	56	29.1
17	8.466	0	29.1
18	8.110	0	29.1
19	7.753	55	42.3
20	7.397	0	42.3
21	7.041	0	42.3
22	6.684	77	60.8
23	6.328	0	60.8
24	5.971	53	73.6
25	5.615	0	73.6
26	5.258	0	73.6
27	4.902	49	85.3
28	4.545	0	85.3
29	4.189	0	85.3
30	3.832	31	92.8
31	3.476	0	92.8
32	3.119	0	92.8
33	2.763	18	97.1
34	2.406	0	97.1
35	2.050	0	97.1
36	1.693	9	99.3
37	1.337	0	99.3
38	0.9804	3	100.0
39	0.6240	0	100.0
40	0.2675	0	100.0
41		0	100.0



```
T
I  PROGRAM:          PERCENTAGE HISTOGRAMS                            NAME      CO
T
L  DATA:    DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY            N              416
E  RUN:                                                               X BAR     0.82302
S  TIME:    25/03/83 11:55:33                                         STD DEV   0.18623

CELL LOWER LIMIT NMBR   %    LOGARITHMIC VALUES            BAR INTERVAL = 0.25000   STD DEV   ARITH.LIMIT
   1                0   0.0
   2 -0.8485E-01    0   0.0                                                                   0.8225
   3 -0.3830E-01    3   0.7 *                                                                 0.9156
   4  0.8262E-02    0   0.0                                                                    1.019
   5  0.5482E-01    0   0.0                                                                    1.135
   6  0.1014        0   0.0                                                                    1.263
   7  0.1479        0   0.0                                                                    1.406
   8  0.1945        0   0.0                                                                    1.565
   9  0.2411        0   0.0                                                                    1.742
  10  0.2876        9   2.2 **                                                                 1.939
  11  0.3342        0   0.0                                                                    2.159
  12  0.3807        0   0.0                                                                    2.403
  13  0.4273        0   0.0                                                                    2.675
  14  0.4738       18   4.3 ****                                                               2.977
  15  0.5204        0   0.0                                                                    3.314
  16  0.5670       31   7.5 *******                                                            3.689
  17  0.6135        0   0.0                                                                    4.107
  18  0.6601       49  11.8 ************                                                       4.572
  19  0.7066        0   0.0                                                                    5.089
  20  0.7532       53  12.7 *************                                                      5.665
  21  0.7997       77  18.5 *******************                                                6.306
  22  0.8463        0   0.0                                                                    7.019
  23  0.8929       55  13.2 *************                                                      7.814
  24  0.9394       56  13.5 *************                                                      8.698
  25  0.9860       29   7.0 *******                                                            9.682
  26    1.033      14   3.4 ***                                                                10.78
  27    1.079      12   2.9 ***                                                                12.00
  28    1.126       5   1.2 *                                                                  13.36
  29    1.172       4   1.0 *                                                                  14.87
  30    1.219       0   0.0                                                                    16.55
  31    1.265       0   0.0                                                                    18.42
  32    1.312       0   0.0                                                                    20.51
  33    1.358       0   0.0                                                                    22.83
  34    1.405       0   0.0                                                                    25.41
  35    1.452       1   0.2                                                                    28.28
  36    1.498       0   0.0                                                                    31.49
  37    1.545       0   0.0                                                                    35.05
  38    1.591       0   0.0                                                                    39.01
  39    1.638       0   0.0                                                                    43.43
  40    1.684       0   0.0                                                                    48.34
  41    1.731       0   0.0                                                                    53.81
```

TITLES			
PROGRAM:	PERCENTAGE CUMULATIVE FREQUENCY PLOTS	NAME	CO
DATA:	DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY	N	416
RUN:		X BAR	0.82302
TIME:	25/03/83 11:55:33	STD DEV	0.18623



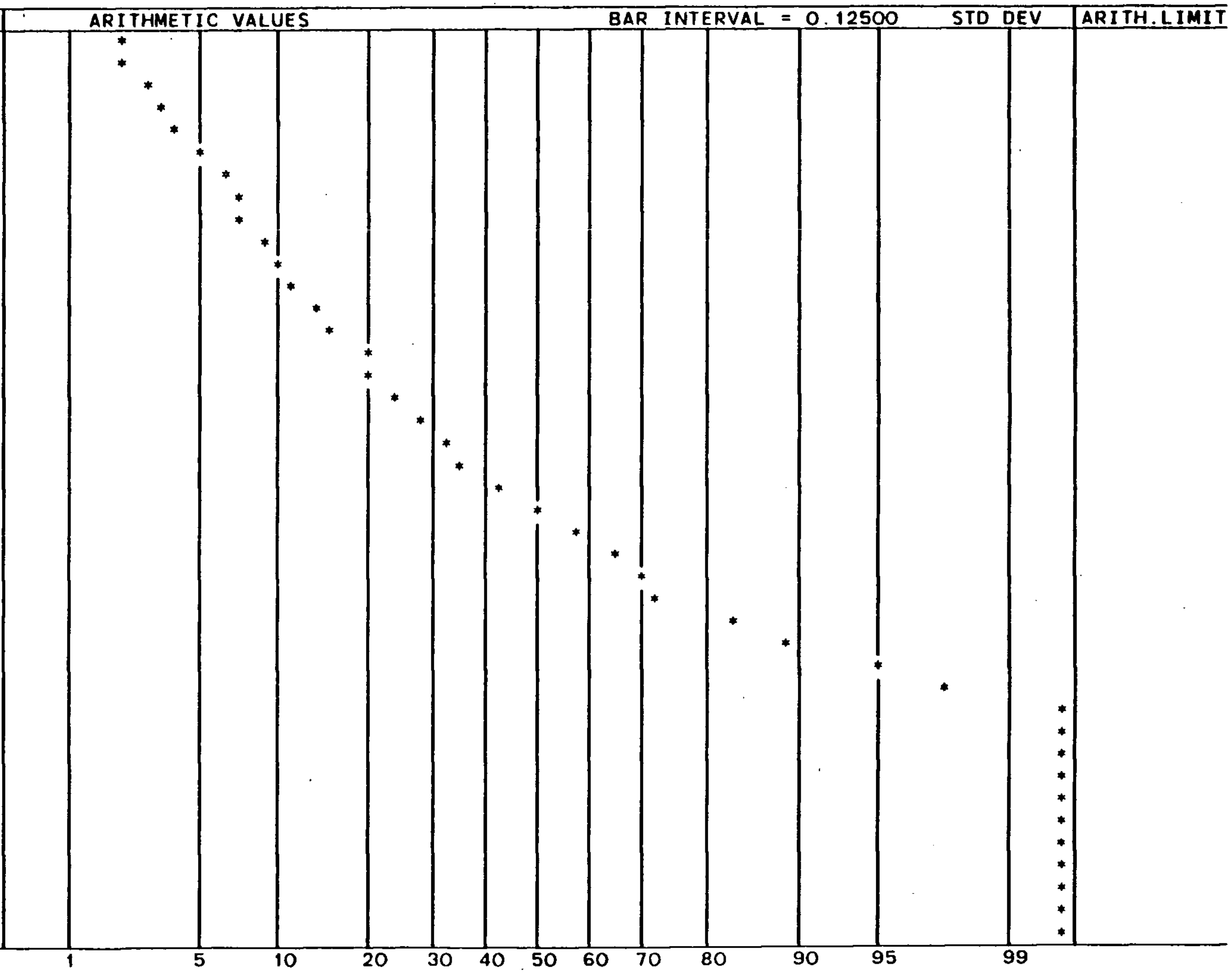
CELL	LOWER LIMIT	NMBR	%	ARITH.LIMIT
1	1.277	1	0.2	18.92
2	1.254	0	0.2	17.93
3	1.230	0	0.2	17.00
4	1.207	0	0.2	16.11
5	1.184	1	0.5	15.27
6	1.161	3	1.2	14.47
7	1.137	5	2.4	13.72
8	1.114	0	2.4	13.00
9	1.091	8	4.3	12.32
10	1.067	4	5.3	11.68
11	1.044	0	5.3	11.07
12	1.021	14	8.7	10.49
13	0.9976	29	15.6	9.945
14	0.9743	0	15.6	9.426
15	0.9511	56	29.1	8.934
16	0.9278	0	29.1	8.468
17	0.9045	0	29.1	8.026
18	0.8812	55	42.3	7.607
19	0.8579	0	42.3	7.210
20	0.8347	77	60.8	6.834
21	0.8114	0	60.8	6.477
22	0.7881	0	60.8	6.139
23	0.7648	53	73.6	5.819
24	0.7415	0	73.6	5.515
25	0.7183	0	73.6	5.227
26	0.6950	49	85.3	4.954
27	0.6717	0	85.3	4.696
28	0.6484	0	85.3	4.451
29	0.6252	0	85.3	4.218
30	0.6019	31	92.8	3.998
31	0.5786	0	92.8	3.790
32	0.5553	0	92.8	3.592
33	0.5320	0	92.8	3.404
34	0.5088	0	92.8	3.227
35	0.4855	0	92.8	3.058
36	0.4622	18	97.1	2.899
37	0.4389	0	97.1	2.747
38	0.4156	0	97.1	2.604
39	0.3924	0	97.1	2.468
40	0.3691	0	97.1	2.339
41		12	100.0	

```
T
I  PROGRAM:          PERCENTAGE HISTOGRAMS                          NAME       MN
T
L  DATA:   DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY           N               416
E  RUN:                                                             X BAR       815.78
S  TIME:   25/03/83 11:55:33                                        STD DEV     519.16

CELL LOWER LIMIT NMBR    %         ARITHMETIC VALUES                          BAR INTERVAL = 0.25000    STD DEV   ARITH.LIMIT
   1                O   0.0
   2   -1715.       O   0.0
   3   -1585.       O   0.0
   4   -1456.       O   0.0
   5   -1326.       O   0.0
   6   -1196.       O   0.0
   7   -1066.       O   0.0
   8   -936.4       O   0.0
   9   -806.6       O   0.0
  10   -676.8       O   0.0
  11   -547.0       O   0.0
  12   -417.2       O   0.0
  13   -287.4       O   0.0
  14   -157.6       O   0.0
  15   -27.85       O   0.0
  16    101.9      11   2.6 ***
  17    231.7      54  13.0 *************
  18    361.5      56  13.5 *************
  19    491.3      42  10.1 **********
  20    621.1      65  15.6 ****************
  21    750.9      49  11.8 ************
  22    880.7      34   8.2 ********
  23    1010.      20   4.8 *****
  24    1140.      27   6.5 ******
  25    1270.       9   2.2 **
  26    1400.      14   3.4 ***
  27    1530.       8   1.9 **
  28    1659.       7   1.7 **
  29    1789.       9   2.2 **
  30    1919.       2   0.5
  31    2049.       1   0.2
  32    2179.       3   0.7 *
  33    2308.       1   0.2
  34    2438.       O   0.0
  35    2568.       1   0.2
  36    2698.       1   0.2
  37    2828.       O   0.0
  38    2957.       O   0.0
  39    3087.       O   0.0
  40    3217.       O   0.0
  41    3347.       2   0.5
```

TITLES			
PROGRAM: PERCENTAGE CUMULATIVE FREQUENCY PLOTS		NAME	MN
DATA: DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY		N	416
RUN:		X BAR	815.78
TIME: 25/03/83 11:55:33		STD DEV	519.16

CELL	LOWER LIMIT	NMBR	%
1	2081.	8	1.9
2	2016.	1	2.2
3	1951.	2	2.6
4	1887.	2	3.1
5	1822.	3	3.8
6	1757.	4	4.8
7	1692.	6	6.3
8	1627.	3	7.0
9	1562.	2	7.5
10	1497.	7	9.1
11	1432.	4	10.1
12	1367.	7	11.8
13	1302.	6	13.2
14	1238.	11	15.9
15	1173.	17	20.0
16	1108.	4	20.9
17	1043.	17	25.0
18	978.0	13	28.1
19	913.1	17	32.2
20	848.2	15	35.8
21	783.3	29	42.8
22	718.4	26	49.0
23	653.5	33	57.0
24	588.6	29	63.9
25	523.8	23	69.5
26	458.9	14	72.8
27	394.0	40	82.5
28	329.1	25	88.5
29	264.2	27	95.0
30	199.3	11	97.6
31	134.4	8	99.5
32	69.49	2	100.0
33	4.599	0	100.0
34	-60.30	0	100.0
35	-125.2	0	100.0
36	-190.1	0	100.0
37	-255.0	0	100.0
38	-319.9	0	100.0
39	-384.8	0	100.0
40	-449.7	0	100.0
41		0	100.0

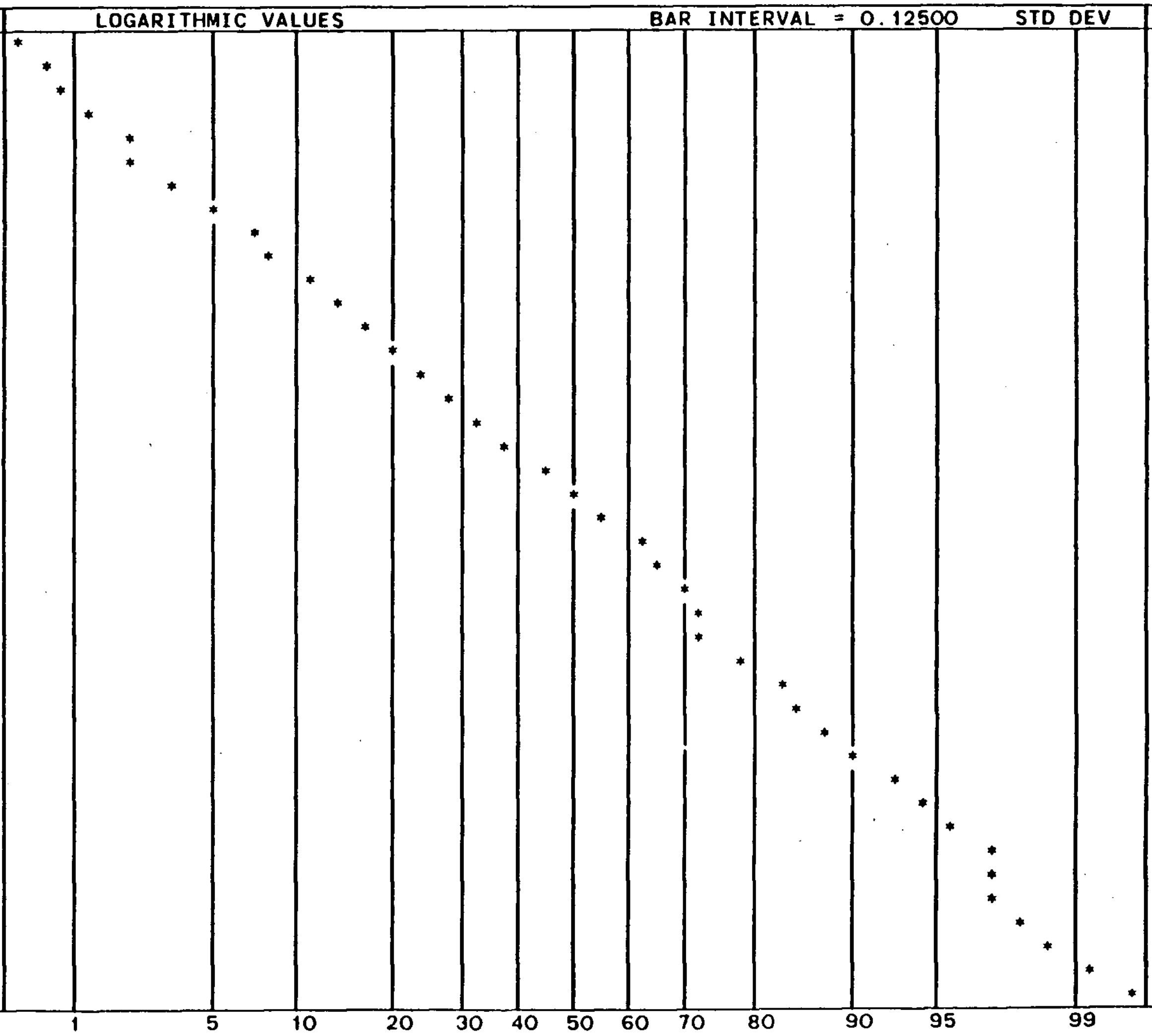


```
T
I  PROGRAM:          PERCENTAGE HISTOGRAMS                          NAME      MN
T
L  DATA:    DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY          N              416
E  RUN:                                                             X BAR       2.8369
S  TIME:    25/03/83 11:55:33                                       STD DEV    0.25878

CELL LOWER LIMIT NMBR    %   LOGARITHMIC VALUES            BAR INTERVAL = 0.25000    STD DEV  ARITH.LIMIT
   1                0   0.0
   2    1.575       0   0.0                                                                       37.61
   3    1.640       0   0.0                                                                       43.65
   4    1.705       0   0.0                                                                       50.66
   5    1.769       0   0.0                                                                       58.80
   6    1.834       0   0.0                                                                       68.25
   7    1.899       0   0.0                                                                       79.21
   8    1.963       1   0.2                                                                       91.93
   9    2.028       1   0.2                                                                       106.7
  10    2.093       1   0.2                                                                       123.8
  11    2.158       2   0.5                                                                       143.7
  12    2.222       4   1.0 *                                                                     166.8
  13    2.287       2   0.5                                                                       193.6
  14    2.352      10   2.4 **                                                                    224.7
  15    2.416      16   3.8 ****                                                                  260.8
  16    2.481      24   5.8 ******                                                                302.7
  17    2.546      22   5.3 *****                                                                 351.3
  18    2.610      36   8.7 *********                                                             407.8
  19    2.675      15   3.6 ****                                                                  473.3
  20    2.740      35   8.4 ********                                                              549.3
  21    2.805      53  12.7 *************                                                         637.5
  22    2.869      48  11.5 ************                                                          740.0
  23    2.934      31   7.5 *******                                                               858.8
  24    2.999      30   7.2 *******                                                               996.8
  25    3.063      33   7.9 ********                                                              1157.
  26    3.128      20   4.8 *****                                                                 1343.
  27    3.193      16   3.8 ****                                                                  1558.
  28    3.257       8   1.9 **                                                                    1809.
  29    3.322       4   1.0 *                                                                     2099.
  30    3.387       2   0.5                                                                       2437.
  31    3.451       0   0.0                                                                       2828.
  32    3.516       1   0.2                                                                       3282.
  33    3.581       0   0.0                                                                       3809.
  34    3.646       0   0.0                                                                       4421.
  35    3.710       1   0.2                                                                       5132.
  36    3.775       0   0.0                                                                       5956.
  37    3.840       0   0.0                                                                       6913.
  38    3.904       0   0.0                                                                       8023.
  39    3.969       0   0.0                                                                       9312.
  40    4.034       0   0.0                                                                  0.1081E+05
  41    4.098       0   0.0                                                                  0.1254E+05
```

TITLES			NAME	MN
PROGRAM:	PERCENTAGE CUMULATIVE FREQUENCY PLOTS			
DATA:	DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY		N	416
RUN:			X BAR	2.8369
TIME:	25/03/83 11:55:33		STD DEV	0.25878

CELL	LOWER LIMIT	NMBR	%	ARITH.LIMIT
1	3.468	2	0.5	2935.
2	3.435	1	0.7	2725.
3	3.403	1	1.0	2529.
4	3.371	1	1.2	2347.
5	3.338	3	1.9	2179.
6	3.306	1	2.2	2023.
7	3.274	4	3.1	1877.
8	3.241	8	5.0	1743.
9	3.209	8	7.0	1618.
10	3.177	6	8.4	1501.
11	3.144	14	11.8	1394.
12	3.112	9	13.9	1294.
13	3.079	9	16.1	1201.
14	3.047	19	20.7	1115.
15	3.015	18	25.0	1035.
16	2.982	15	28.6	960.3
17	2.950	19	33.2	891.4
18	2.918	21	38.2	827.4
19	2.885	28	45.0	768.0
20	2.853	18	49.3	712.9
21	2.821	22	54.6	661.7
22	2.788	30	61.8	614.2
23	2.756	13	64.9	570.2
24	2.724	18	69.2	529.2
25	2.691	7	70.9	491.2
26	2.659	8	72.8	456.0
27	2.627	22	78.1	423.3
28	2.594	18	82.5	392.9
29	2.562	8	84.4	364.7
30	2.530	14	87.7	338.5
31	2.497	7	89.4	314.2
32	2.465	15	93.0	291.7
33	2.433	6	94.5	270.7
34	2.400	6	95.9	251.3
35	2.368	6	97.4	233.3
36	2.335	0	97.4	216.5
37	2.303	0	97.4	201.0
38	2.271	2	97.8	186.5
39	2.238	3	98.6	173.2
40	2.206	2	99.0	160.7
41		4	100.0	



```
T
I   PROGRAM:          PERCENTAGE HISTOGRAMS                                NAME       F
T
L   DATA:    DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY                N               416
E   RUN:                                                                   X BAR      415.07
S   TIME:    25/03/83 11:55:33                                             STD DEV    157.18

CELL LOWER LIMIT NMBR   %         ARITHMETIC VALUES            BAR INTERVAL = 0.25000   STD DEV  ARITH.LIMIT
   1                0   0.0
   2   -351.2       0   0.0
   3   -311.9       0   0.0
   4   -272.6       0   0.0
   5   -233.3       0   0.0
   6   -194.0       0   0.0
   7   -154.7       0   0.0
   8   -115.4       0   0.0
   9   -76.12       0   0.0
  10   -36.83       0   0.0
  11    2.467       0   0.0
  12    41.76       0   0.0
  13    81.06       4   1.0  *
  14    120.4       2   0.5
  15    159.7       6   1.4  *
  16    198.9      25   6.0  ******
  17    238.2      34   8.2  ********
  18    277.5      49  11.8  ************
  19    316.8      48  11.5  ************
  20    356.1      42  10.1  **********
  21    395.4      47  11.3  ***********
  22    434.7      39   9.4  *********
  23    474.0      30   7.2  *******
  24    513.3      25   6.0  ******
  25    552.6      18   4.3  ****
  26    591.9      11   2.6  ***
  27    631.2       6   1.4  *
  28    670.5       9   2.2  **
  29    709.8       2   0.5
  30    749.1       4   1.0  *
  31    788.4       5   1.2  *
  32    827.7       5   1.2  *
  33    867.0       1   0.2
  34    906.3       1   0.2
  35    945.6       1   0.2
  36    984.9       1   0.2
  37    1024.       0   0.0
  38    1063.       1   0.2
  39    1103.       0   0.0
  40    1142.       0   0.0
  41    1181.       0   0.0
```

TITLES

PROGRAM: PERCENTAGE CUMULATIVE FREQUENCY PLOTS

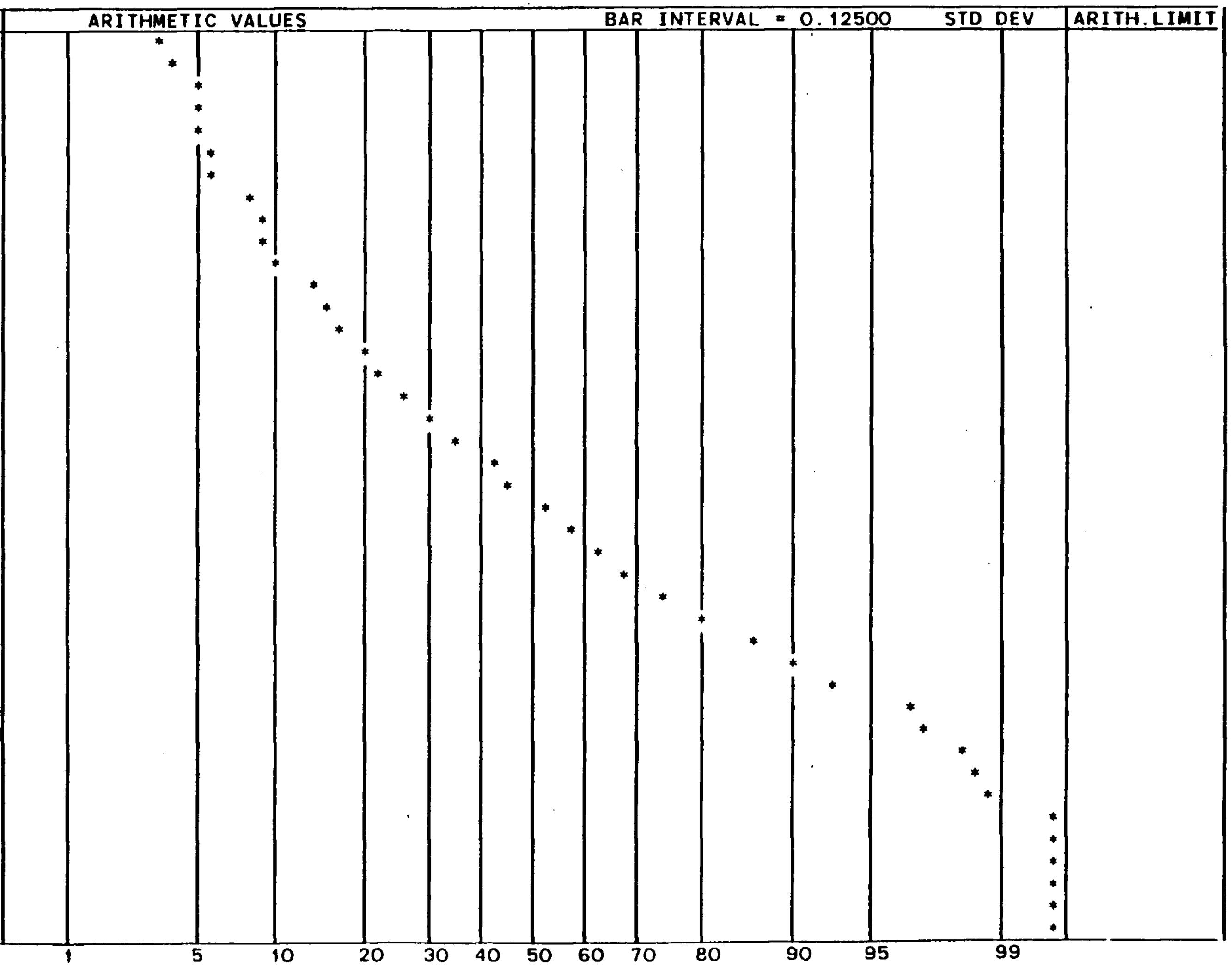
DATA: DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY

RUN:

TIME: 25/03/83 11:55:33

NAME	F
N	416
X BAR	415.07
STD DEV	157.18

CELL	LOWER LIMIT	NMBR	%
1	798.2	14	3.4
2	778.6	2	3.8
3	758.9	3	4.6
4	739.3	0	4.6
5	719.6	2	5.0
6	700.0	3	5.8
7	680.3	0	5.8
8	660.7	10	8.2
9	641.0	2	8.7
10	621.4	1	8.9
11	601.7	7	10.6
12	582.1	11	13.2
13	562.4	9	15.4
14	542.8	7	17.1
15	523.1	10	19.5
16	503.5	10	21.9
17	483.8	15	25.5
18	464.2	20	30.3
19	444.5	22	35.6
20	424.9	26	41.8
21	405.2	16	45.7
22	385.6	32	53.4
23	366.0	22	58.7
24	346.3	19	63.2
25	326.7	16	67.1
26	307.0	26	73.3
27	287.4	26	79.6
28	267.7	29	86.5
29	248.1	13	89.7
30	228.4	15	93.3
31	208.8	15	96.9
32	189.1	2	97.4
33	169.5	4	98.3
34	149.8	1	98.6
35	130.2	1	98.8
36	110.5	4	99.8
37	90.88	1	100.0
38	71.23	0	100.0
39	51.59	0	100.0
40	31.94	0	100.0
41		0	100.0

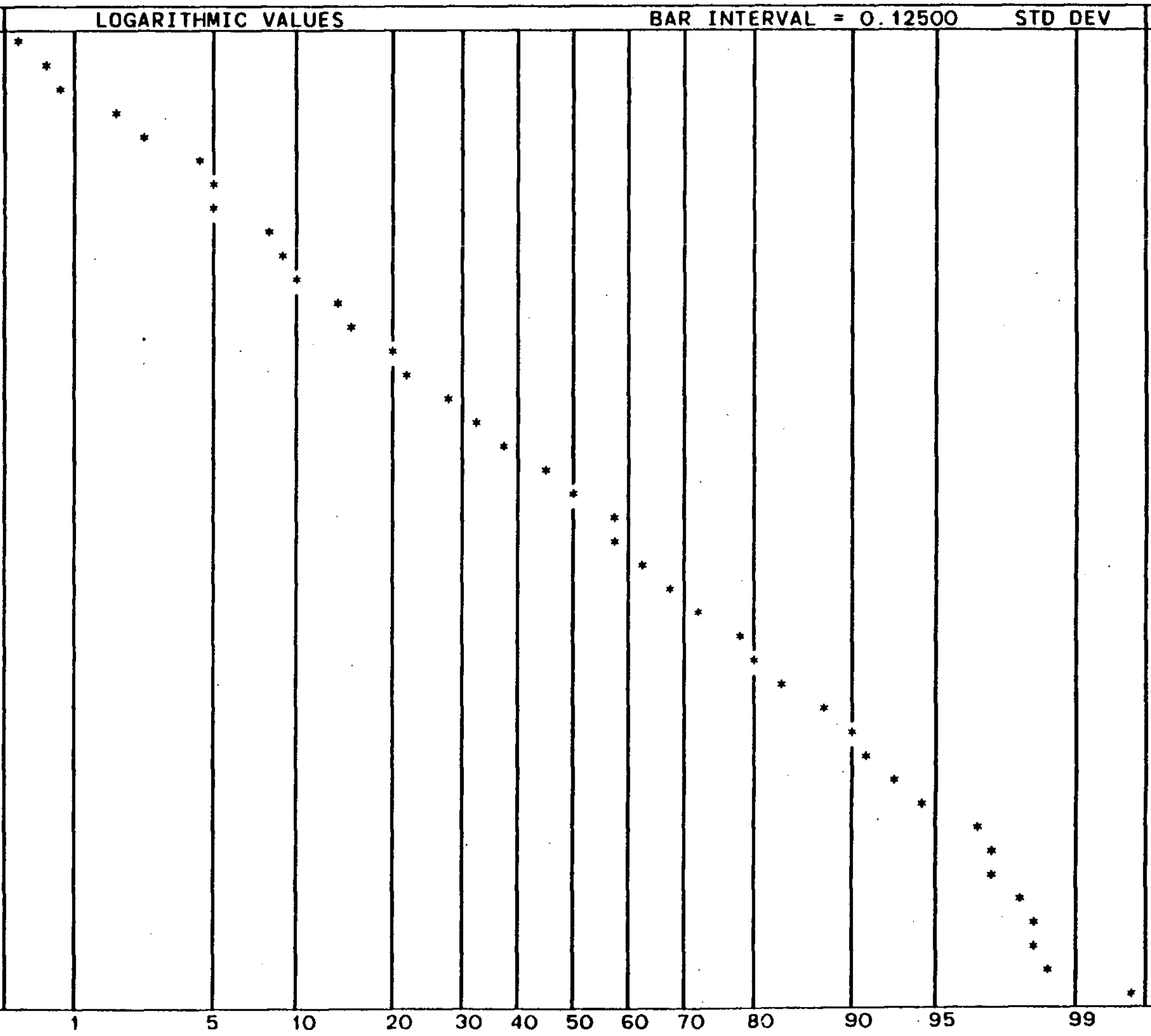


```
T
I   PROGRAM:          PERCENTAGE HISTOGRAMS                                    NAME      F
T
L   DATA:    DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY                    N              416
E   RUN:                                                                       X BAR       2.5880
S   TIME:    25/03/83 11:55:33                                                 STD DEV    0.16456

CELL|LOWER LIMIT|NMBR|   %  |      LOGARITHMIC VALUES                     BAR INTERVAL = 0.25000     STD DEV |ARITH.LIMIT
   1|           |   0|   0.0|                                                                                 |
   2|   1.786   |   0|   0.0|                                                                                 |   61.07
   3|   1.827   |   0|   0.0|                                                                                 |   67.14
   4|   1.868   |   0|   0.0|                                                                                 |   73.81
   5|   1.909   |   0|   0.0|                                                                                 |   81.14
   6|   1.950   |   0|   0.0|                                                                                 |   89.21
   7|   1.992   |   1|   0.2|                                                                                 |   98.07
   8|   2.033   |   0|   0.0|                                                                                 |   107.8
   9|   2.074   |   4|   1.0|*                                                                                |   118.5
  10|   2.115   |   1|   0.2|                                                                                 |   130.3
  11|   2.156   |   0|   0.0|                                                                                 |   143.2
  12|   2.197   |   3|   0.7|*                                                                                |   157.5
  13|   2.238   |   3|   0.7|*                                                                                |   173.1
  14|   2.280   |   1|   0.2|                                                                                 |   190.3
  15|   2.321   |  24|   5.8|******                                                                           |   209.2
  16|   2.362   |  13|   3.1|***                                                                              |   230.0
  17|   2.403   |  21|   5.0|*****                                                                            |   252.9
  18|   2.444   |  40|   9.6|**********                                                                       |   278.0
  19|   2.485   |  34|   8.2|********                                                                         |   305.6
  20|   2.526   |  27|   6.5|******                                                                           |   336.0
  21|   2.567   |  54|  13.0|*************                                                                    |   369.4
  22|   2.609   |  42|  10.1|**********                                                                       |   406.1
  23|   2.650   |  45|  10.8|***********                                                                      |   446.4
  24|   2.691   |  28|   6.7|*******                                                                          |   490.8
  25|   2.732   |  28|   6.7|*******                                                                          |   539.5
  26|   2.773   |  11|   2.6|***                                                                              |   593.2
  27|   2.814   |  15|   3.6|****                                                                             |   652.1
  28|   2.855   |   6|   1.4|*                                                                                |   716.9
  29|   2.897   |  10|   2.4|**                                                                               |   788.1
  30|   2.938   |   2|   0.5|                                                                                 |   866.4
  31|   2.979   |   2|   0.5|                                                                                 |   952.5
  32|   3.020   |   1|   0.2|                                                                                 |   1047.
  33|   3.061   |   0|   0.0|                                                                                 |   1151.
  34|   3.102   |   0|   0.0|                                                                                 |   1266.
  35|   3.143   |   0|   0.0|                                                                                 |   1391.
  36|   3.185   |   0|   0.0|                                                                                 |   1530.
  37|   3.226   |   0|   0.0|                                                                                 |   1681.
  38|   3.267   |   0|   0.0|                                                                                 |   1849.
  39|   3.308   |   0|   0.0|                                                                                 |   2032.
  40|   3.349   |   0|   0.0|                                                                                 |   2234.
  41|   3.390   |   0|   0.0|                                                                                 |   2456.
```

T I T L E S			NAME	F
	PROGRAM:	PERCENTAGE CUMULATIVE FREQUENCY PLOTS		
	DATA:	DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY	N	416
	RUN:		X BAR	2.5880
	TIME:	25/03/83 11:55:33	STD DEV	0.16456

LOGARITHMIC VALUES BAR INTERVAL = 0.12500 STD DEV



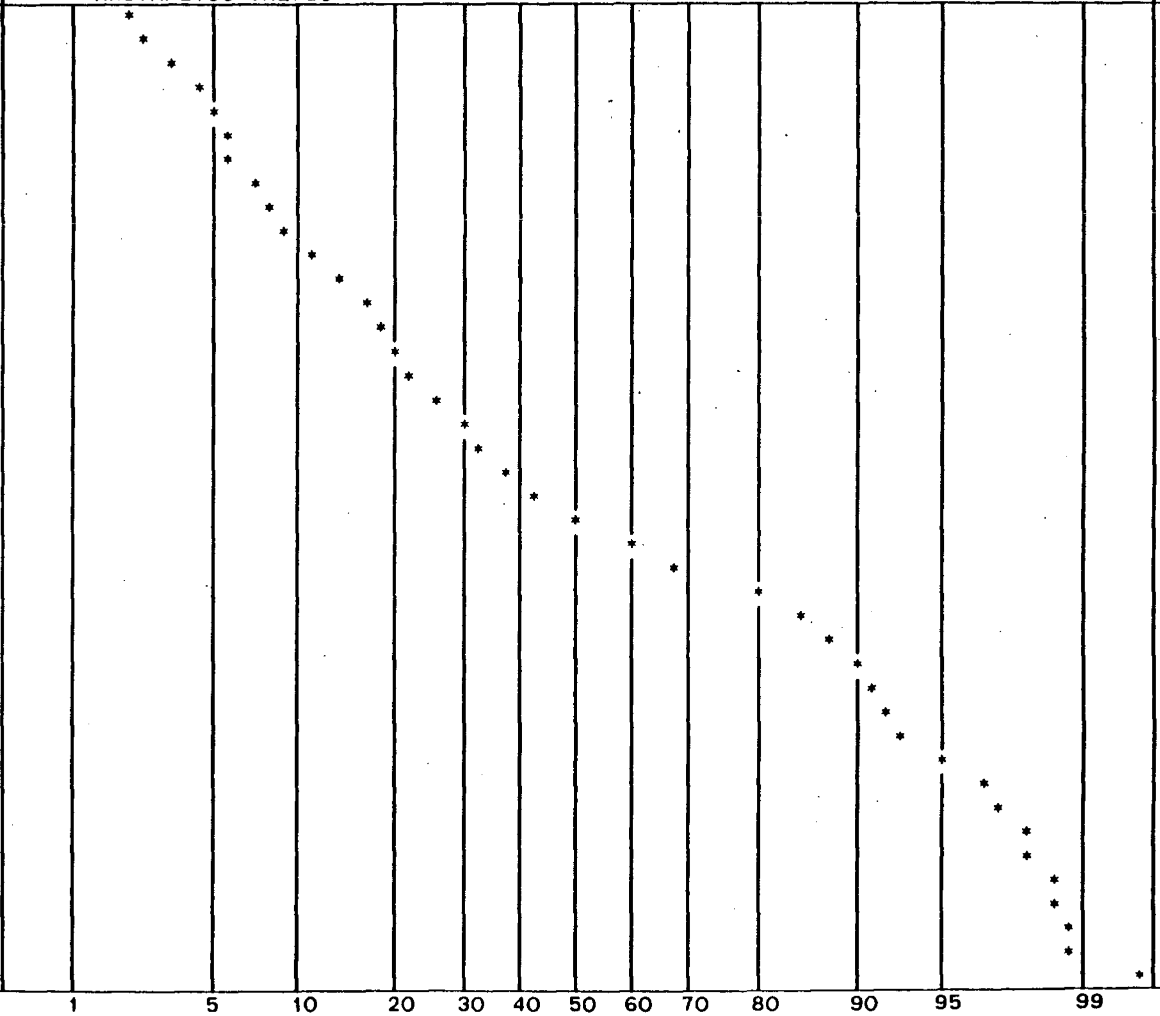
CELL	LOWER LIMIT	NMBR	%	ARITH.LIMIT
1	2.989	2	0.5	975.3
2	2.969	1	0.7	930.2
3	2.948	1	1.0	887.1
4	2.927	3	1.7	846.1
5	2.907	3	2.4	807.0
6	2.886	8	4.3	769.6
7	2.866	1	4.6	734.0
8	2.845	2	5.0	700.1
9	2.825	13	8.2	667.7
10	2.804	2	8.7	636.8
11	2.783	8	10.6	607.4
12	2.763	14	13.9	579.3
13	2.742	7	15.6	552.5
14	2.722	16	19.5	526.9
15	2.701	10	21.9	502.5
16	2.681	29	28.8	479.3
17	2.660	17	32.9	457.1
18	2.639	22	38.2	436.0
19	2.619	23	43.8	415.8
20	2.598	24	49.5	396.6
21	2.578	31	57.0	378.2
22	2.557	7	58.7	360.7
23	2.537	19	63.2	344.0
24	2.516	16	67.1	328.1
25	2.495	17	71.2	313.0
26	2.475	28	77.9	298.5
27	2.454	7	79.6	284.7
28	2.434	14	82.9	271.5
29	2.413	21	88.0	258.9
30	2.393	7	89.7	247.0
31	2.372	6	91.1	235.5
32	2.351	9	93.3	224.6
33	2.331	6	94.7	214.3
34	2.310	9	96.9	204.3
35	2.290	1	97.1	194.9
36	2.269	1	97.4	185.9
37	2.249	2	97.8	177.3
38	2.228	2	98.3	169.1
39	2.208	0	98.3	161.3
40	2.187	1	98.6	153.8
41		6	100.0	

```
T
I   PROGRAM:            PERCENTAGE HISTOGRAMS                                NAME      BA
T
L   DATA:    DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY                  N                416
E   RUN:                                                                     X BAR       795.70
S   TIME:    25/03/83 11:55:33                                               STD DEV     158.27

CELL LOWER LIMIT NMBR    %    ARITHMETIC VALUES                BAR INTERVAL = 0.25000   STD DEV   AR:TH.LIMIT
   1                0   0.0
   2   24.15        0   0.0
   3   63.72        0   0.0
   4   103.3        0   0.0
   5   142.8        0   0.0
   6   182.4        0   0.0
   7   222.0        0   0.0
   8   261.5        2   0.5
   9   301.1        1   0.2
  10   340.7        1   0.2
  11   380.2        1   0.2
  12   419.8        1   0.2
  13   459.4        2   0.5
  14   498.9        5   1.2 *
  15   538.5       10   2.4 **
  16   578.1       13   3.1 ***
  17   617.6        9   2.2 **
  18   657.2       25   6.0 ******
  19   696.8       81  19.5 *******************
  20   736.3       69  16.6 *****************
  21   775.9       49  11.8 ************
  22   815.5       34   8.2 ********
  23   855.0       30   7.2 *******
  24   894.6       13   3.1 ***
  25   934.2       19   4.6 *****
  26   973.7       15   3.6 ****
  27   1013.        8   1.9 **
  28   1053.        7   1.7 **
  29   1092.        6   1.4 *
  30   1132.        6   1.4 *
  31   1172.        1   0.2
  32   1211.        3   0.7 *
  33   1251.        0   0.0
  34   1290.        2   0.5
  35   1330.        1   0.2
  36   1369.        1   0.2
  37   1409.        1   0.2
  38   1449.        0   0.0
  39   1488.        0   0.0
  40   1528.        0   0.0
  41   1567.        0   0.0
```

```
T
I   PROGRAM:        PERCENTAGE CUMULATIVE FREQUENCY PLOTS          NAME        BA
T
L   DATA:    DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY        N                 416
E   RUN:                                                           X BAR        795.70
S   TIME:    25/03/83 11:55:33                                     STD DEV      158.27
```

```
CELL LOWER LIMIT NMBR    %    ARITHMETIC VALUES     BAR INTERVAL = 0.12500   STD DEV  ARITH.LIMIT
   1    1181.       9    2.2
   2    1162.       1    2.4
   3    1142.       4    3.4
   4    1122.       3    4.1
   5    1102.       2    4.6
   6    1083.       3    5.3
   7    1063.       2    5.8
   8    1043.       6    7.2
   9    1023.       4    8.2
  10    1003.       3    8.9
  11    983.6      10   11.3
  12    963.9      10   13.7
  13    944.1      10   16.1
  14    924.3       7   17.8
  15    904.5       7   19.5
  16    884.7       9   21.6
  17    864.9      15   25.2
  18    845.2      20   30.0
  19    825.4      12   32.9
  20    805.6      15   36.5
  21    785.8      26   42.8
  22    766.0      29   49.8
  23    746.2      42   59.9
  24    726.5      32   67.5
  25    706.7      51   79.8
  26    686.9      22   85.1
  27    667.1      12   88.0
  28    647.3       8   89.9
  29    627.5       5   91.1
  30    607.8       4   92.1
  31    588.0       5   93.3
  32    568.2       8   95.2
  33    548.4       7   96.9
  34    528.6       2   97.4
  35    508.8       3   98.1
  36    489.1       0   98.1
  37    469.3       2   98.6
  38    449.5       0   98.6
  39    429.7       1   98.8
  40    409.9       0   98.8
  41                5  100.0
```

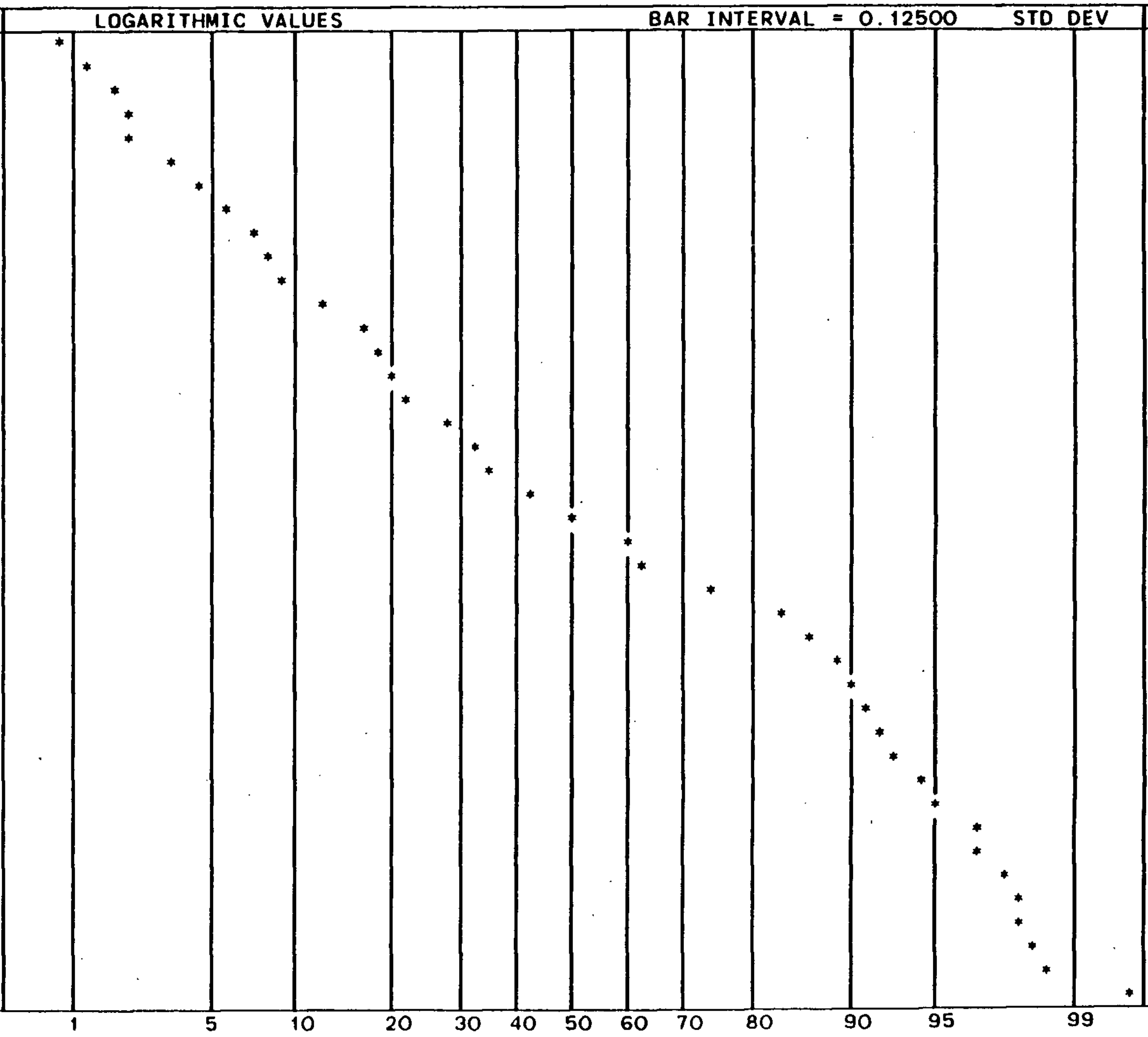


```
T
I  PROGRAM:          PERCENTAGE HISTOGRAMS                                     NAME       BA
T
L  DATA:   DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY                      N                 416
E  RUN:                                                                        X BAR        2.8919
S  TIME:   25/03/83 11:55:33                                                   STD DEV  0.91444E-01

CELL LOWER LIMIT NMBR   %   LOGARITHMIC VALUES             BAR INTERVAL = 0.25000   STD DEV ARITH.LIMIT
   1                2  0.5
   2    2.446       0  0.0                                                                     279.3
   3    2.469       0  0.0                                                                     294.4
   4    2.492       0  0.0                                                                     310.3
   5    2.515       1  0.2                                                                     327.1
   6    2.538       1  0.2                                                                     344.8
   7    2.560       0  0.0                                                                     363.4
   8    2.583       1  0.2                                                                     383.1
   9    2.606       0  0.0                                                                     403.8
  10    2.629       1  0.2                                                                     425.6
  11    2.652       1  0.2                                                                     448.6
  12    2.675       1  0.2                                                                     472.9
  13    2.698       3  0.7 *                                                                   498.4
  14    2.720       5  1.2 *                                                                   525.4
  15    2.743      12  2.9 ***                                                                 553.7
  16    2.766       8  1.9 **                                                                  583.7
  17    2.789       6  1.4 *                                                                   615.2
  18    2.812      20  4.8 *****                                                               648.5
  19    2.835      73 17.5 ******************                                                  683.5
  20    2.858      56 13.5 *************                                                       720.5
  21    2.880      73 17.5 ******************                                                  759.4
  22    2.903      27  6.5 ******                                                              800.4
  23    2.926      35  8.4 ********                                                            843.7
  24    2.949      20  4.8 *****                                                               889.3
  25    2.972      23  5.5 ******                                                              937.4
  26    2.995      17  4.1 ****                                                                988.0
  27    3.018       9  2.2 **                                                                  1041.
  28    3.040       9  2.2 **                                                                  1098.
  29    3.063       4  1.0 *                                                                   1157.
  30    3.086       3  0.7 *                                                                   1220.
  31    3.109       3  0.7 *                                                                   1286.
  32    3.132       2  0.5                                                                     1355.
  33    3.155       0  0.0                                                                     1428.
  34    3.178       0  0.0                                                                     1505.
  35    3.201       0  0.0                                                                     1587.
  36    3.223       0  0.0                                                                     1673.
  37    3.246       0  0.0                                                                     1763.
  38    3.269       0  0.0                                                                     1858.
  39    3.292       0  0.0                                                                     1959.
  40    3.315       0  0.0                                                                     2065.
  41    3.338       0  0.0                                                                     2176.
```

TITLES			
PROGRAM: PERCENTAGE CUMULATIVE FREQUENCY PLOTS		NAME	BA
DATA: DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY		N	416
RUN:		X BAR	2.8919
TIME: 25/03/83 11:55:33		STD DEV	0.91444E-01

CELL	LOWER LIMIT	NMBR	%	ARITH.LIMIT
1	3.115	4	1.0	1303.
2	3.103	1	1.2	1269.
3	3.092	2	1.7	1236.
4	3.080	1	1.9	1204.
5	3.069	1	2.2	1172.
6	3.058	5	3.4	1142.
7	3.046	4	4.3	1112.
8	3.035	4	5.3	1083.
9	3.023	6	6.7	1055.
10	3.012	6	8.2	1028.
11	3.000	3	8.9	1001.
12	2.989	14	12.3	975.1
13	2.978	16	16.1	949.8
14	2.966	7	17.8	925.1
15	2.955	7	19.5	901.1
16	2.943	14	22.8	877.7
17	2.932	18	27.2	854.9
18	2.920	19	31.7	832.7
19	2.909	15	35.3	811.0
20	2.898	31	42.8	790.0
21	2.886	29	49.8	769.5
22	2.875	42	59.9	749.5
23	2.863	16	63.7	730.0
24	2.852	41	73.6	711.0
25	2.840	40	83.2	692.6
26	2.829	15	86.8	674.6
27	2.818	10	89.2	657.1
28	2.806	5	90.4	640.0
29	2.795	3	91.1	623.4
30	2.783	4	92.1	607.2
31	2.772	3	92.8	591.4
32	2.760	7	94.5	576.0
33	2.749	3	95.2	561.1
34	2.738	7	96.9	546.5
35	2.726	0	96.9	532.3
36	2.715	3	97.6	518.5
37	2.703	2	98.1	505.0
38	2.692	0	98.1	491.9
39	2.680	1	98.3	479.1
40	2.669	1	98.6	466.7
41		6	100.0	



```
T
I  PROGRAM:          PERCENTAGE HISTOGRAMS                                   NAME       FE
T
L  DATA:    DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY                   N                416
E  RUN:                                                                      X BAR       1.7260
S  TIME:    25/03/83 11:55:33                                                STD DEV    0.50650

CELL LOWER LIMIT NMBR   %          ARITHMETIC VALUES                      BAR INTERVAL = 0.25000    STD DEV   ARITH.LIMIT
   1                0   0.0
   2 -0.7431        0   0.0
   3 -0.6165        0   0.0
   4 -0.4899        0   0.0
   5 -0.3633        0   0.0
   6 -0.2366        0   0.0
   7 -0.1100        0   0.0
   8  0.1660E-01    0   0.0
   9  0.1432        0   0.0
  10  0.2698        0   0.0
  11  0.3965        0   0.0
  12  0.5231        2   0.5
  13  0.6497        5   1.2 *
  14  0.7763        8   1.9 **
  15  0.9030       12   2.9 ***
  16    1.030      20   4.8 *****
  17    1.156      25   6.0 ******
  18    1.283      54  13.0 *************
  19    1.409      22   5.3 *****
  20    1.536      50  12.0 ************
  21    1.663      30   7.2 *******
  22    1.789      44  10.6 ***********
  23    1.916      31   7.5 *******
  24    2.043      47  11.3 ***********
  25    2.169      16   3.8 ****
  26    2.296      25   6.0 ******
  27    2.422       9   2.2 **
  28    2.549       8   1.9 **
  29    2.676       3   0.7 *
  30    2.802       0   0.0
  31    2.929       4   1.0 *
  32    3.056       0   0.0
  33    3.182       0   0.0
  34    3.309       0   0.0
  35    3.435       0   0.0
  36    3.562       0   0.0
  37    3.689       0   0.0
  38    3.815       0   0.0
  39    3.942       0   0.0
  40    4.069       0   0.0
  41    4.195       1   0.2
```

TITLES

PROGRAM: PERCENTAGE CUMULATIVE FREQUENCY PLOTS

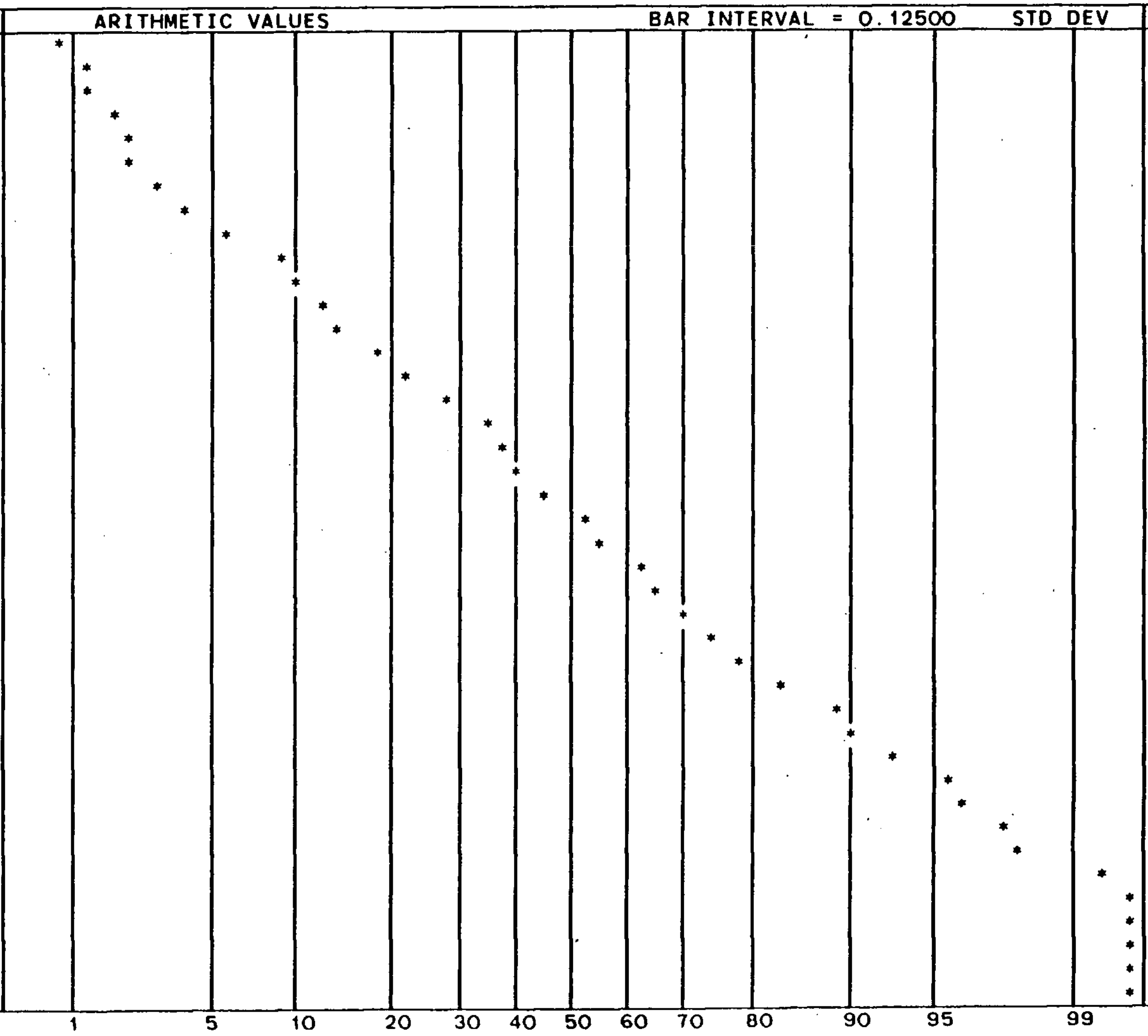
DATA: DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY

RUN:

TIME: 25/03/83 11:55:33

NAME	FE
N	416
X BAR	1.7260
STD DEV	0.50650

CELL	LOWER LIMIT	NMBR	%
1	2.961	4	1.0
2	2.897	1	1.2
3	2.834	0	1.2
4	2.771	2	1.7
5	2.707	1	1.9
6	2.644	1	2.2
7	2.581	3	2.9
8	2.517	4	3.8
9	2.454	8	5.8
10	2.391	13	8.9
11	2.327	4	9.9
12	2.264	9	12.0
13	2.201	8	13.9
14	2.138	18	18.3
15	2.074	17	22.4
16	2.011	20	27.2
17	1.948	31	34.6
18	1.884	15	38.2
19	1.821	10	40.6
20	1.758	19	45.2
21	1.694	30	52.4
22	1.631	9	54.6
23	1.568	29	61.5
24	1.504	12	64.4
25	1.441	22	69.7
26	1.378	21	74.8
27	1.314	11	77.4
28	1.251	22	82.7
29	1.188	25	88.7
30	1.125	4	89.7
31	1.061	12	92.5
32	0.9979	14	95.9
33	0.9346	2	96.4
34	0.8713	5	97.6
35	0.8080	1	97.8
36	0.7447	6	99.3
37	0.6814	1	99.5
38	0.6181	0	99.5
39	0.5548	2	100.0
40	0.4914	0	100.0
41		0	100.0



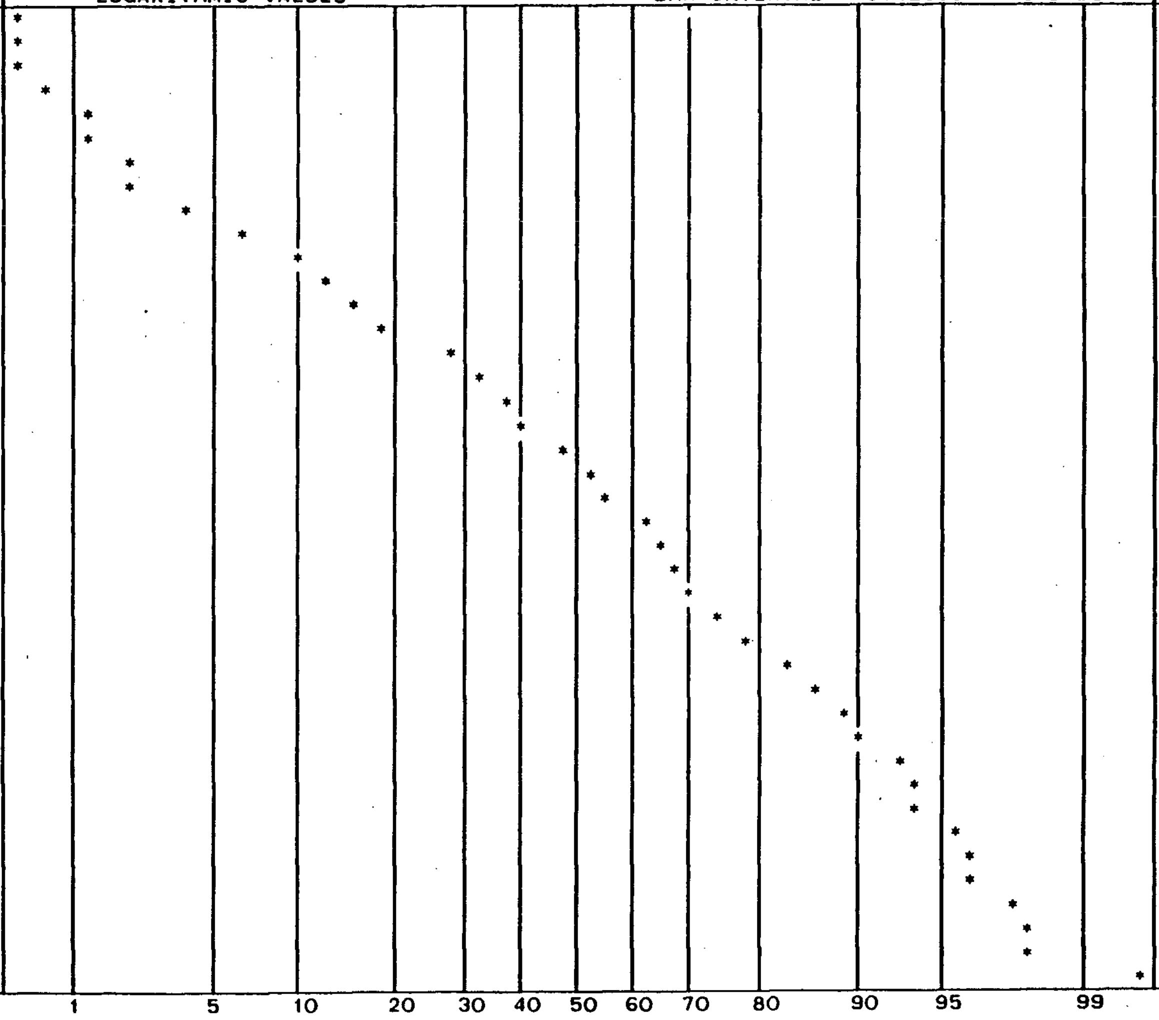
ARITH.LIMIT

```
T |                                                        |  |          |
I | PROGRAM:          PERCENTAGE HISTOGRAMS                |  | NAME     |  FE
T |                                                        |  |          |
L | DATA:    DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY|  | N        |        416
E | RUN:                                                   |  | X BAR    |  0.21889
S | TIME:    25/03/83 11:55:33                             |  | STD DEV  |  0.12766

CELL|LOWER LIMIT|NMBR|  %  |      LOGARITHMIC VALUES                BAR INTERVAL = 0.25000    STD DEV |ARITH.LIMIT
   1|           |   0|  0.0|                                                                          |
   2|-0.4035    |   0|  0.0|                                                                          |  0.3949
   3|-0.3716    |   0|  0.0|                                                                          |  0.4251
   4|-0.3396    |   0|  0.0|                                                                          |  0.4575
   5|-0.3077    |   0|  0.0|                                                                          |  0.4924
   6|-0.2758    |   0|  0.0|                                                                          |  0.5299
   7|-0.2439    |   2|  0.5|                                                                          |  0.5703
   8|-0.2120    |   0|  0.0|                                                                          |  0.6138
   9|-0.1801    |   1|  0.2|                                                                          |  0.6606
  10|-0.1481    |   4|  1.0|*                                                                         |  0.7110
  11|-0.1162    |   2|  0.5|                                                                          |  0.7652
  12|-0.8431E-01|   1|  0.2|                                                                          |  0.8235
  13|-0.5239E-01|   7|  1.7|**                                                                        |  0.8864
  14|-0.2048E-01|  10|  2.4|**                                                                        |  0.9539
  15| 0.1144E-01|  16|  3.8|****                                                                      |   1.027
  16| 0.4335E-01|   4|  1.0|*                                                                         |   1.105
  17| 0.7527E-01|  25|  6.0|******                                                                    |   1.189
  18| 0.1072    |  33|  7.9|********                                                                  |   1.280
  19| 0.1391    |  30|  7.2|*******                                                                   |   1.378
  20| 0.1710    |  25|  6.0|******                                                                    |   1.483
  21| 0.2029    |  56| 13.5|*************                                                             |   1.596
  22| 0.2349    |  31|  7.5|*******                                                                   |   1.717
  23| 0.2668    |  36|  8.7|*********                                                                 |   1.848
  24| 0.2987    |  57| 13.7|**************                                                            |   1.989
  25| 0.3306    |  35|  8.4|********                                                                  |   2.141
  26| 0.3625    |  17|  4.1|****                                                                      |   2.304
  27| 0.3944    |  16|  3.8|****                                                                      |   2.480
  28| 0.4263    |   3|  0.7|*                                                                         |   2.669
  29| 0.4583    |   4|  1.0|*                                                                         |   2.873
  30| 0.4902    |   0|  0.0|                                                                          |   3.092
  31| 0.5221    |   0|  0.0|                                                                          |   3.327
  32| 0.5540    |   0|  0.0|                                                                          |   3.581
  33| 0.5859    |   0|  0.0|                                                                          |   3.854
  34| 0.6178    |   0|  0.0|                                                                          |   4.148
  35| 0.6498    |   0|  0.0|                                                                          |   4.464
  36| 0.6817    |   0|  0.0|                                                                          |   4.805
  37| 0.7136    |   0|  0.0|                                                                          |   5.171
  38| 0.7455    |   0|  0.0|                                                                          |   5.566
  39| 0.7774    |   1|  0.2|                                                                          |   5.990
  40| 0.8093    |   0|  0.0|                                                                          |   6.447
  41| 0.8413    |   0|  0.0|                                                                          |   6.938
```

```
T
I  PROGRAM:          PERCENTAGE CUMULATIVE FREQUENCY PLOTS        NAME      FE
T
L  DATA:    DAISY CREEK RECON STREAM SEDIMENT GEOCHEMISTRY        N               416
E  RUN:                                                           X BAR     0.21889
S  TIME:    25/03/83 11:55:33                                     STD DEV   0.12766

CELL LOWER LIMIT NMBR    %   LOGARITHMIC VALUES   BAR INTERVAL = 0.12500   STD DEV  ARITH.LIMIT
  1  0.5301          1    0.2                                                        3.389
  2  0.5141          0    0.2                                                        3.267
  3  0.4982          0    0.2                                                        3.149
  4  0.4822          2    0.7                                                        3.035
  5  0.4662          2    1.2                                                        2.926
  6  0.4503          0    1.2                                                        2.820
  7  0.4343          3    1.9                                                        2.718
  8  0.4184          1    2.2                                                        2.620
  9  0.4024          7    3.8                                                        2.526
 10  0.3865          9    6.0                                                        2.435
 11  0.3705         16    9.9                                                        2.347
 12  0.3545          9   12.0                                                        2.262
 13  0.3386         16   15.9                                                        2.181
 14  0.3226         10   18.3                                                        2.102
 15  0.3067         37   27.2                                                        2.026
 16  0.2907         20   32.0                                                        1.953
 17  0.2747         26   38.2                                                        1.883
 18  0.2588         10   40.6                                                        1.815
 19  0.2428         31   48.1                                                        1.749
 20  0.2269         18   52.4                                                        1.686
 21  0.2109          9   54.6                                                        1.625
 22  0.1950         29   61.5                                                        1.567
 23  0.1790         12   64.4                                                        1.510
 24  0.1630         13   67.5                                                        1.456
 25  0.1471          9   69.7                                                        1.403
 26  0.1311         21   74.8                                                        1.352
 27  0.1152         11   77.4                                                        1.304
 28  0.9921E-01     22   82.7                                                        1.257
 29  0.8325E-01     12   85.6                                                        1.211
 30  0.6729E-01     13   88.7                                                        1.168
 31  0.5133E-01      4   89.7                                                        1.125
 32  0.3538E-01     12   92.5                                                        1.085
 33  0.1942E-01      4   93.5                                                        1.046
 34  0.3459E-02      0   93.5                                                        1.008
 35 -0.1250E-01     10   95.9                                                        0.9716
 36 -0.2846E-01      2   96.4                                                        0.9366
 37 -0.4442E-01      0   96.4                                                        0.9028
 38 -0.6037E-01      5   97.6                                                        0 8702
 39 -0.7633E-01      1   97.8                                                        0.8388
 40 -0.9229E-01      0   97.8                                                        0.3086
 41                  9  100.0
                             1    5   10   20  30  40  50  60  70  80   90  95   99
```



APPENDIX 5

STREAM SEDIMENT REGRESSION OUTPUT

```
FUNCTIONAL REGRESSION
  REDUCED MAJOR AXIS

   DAISY CREEK STREAM SEDIMENT DATA - ALL DATA INCLUDED

     BACKWARDS STEPWISE MULTIPLE REGRESSION ON  CU

     ITERATION NUMBER  1

     NUMBER OF SAMPLES REGRESSED (N) =   388

     CORRELATION COEFFICIENT (R) =  0.7778

     STANDARD ERROR (E) =  0.1878

                VARIABLE     BETA      SIGNIFICANCE
                  NAME       VALUE         LEVEL
                --------     -----     ------------

                    PB       0.5523       0.0
                    ZN      -0.1379       0.0186
                    MO       0.2120       0.0000
                    AG       0.3405       0.0001
                    CO       0.0302       0.3463
                    MN       0.3760       0.0000
                     F       0.2017       0.0007
                    BA       0.1068       0.1905
                    FE       0.5808       0.0000
                CONSTANT    -0.9877       0.0
```

```
FUNCTIONAL REGRESSION
  REDUCED MAJOR AXIS

   DAISY CREEK STREAM SEDIMENT DATA - ALL DATA INCLUDED

     BACKWARDS STEPWISE MULTIPLE REGRESSION ON  CU

     ITERATION NUMBER  2

     NUMBER OF SAMPLES REGRESSED (N) =   388

     CORRELATION COEFFICIENT (R) =  0.7781

     STANDARD ERROR (E) =  0.1874

               VARIABLE     BETA       SIGNIFICANCE
                 NAME       VALUE         LEVEL
               --------     -----      ------------

                  PB        0.5577       0.0
                  ZN       -0.1440       0.0126
                  MO        0.2150       0.0000
                  AG        0.3364       0.0001
                  MN        0.3806       0.0000
                   F        0.2011       0.0007
                  BA        0.1138       0.1722
                  FE        0.6011       0.0000
               CONSTANT    -0.9980       0.0
```

```
FUNCTIONAL REGRESSION
  REDUCED MAJOR AXIS

   DAISY CREEK STREAM SEDIMENT DATA - ALL DATA INCLUDED

     BACKWARDS STEPWISE MULTIPLE REGRESSION ON  CU

     ITERATION NUMBER  3

     NUMBER OF SAMPLES REGRESSED (N) =   388

     CORRELATION COEFFICIENT (R) =  0.7788

     STANDARD ERROR (E) =  0.1868

               VARIABLE     BETA      SIGNIFICANCE
                 NAME       VALUE        LEVEL
               --------     -----     -----------

                   PB       0.5512       0.0
                   ZN      -0.1300       0.0185
                   MO       0.2090       0.0000
                   AG       0.3299       0.0001
                   MN       0.3891       0.0000
                    F       0.1985       0.0008
                   FE       0.6116       0.0000
               CONSTANT    -0.7097       0.0
```

```
DAISY CREEK STREAM SEDIMENT DATA - ALL DATA INCLUDED

             TYPE I A ANOMALIES

SAMPLES WHICH ARE ABOVE THE UPPER LIMIT OF THE
ZONE OF MIXING OF THE TWO POPULATIONS
AND WHICH ARE SIGNIFICANTLY GREATER THAN PREDICTED


 SAMPLE    X-COORD-    Y-COORD-    DEPENDENT
 NUMBER     INATE       INATE      VARIABLE
 ------    --------    --------    ---------


  46726    34272.39   115385.97     163.000
  47424    37510.02   137559.00     780.000
```

```
DAISY CREEK STREAM SEDIMENT DATA - ALL DATA INCLUDED

            TYPE I B ANOMALIES

SAMPLES WHICH ARE ABOVE THE UPPER LIMIT OF THE
ZONE OF MIXING OF THE TWO POPULATIONS
AND WHICH ARE SIGNIFICANTLY LESS THAN PREDICTED

 SAMPLE   X-COORD-   Y-COORD-   DEPENDENT
 NUMBER    INATE      INATE     VARIABLE
 ------   --------   --------   ---------


  30675    48493.74  127124.13     92.000
```

DAISY CREEK STREAM SEDIMENT DATA - ALL DATA INCLUDED

TYPE I C ANOMALIES

SAMPLES WHICH ARE ABOVE THE UPPER LIMIT OF THE
ZONE OF MIXING OF THE TWO POPULATIONS
AND WHICH ARE NOT SIGNIFICANTLY DIFFERANT THAN BACKGROUND

SAMPLE NUMBER	X-COORD-INATE	Y-COORD-INATE	DEPENDENT VARIABLE
46678	34430.44	120185.41	93.000
46727	34283.22	112945.90	96.000
68157	39968.82	98464.43	119.000
68665	36443.28	118277.84	123.000
46736	37156.54	139500.20	136.000

```
DAISY CREEK STREAM SEDIMENT DATA - ALL DATA INCLUDED

         TYPE II A ANOMALIES

SAMPLES WHICH ARE PART OF THE MIXED POPULATION
BUT WHICH ARE SIGNIFICANTLY GREATER THAN PREDICTED


 SAMPLE    X-COORD-    Y-COORD-    DEPENDENT
 NUMBER     INATE       INATE      VARIABLE
 ------    --------    --------    ---------



  NO SAMPLES RECOGNIZED
```

DAISY CREEK STREAM SEDIMENT DATA - ALL DATA INCLUDED

TYPE II B ANOMALIES

SAMPLES WHICH ARE PART OF THE MIXED POPULATION
BUT WHICH ARE SIGNIFICANTLY LESS THAN PREDICTED

SAMPLE NUMBER	X-COORD-INATE	Y-COORD-INATE	DEPENDENT VARIABLE
46827	38016.28	145377.36	60.000
30740	48443.49	124275.54	61.000
46679	34130.51	120206.53	62.000
33887	50171.90	104586.13	64.000
47417	40018.97	133100.08	64.000
46699	29714.98	133793.46	65.000
38062	49702.18	123752.40	65.000
33888	52587.74	103477.02	65.000
46833	36909.98	143501.02	75.000
33886	49612.95	104868.22	77.000

```
DAISY CREEK STREAM SEDIMENT DATA - ALL DATA INCLUDED


        TYPE II C ANOMALIES

SAMPLES WHICH ARE PART OF THE MIXED POPULATION
BUT WHICH ARE NOT SIGNIFICANTLY DIFFERENT FROM BACKGROUND


 SAMPLE    X-COORD-    Y-COORD-    DEPENDENT
 NUMBER     INATE       INATE      VARIABLE
 ------    --------    --------    ---------


  46681     31479.03  117156.50       60.000
  47414     39787.54  130401.02       61.000
  47410     33723.38  118308.06       62.000
  47412     28419.12  112869.94       62.000
  46680     33838.18  118078.60       69.000
  47413     40516.11  127697.90       69.000
  47416     40078.04  132879.82       73.000
  47411     31060.31  117498.06       80.000
  46731     32614.06  110512.19       89.000
  46654     21176.22  101693.84       89.000
```

```
DAISY CREEK STREAM SEDIMENT DATA - ALL DATA INCLUDED


        TYPE III A ANOMALIES

SAMPLES WHICH ARE PART OF THE BACKGROUND POPULATION
BUT WHICH ARE SIGNIFICANTLY GREATER THAN PREDICTED


 SAMPLE    X-COORD-    Y-COORD-    DEPENDENT
 NUMBER      INATE       INATE     VARIABLE
 ------    --------    --------    ---------


  33822    24285.29   109189.54       13.000
  46829    35219.44   140366.70       20.000
  68131    47539.82   101376.00       24.000
  68202    44719.23    95906.56       25.000
  46665    41982.49   112736.98       25.000
  46984    28634.55   139151.16       33.000
  68667    31176.48   116477.63       40.000
  30720    42022.94   107536.78       44.000
  47418    37883.40   134149.12       44.000
  68688    44706.40   148374.88       59.000
```

```
DAISY CREEK STREAM SEDIMENT DATA - ALL DATA INCLUDED


         TYPE III B ANOMALIES

SAMPLES WHICH ARE PART OF THE BACKGROUND POPULATION
BUT WHICH ARE SIGNIFICANTLY LESS THAN PREDICTED


 SAMPLE    X-COORD-    Y-COORD-    DEPENDENT
 NUMBER     INATE       INATE      VARIABLE
 ------    --------    --------    ---------


  46505     51615.58   127550.91       3.000
  46526     24130.37    99890.82       4.000
  33743     44603.78   129500.62       5.000
  33833     27725.46   106419.34       8.000
  33835     29055.98   102999.66       8.000
  33843     33059.24    95930.40       9.000
  46608     27136.17   101647.38      11.000
  33828     31403.47    97056.62      14.000
  46609     49472.28   115328.85      16.000
  32805     43907.57   125926.78      24.000
  30701     45764.29   124602.19      29.000
```

```
DAISY CREEK STREAM SEDIMENT DATA - ALL DATA INCLUDED

  BACKWARDS STEPWISE MULTIPLE REGRESSION ON  CU

  ANOMALY RECOGNITION SUMMARY

    TOTAL # OF SAMPLES = 416

    TOTAL # OF COMPLETE SAMPLES = 416

    TOTAL # OF ANOMALOUS SAMPLES (> T2) =   8

    TOTAL # OF MIXED SAMPLES (< T2 AND > T1) =  20

    TOTAL # OF BACKGROUND SAMPLES (< T1) = 388

      LOWER THRESHOLD (T1) =   60.0000

      UPPER THRESHOLD (T2) =   90.0000

    TOTAL # OF CLASS   I A ANOMALIES =   2

    TOTAL # OF CLASS   I B ANOMALIES =   1

    TOTAL # OF CLASS   I C ANOMALIES =      5

    TOTAL # OF CLASS  II A ANOMALIES =      0

    TOTAL # OF CLASS  II B ANOMALIES =     10

    TOTAL # OF CLASS  II C ANOMALIES =        10

    TOTAL # OF CLASS III A ANOMALIES =        10

    TOTAL # OF CLASS III B ANOMALIES =        11
```

```
Listing of 7D at 15:20:15 on MAR 11, 1984 for CCid=MZAB                                                    Page    1

     1      MIXED POPULATION
     2      46827  38016.28 145377.36     -0.641     60.000
     3      30740  48443.49 124275.54     -0.664     61.000
     4      46679  34130.51 120206.53     -0.763     62.000
     5      33887  50171.90 104586.13     -0.627     64.000
     6      47417  40018.97 133100.08     -0.405     64.000
     7      46699  29714.98 133793.46     -0.728     65.000
     8      38062  49702.18 123752.40     -0.630     65.000
     9      33888  52587.74 103477.02     -0.525     65.000
    10      46833  36909.98 143501.02     -0.477     75.000
    11      33886  49612.95 104868.22     -0.439     77.000
    12      46681  31479.03 117156.50     -0.115     60.000
    13      47414  39787.54 130401.02     -0.150     61.000
    14      47410  33723.38 118308.06     -0.333     62.000
    15      47412  28419.12 112869.94      0.032     62.000
    16      46680  33838.18 118078.60     -0.102     69.000
    17      47413  40516.11 127697.90     -0.355     69.000
    18      47416  40078.04 132879.82     -0.043     73.000
    19      47411  31060.31 117498.06     -0.362     80.000
    20      46731  32614.06 110512.19     -0.257     89.000
    21      46654  21176.22 101693.84     -0.018     89.000
    22      ANOMALOUS POPULATION
    23      46726  34272.39 115385.97      0.437    163.000
    24      47424  37510.02 137559.00      0.900    780.000
    25      30675  48493.74 127124.13     -0.772     92.000
    26      46678  34430.44 120185.41     -0.091     93.000
    27      46727  34283.22 112945.90     -0.078     96.000
    28      68157  39968.82  98464.43     -0.066    119.000
    29      68665  36443.28 118277.84     -0.020    123.000
    30      46736  37156.54 139500.20      0.289    136.000
```

APPENDIX 6

SOIL SURVEY -
GEOCHEMICAL DATA

```
Listing of SOILGD at 17:33:18 on SEP 24, 1984 for CCid=MZAB Page     1

  1    SAMP  EAST NRTH      AG     CU     PB     ZN     CO     MO     AS     HG    BA
  2     NUM   (M)  (M)   (PPM)  (PPM)  (PPM)  (PPM)  (PPM)  (PPM)  (PPM)  (PPB) (PPM)
  3   -----  ---- ----  ------ ------ ------ ------ ------ ------ ------ ------ -----
  4   88000   495  420     0.1   35.0    2.5   45.0   15.0    1.0   10.0     30   670
  5   88002   390  420     0.1   35.0   20.0   35.0    5.0    1.0    5.0     10   440
  6   88004   420  420     0.1   50.0   15.0   60.0    2.5    1.0    5.0     30   610
  7   88006   435  420     0.1   65.0  145.0   70.0    2.5    1.0    5.0     30   620
  8   88008   450  420     0.1   70.0   60.0   75.0   10.0    1.0    5.0     30   630
  9   88010   465  420     0.4  150.0  115.0   70.0    2.5    1.0    5.0     50   690
 10   88012   435  405     0.1   65.0   45.0   70.0   10.0    1.0    5.0     40   590
 11   88014   495  405     0.1   30.0    5.0   45.0   10.0    1.0    5.0     40   650
 12   88016   510  405     0.1   20.0    2.5   50.0   10.0    1.0    5.0     20   600
 13   88018   525  405     0.1   15.0    2.5   40.0   10.0    1.0    5.0     50   570
 14   88019   540  405     0.1   30.0    2.5   35.0   10.0    1.0    5.0     40   540
 15   88022   465  405     0.1   35.0   40.0   60.0   10.0    1.0    5.0     30   730
 16   88024   450  405     0.1   55.0   60.0   95.0   15.0    1.0    5.0     20   940
 17   88026   420  510     0.1   10.0    2.5   25.0   10.0    1.0    5.0     10   420
 18   88028   435  510     0.1   50.0   10.0   35.0    2.5    1.0    5.0     10   590
 19   88030   390  510     0.1   65.0   10.0   45.0    2.5    1.0   20.0     20   590
 20   88032   420  525     0.1   15.0    2.5   35.0    2.5    1.0    5.0     20   480
 21   88034   435  525     0.1   45.0    2.5   40.0    2.5    1.0    5.0     10   490
 22   88036   450  525     0.8  520.0    5.0   70.0    5.0    1.0    5.0     40   650
 23   88038   465  525     0.1  275.0    2.5   45.0    2.5    1.0    5.0     50   550
 24   88040   480  525     0.1  135.0   10.0   90.0   10.0    1.0    5.0     40   700
 25   88042   495  525     0.1   35.0    5.0   55.0   10.0    1.0    5.0     30   710
 26   88802   480  480     0.4  245.0    5.0   55.0   10.0    1.0    5.0     30   920
 27   88804   480  465     0.4  280.0    2.5   70.0   10.0    1.0    5.0     40   740
 28   88806   480  450     0.7  365.0   10.0   95.0    2.5    1.0    5.0     40   830
 29   88808   480  435     0.7  180.0    2.5   75.0   10.0    1.0    5.0     40   700
 30   88810   480  420     0.4  125.0    2.5   70.0   10.0    1.0    5.0     50   850
 31   88812   480  405     0.8   50.0    5.0   55.0   10.0    1.0    5.0     30   690
 32   88814   480  390     0.1   30.0   10.0   55.0    2.5    1.0   10.0     30   650
 33   88816   480  375     0.1   20.0    5.0   45.0   15.0    1.0    5.0     30   630
 34   88818   480  360     0.1   40.0    5.0   55.0   10.0    1.0   10.0     30   640
 35   88820   480  345     0.1   25.0    2.5   50.0   15.0    1.0    5.0     40   610
 36   88822   495  480     0.1   35.0   15.0   75.0   10.0    1.0    5.0     40   750
 37   88824   510  480     0.1   40.0    2.5   65.0   10.0    1.0    5.0     50   650
 38   88826   525  480     0.1   15.0    2.5   45.0   10.0    1.0    5.0     10   610
 39   88828   540  480     0.1   20.0    2.5   45.0   10.0    1.0    5.0     20   650
 40   88830   570  480     0.1   35.0    5.0   55.0    5.0    1.0    5.0     30   690
 41   88832   465  480     1.7  950.0   20.0   65.0    2.5    1.0   10.0     50   710
 42   88834   450  480     0.1  370.0  210.0   40.0   10.0    1.0    5.0     20   560
 43   88836   435  480     0.1  110.0 1150.0   60.0   10.0    1.0   10.0     20   630
 44   88838   420  480     0.1   10.0   10.0   50.0    5.0    1.0    5.0     20   670
 45   88840   390  480     0.1   20.0   10.0   40.0    2.5    1.0    5.0     20   700
 46   88842   495  465     0.1   30.0    5.0   50.0    5.0    1.0    5.0     40   240
 47   88844   510  465     0.1   25.0    2.5   50.0   10.0    1.0   10.0     50   710
 48   88846   525  465     0.1   15.0    5.0   50.0    5.0    1.0    5.0     40   630
 49   88848   540  465     0.1   15.0    5.0   55.0   10.0    1.0    5.0     20   570
 50   88850   420  465     0.1   15.0   10.0   45.0    2.5    1.0    5.0     10   570
 51   88852   495  360     0.1   20.0    2.5   40.0   10.0    1.0    5.0     30   630
 52   88854   510  360     0.1   20.0    2.5   35.0    5.0    1.0    5.0     10   630
 53   88856   525  360     0.1   10.0    2.5   30.0   10.0    1.0    5.0     20   580
 54   88858   540  360     0.1   25.0    2.5   50.0    2.5    1.0    5.0     30   670
 55   88860   540  363     0.1   25.0    2.5   45.0   10.0    1.0    5.0     20   850
 56   88862   537  357     0.1   20.0    2.5   45.0   10.0    1.0    5.0     30   650
 57   88864   543  357     0.1   25.0    2.5   45.0   10.0    1.0    5.0     20   680
 58   88866   570  360     0.1   25.0    2.5   50.0   10.0    1.0    5.0     20   670
```

```
Listing of SOILGD at 17:33:18 on SEP 24, 1984 for CCid=MZAB Page     2

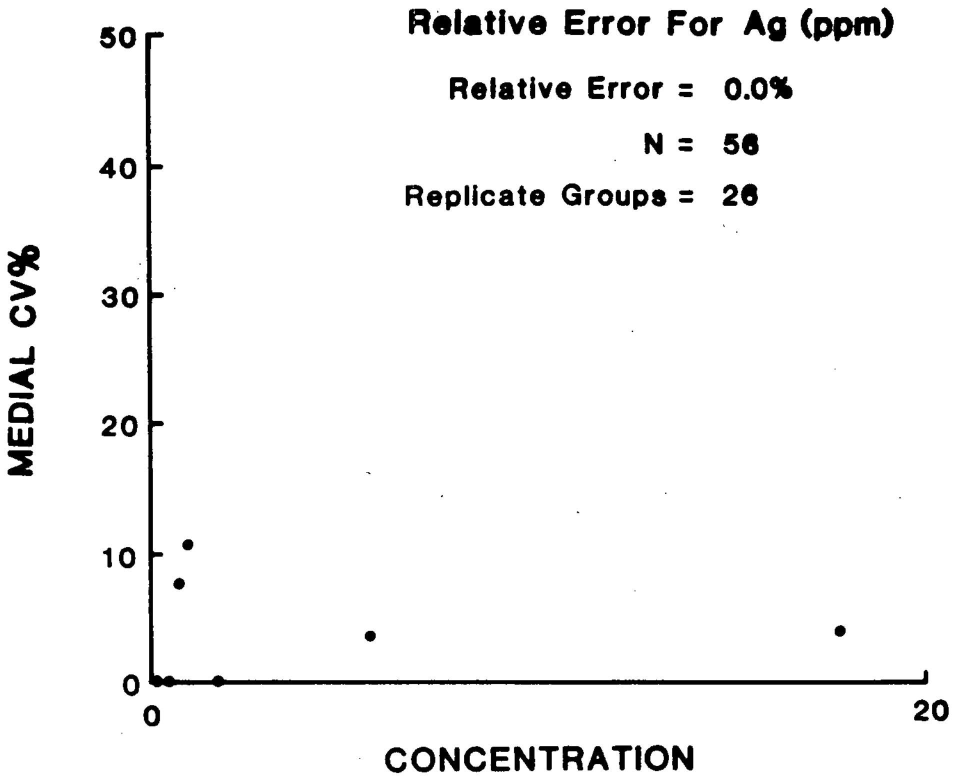
 59      SAMP   EAST NRTH       AG     CU     PB     ZN     CO     MO     AS     HG    BA
 60       NUM    (M)  (M)    (PPM)  (PPM)  (PPM)  (PPM)  (PPM)  (PPM)  (PPM)  (PPB) (PPM)
 61     -----   ---- ----   ------ ------ ------ ------ ------ ------ ------ ------ -----
 62     88868    540  390      0.1   20.0    2.5   30.0   10.0    1.0    5.0     20   540
 63     88870    570  390      0.1   15.0    2.5   35.0   10.0    1.0    5.0     20   570
 64     88872    525  390      0.1   20.0    2.5   35.0   10.0    1.0    5.0     20   480
 65     88874    510  390      0.1   10.0    5.0   35.0   10.0    1.0    5.0     20   600
 66     88876    495  390      0.1   40.0   10.0   65.0   15.0    1.0    5.0     40   690
 67     88878    495  375      0.8   30.0    2.5   50.0    2.5    1.0    5.0     30   620
 68     88880    510  375      0.4   25.0    5.0   40.0   10.0    1.0    5.0     30   710
 69     88882    525  375      0.1   20.0    2.5   45.0   15.0    1.0    5.0     20   850
 70     88884    540  375      0.1   15.0    2.5   30.0    2.5    1.0    5.0     40   550
 71     88886    483  402      0.1   30.0    2.5   45.0   10.0    1.0    5.0     50   780
 72     88888    480  408      0.1   75.0    2.5   80.0    2.5    1.0    5.0     60   750
 73     88890    477  402      0.1  315.0   10.0   70.0   10.0    1.0    5.0     40   870
 74     88892    480  510      0.1  145.0   10.0   65.0   10.0    1.0    5.0     50   760
 75     88894    510  510      0.1   25.0    2.5   60.0   10.0    1.0    5.0     30   730
 76     88896    540  510      0.1   30.0    2.5   50.0    2.5    1.0    5.0     40   540
 77     88898    570  510      0.1   25.0    2.5   50.0   10.0    1.0   30.0     40   620
 78     88899    450  510      0.4  560.0   10.0   60.0   10.0    1.0    5.0     40   570
 79     88900    465  510      1.1  620.0    2.5   45.0    2.5    1.0    5.0     30   480
 80     88902    435  465      0.1   50.0  670.0   40.0    2.5    1.0    5.0     10   500
 81     88904    450  465      0.1  180.0  360.0   45.0   10.0    1.0    5.0     20   560
 82     88906    465  465      0.1  370.0   25.0   50.0    2.5    1.0    5.0     50   640
 83     88908    495  450      0.1   30.0    2.5   50.0    2.5    1.0    5.0     60   530
 84     88910    510  450      0.1   15.0    2.5   30.0    2.5    1.0    5.0     10   520
 85     88912    525  450      0.1   65.0    2.5   55.0   10.0    1.0    5.0     20   670
 86     88914    540  450      0.1   20.0    2.5   30.0    2.5    1.0    5.0     10   500
 87     88916    570  450      0.1   20.0    2.5   45.0    2.5    1.0    5.0     20   570
 88     88918    390  450      0.1   45.0   20.0   45.0    2.5    1.0    5.0     20   530
 89     88920    420  450      0.1   20.0   10.0   50.0   10.0    1.0    5.0     30   550
 90     88922    435  450      0.1   35.0   50.0   70.0   10.0    1.0    5.0     50   750
 91     88924    450  450      0.1  315.0  940.0   85.0   15.0    1.0    5.0     30   760
 92     88926    465  450      0.4  455.0   40.0   80.0   10.0    1.0    5.0     40   760
 93     88928    540  435      0.1    2.5    2.5   20.0    2.5    1.0    5.0     30   440
 94     88930    525  435      0.1   20.0    2.5   40.0    2.5    1.0    5.0     50   710
 95     88932    510  435      0.1   30.0    2.5   45.0    2.5    1.0    5.0     50   640
 96     88934    495  435      0.1   20.0    5.0   50.0   10.0    1.0    5.0     40   710
 97     88936    420  435      0.1   35.0   10.0   50.0    2.5    1.0    5.0     20   540
 98     88938    435  435      0.1  105.0   55.0   60.0   10.0    1.0    5.0     20   610
 99     88940    450  435      0.1   80.0  240.0   55.0   15.0    1.0    5.0     30   750
100     88942    465  435      0.1  285.0   70.0   65.0   10.0    1.0    5.0     30   740
101     88944    570  420      0.1   20.0    5.0   35.0   10.0    1.0    5.0     20   570
102     88946    540  420      0.1   10.0    5.0   35.0   10.0    1.0    5.0     10   570
103     88948    525  420      0.1   20.0    5.0   30.0   10.0    1.0    5.0     10   510
104     88950    510  420      0.1   10.0    5.0   30.0    5.0    1.0    5.0     20   420
105     88952    420  405      0.1   25.0   35.0   60.0   10.0    1.0   10.0     10   590
106     88954    390  390      0.1   30.0   20.0   60.0    2.5    1.0   10.0     10   680
107     88956    420  390      0.1   35.0   10.0   45.0   10.0    1.0    5.0     20   470
108     88958    435  390      0.1   85.0   30.0   55.0   10.0    1.0    5.0     20   670
109     88960    450  390      0.1  140.0   40.0   85.0   10.0    1.0    5.0     30   820
110     88962    465  390      0.1   55.0   25.0   75.0    2.5    1.0    5.0     40   750
111     88964    465  375      0.1   65.0   20.0  105.0   10.0    1.0    5.0     30   950
112     88966    450  375      0.1  140.0   30.0   80.0   10.0    1.0    5.0     30   830
113     88968    435  375      0.1   95.0   25.0   65.0   10.0    1.0    5.0     20   640
114     88970    420  375      0.1   30.0   20.0   65.0   10.0    1.0    5.0     30   640
115     88972    390  360      0.1   30.0   15.0   45.0    5.0    1.0    5.0     10   570
116     88974    387  357      0.1   30.0   10.0   70.0   10.0    1.0    5.0     20   660
```

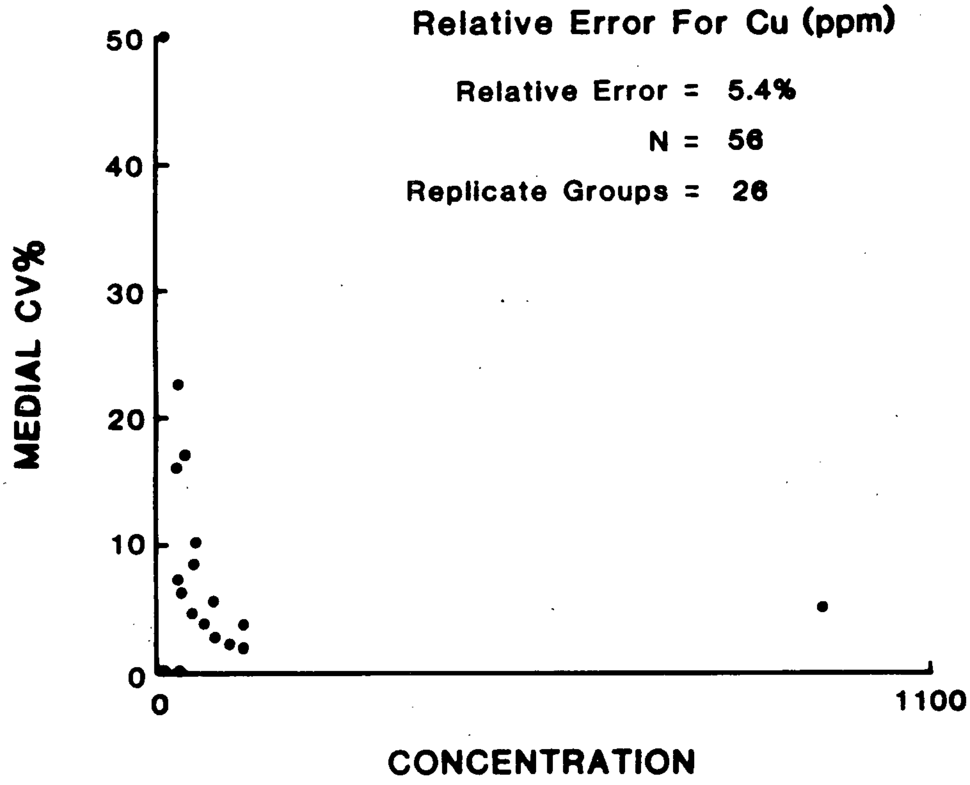
```
Listing of SOILGD at 17:33:18 on SEP 24, 1984 for CCid=MZAB Page    3

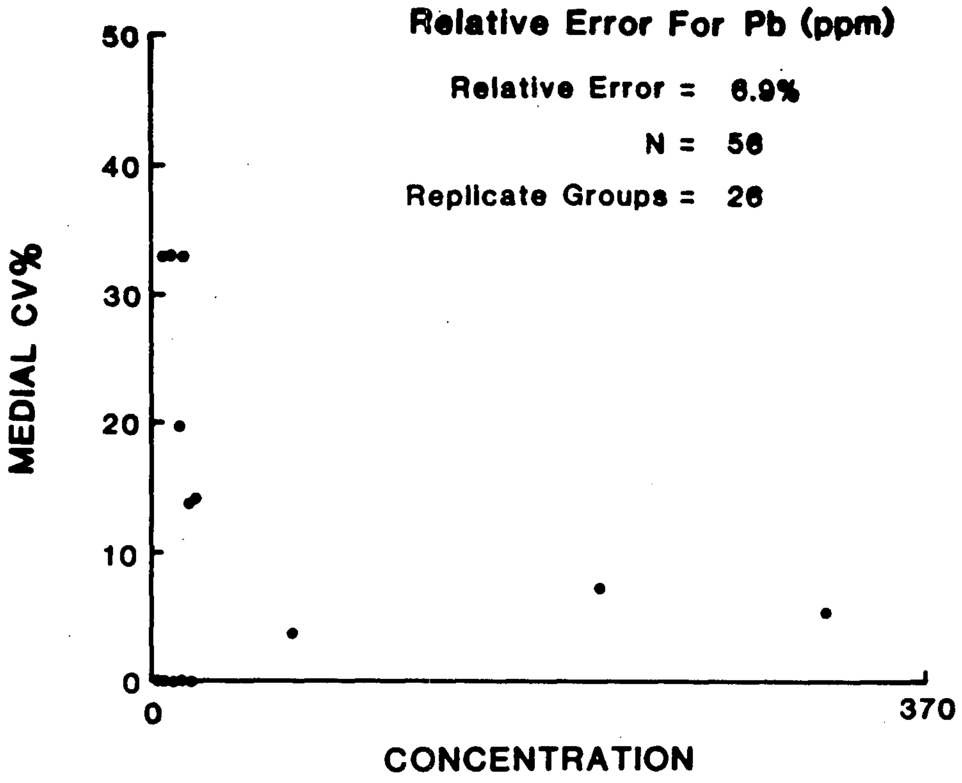
   117      SAMP   EAST NRTH    AG     CU     PB     ZN     CO     MO     AS     HG    BA
   118      NUM     (M)  (M)  (PPM)  (PPM)  (PPM)  (PPM)  (PPM)  (PPM)  (PPM)  (PPB) (PPM)
   119      -----  ---- ----  ------ ------ ------ ------ ------ ------ ------ ------ -----
   120      88976   390  363    0.1   25.0   20.0   45.0    5.0    1.0   10.0     30   470
   121      88978   393  357    0.1   50.0   15.0   90.0    5.0    1.0    5.0     20   650
   122      88980   420  360    0.1   55.0   25.0   50.0   10.0    1.0    5.0     20   630
   123      88982   435  360    0.1  195.0   20.0   50.0   10.0    1.0    5.0     30   600
   124      88984   450  360    0.1  130.0   15.0   70.0    5.0    1.0    5.0     50   780
   125      88986   465  360    0.1   55.0   20.0  115.0    5.0    1.0    5.0     30   930
```

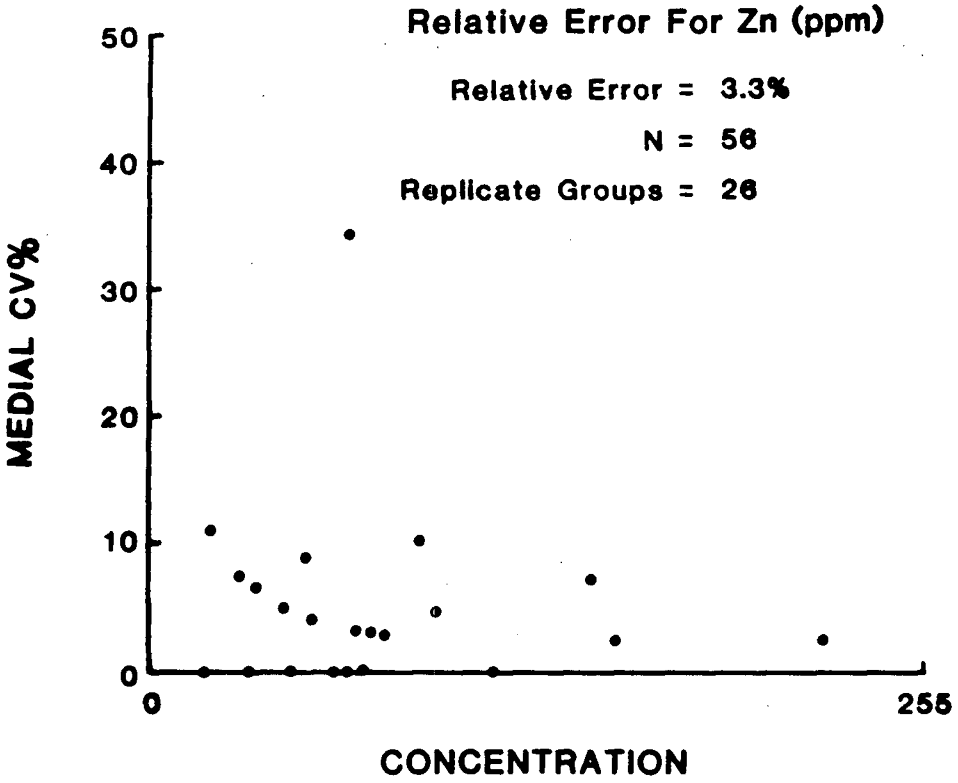
APPENDIX 7

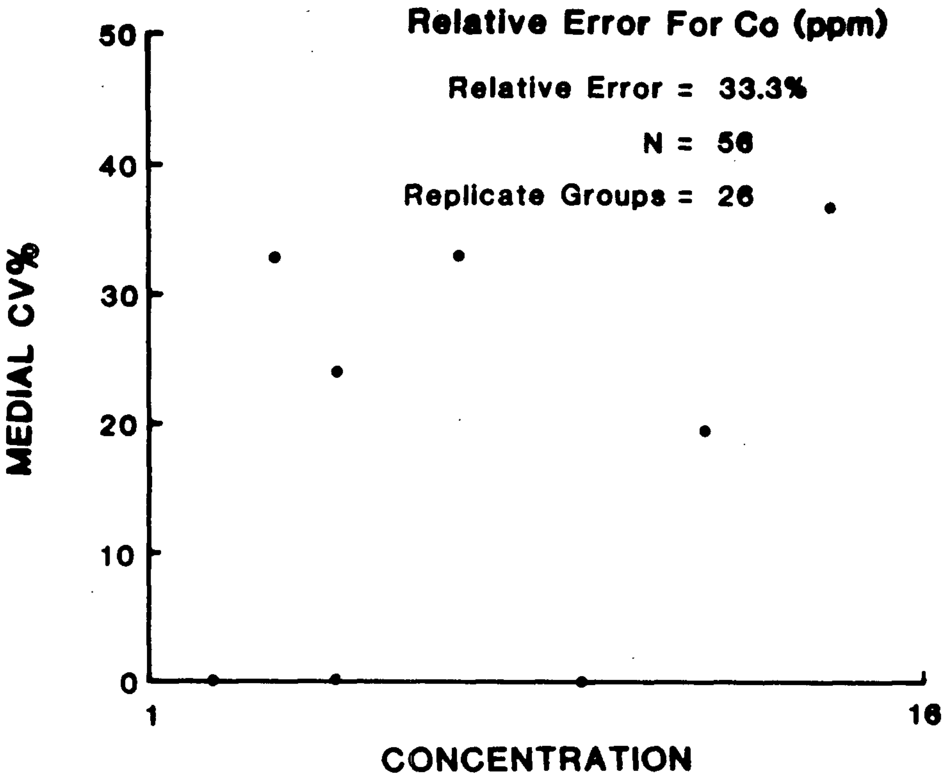
SOIL SURVEY -
RELATIVE ERROR PLOTS


Relative Error For Ag (ppm)
Relative Error = 0.0%
N = 56
Replicate Groups = 26
MEDIAL CV%
50
40
30
20
10
0
0
20
CONCENTRATION


Relative Error For Cu (ppm)
Relative Error = 5.4%
N = 56
Replicate Groups = 26
MEDIAL CV%
50
40
30
20
10
0
0
1100
CONCENTRATION


Relative Error For Pb (ppm)
Relative Error = 6.9%
N = 56
Replicate Groups = 26
MEDIAL CV%
50
40
30
20
10
0
0
370
CONCENTRATION


Relative Error For Zn (ppm)
Relative Error = 3.3%
N = 56
Replicate Groups = 26
MEDIAL CV%
50
40
30
20
10
0
0
255
CONCENTRATION

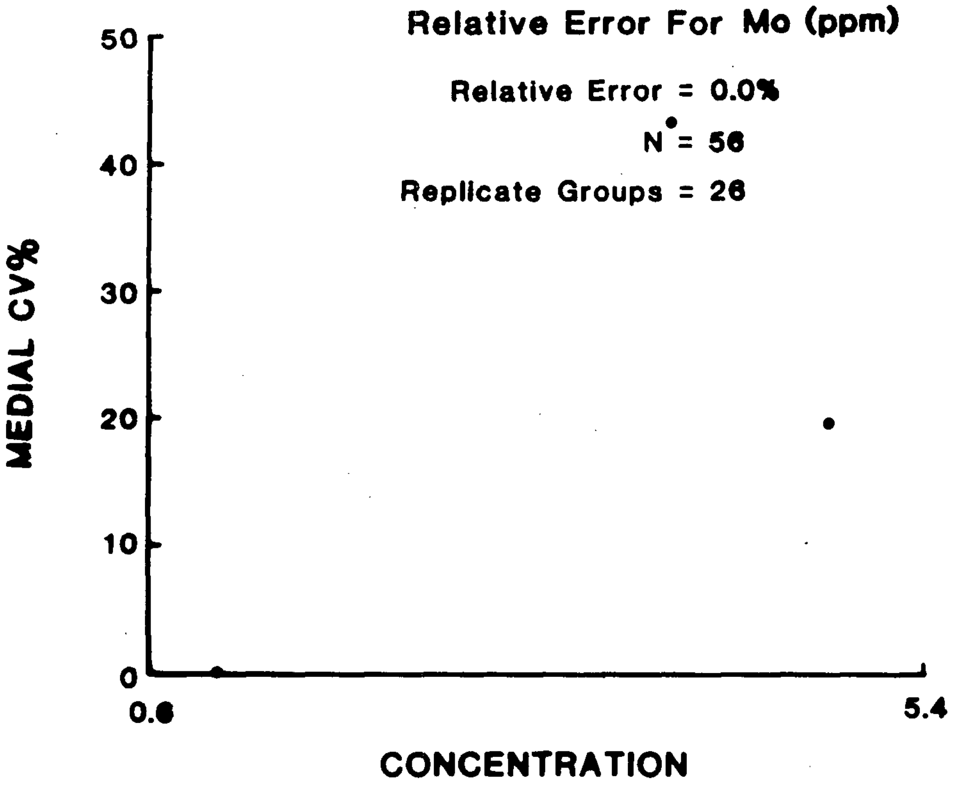


Relative Error For Co (ppm)

Relative Error = 33.3%

N = 56

Replicate Groups = 26

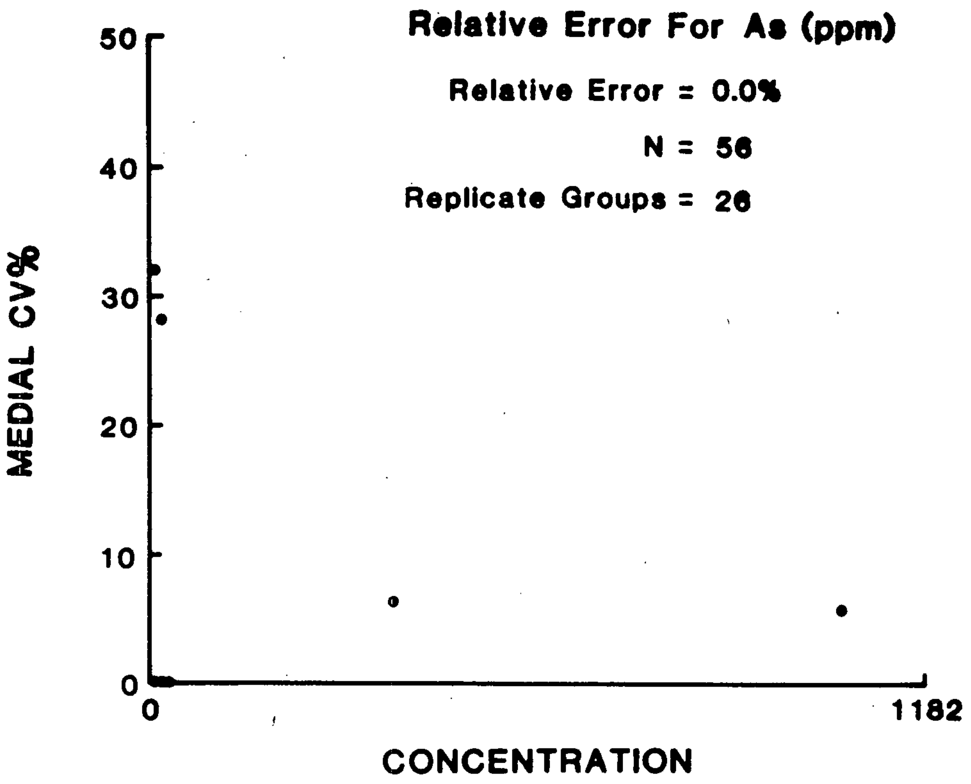


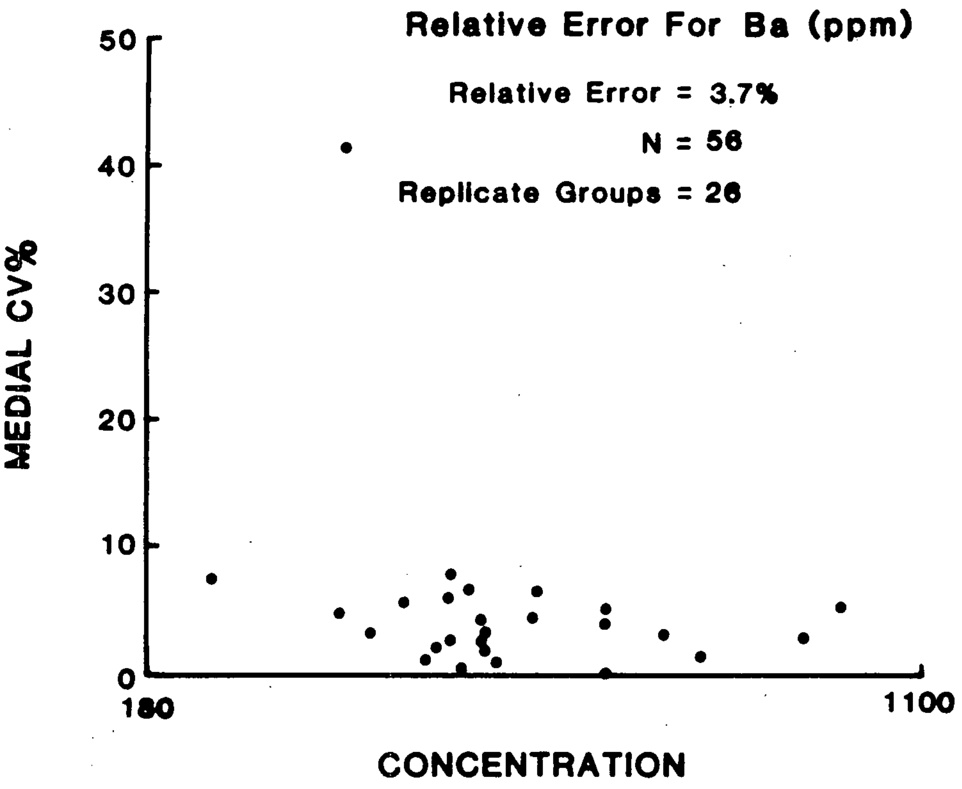
Relative Error For Mo (ppm)

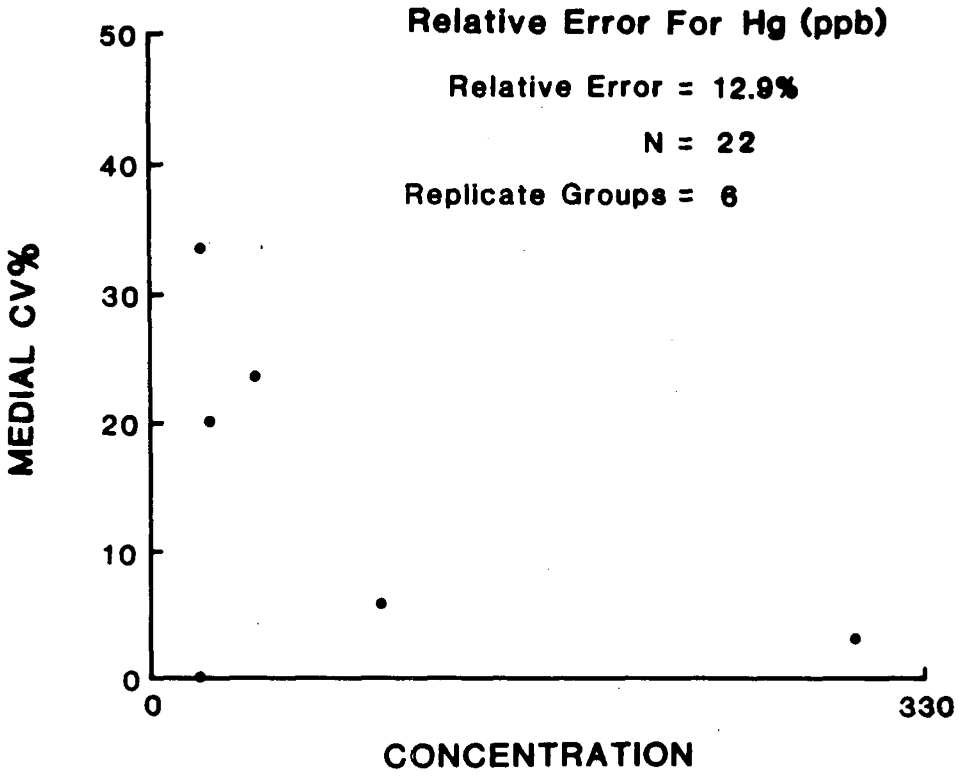
Relative Error = 0.0%

N = 56

Replicate Groups = 26


Relative Error For As (ppm)
Relative Error = 0.0%
N = 56
Replicate Groups = 26
MEDIAL CV%
50
40
30
20
10
0
0
1182
CONCENTRATION


Relative Error For Ba (ppm)
Relative Error = 3.7%
N = 56
Replicate Groups = 26
MEDIAL CV%
50
40
30
20
10
0
180
1100
CONCENTRATION


Relative Error For Hg (ppb)
Relative Error = 12.9%
N = 22
Replicate Groups = 6
MEDIAL CV%
50
40
30
20
10
0
0
330
CONCENTRATION

APPENDIX 8

SOIL SURVEY PROBABILITY PLOTS

```
T
I   PROGRAM:          PERCENTAGE HISTOGRAMS                          NAME      AG-SC
T
L   DATA:    DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY                N               116
E   RUN:                                                             X BAR     0.16896
S   TIME:    25/03/83 14:08:04                                       STD DEV   0.22512

CELL LOWER LIMIT NMBR   %   ARITHMETIC VALUES           BAR INTERVAL = 0.25000   STD DEV  ARITH.LIMIT
   1               0   0.0
   2 -0.9285       0   0.0
   3 -0.8722       0   0.0
   4 -0.8160       0   0.0
   5 -0.7597       0   0.0
   6 -0.7034       0   0.0
   7 -0.6471       0   0.0
   8 -0.5908       0   0.0
   9 -0.5345       0   0.0
  10 -0.4783       0   0.0
  11 -0.4220       0   0.0
  12 -0.3657       0   0.0
  13 -0.3094       0   0.0
  14 -0.2531       0   0.0
  15 -0.1969       0   0.0
  16 -0.1406       0   0.0
  17 -0.8430E-01   0   0.0
  18 -0.2802E-01   0   0.0
  19  0.2826E-01   0   0.0
  20  0.8454E-01 102  87.9 ****************************************************************************************
  21  0.1408       0   0.0
  22  0.1971       0   0.0
  23  0.2534       0   0.0
  24  0.3097       0   0.0
  25  0.3659       7   6.0 ******
  26  0.4222       0   0.0
  27  0.4785       0   0.0
  28  0.5348       0   0.0
  29  0.5911       0   0.0
  30  0.6474       2   1.7 **
  31  0.7036       0   0.0
  32  0.7599       3   2.6 ***
  33  0.8162       0   0.0
  34  0.8725       0   0.0
  35  0.9288       0   0.0
  36  0.9850       0   0.0
  37   1.041       0   0.0
  38   1.098       1   0.9 *
  39   1.154       0   0.0
  40   1.210       0   0.0
  41   1.266       1   0.9 *
```

```
T
I  PROGRAM:        PERCENTAGE CUMULATIVE FREQUENCY PLOTS            NAME       AG-SC
T
L  DATA:    DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY                N            116
E  RUN:                                                             X BAR      0.16896
S  TIME:    25/03/83 14:08:04                                       STD DEV    0.22512

CELL  LOWER LIMIT  NMBR     %   ARITHMETIC VALUES      BAR INTERVAL = 0.12500   STD DEV   ARITH.LIMIT
   1  0.7177          5   4.3          *
   2  0.6896          2   6.0             *
   3  0.6614          0   6.0             *
   4  0.6333          0   6.0             *
   5  0.6051          0   6.0             *
   6  0.5770          0   6.0             *
   7  0.5489          0   6.0             *
   8  0.5207          0   6.0             *
   9  0.4926          0   6.0             *
  10  0.4644          0   6.0             *
  11  0.4363          0   6.0             *
  12  0.4082          0   6.0             *
  13  0.3800          7  12.1                   *
  14  0.3519          0  12.1                   *
  15  0.3237          0  12.1                   *
  16  0.2956          0  12.1                   *
  17  0.2675          0  12.1                   *
  18  0.2393          0  12.1                   *
  19  0.2112          0  12.1                   *
  20  0.1830          0  12.1                   *
  21  0.1549          0  12.1                   *
  22  0.1268          0  12.1                   *
  23  0.9861E-01    102 100.0                                                                       *
  24  0.7047E-01      0 100.0                                                                       *
  25  0.4233E-01      0 100.0                                                                       *
  26  0.1419E-01      0 100.0                                                                       *
  27  -0.1395E-01     0 100.0                                                                       *
  28  -0.4209E-01     0 100.0                                                                       *
  29  -0.7023E-01     0 100.0                                                                       *
  30  -0.9837E-01     0 100.0                                                                       *
  31  -0.1265         0 100.0                                                                       *
  32  -0.1547         0 100.0                                                                       *
  33  -0.1828         0 100.0                                                                       *
  34  -0.2109         0 100.0                                                                       *
  35  -0.2391         0 100.0                                                                       *
  36  -0.2672         0 100.0                                                                       *
  37  -0.2954         0 100.0                                                                       *
  38  -0.3235         0 100.0                                                                       *
  39  -0.3516         0 100.0                                                                       *
  40  -0.3798         0 100.0                                                                       *
  41                  0 100.0                                                                       *
                                1       5     10    20   30  40  50  60  70   80    90   95       99
```

```
T
I   PROGRAM:            PERCENTAGE HISTOGRAMS                                         NAME        AG-SC
T
L   DATA:    DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY                                 N             116
E   RUN:                                                                              X BAR     -0.90616
S   TIME:    25/03/83 14:08:04                                                        STD DEV    0.26358

CELL LOWER LIMIT NMBR    %          LOGARITHMIC VALUES                   BAR INTERVAL = 0.25000    STD DEV  ARITH.LIMIT
   1                0   0.0
   2   -2.191       0   0.0                                                                                 0.6440E-02
   3   -2.125       0   0.0                                                                                 0.7495E-02
   4   -2.059       0   0.0                                                                                 0.8723E-02
   5   -1.993       0   0.0                                                                                 0.1015E-01
   6   -1.928       0   0.0                                                                                 0.1182E-01
   7   -1.862       0   0.0                                                                                 0.1375E-01
   8   -1.796       0   0.0                                                                                 0.1601E-01
   9   -1.730       0   0.0                                                                                 0.1863E-01
  10   -1.664       0   0.0                                                                                 0.2168E-01
  11   -1.598       0   0.0                                                                                 0.2523E-01
  12   -1.532       0   0.0                                                                                 0.2937E-01
  13   -1.466       0   0.0                                                                                 0.3418E-01
  14   -1.400       0   0.0                                                                                 0.3978E-01
  15   -1.334       0   0.0                                                                                 0.4629E-01
  16   -1.269       0   0.0                                                                                 0.5388E-01
  17   -1.203       0   0.0                                                                                 0.6271E-01
  18   -1.137       0   0.0                                                                                 0.7298E-01
  19   -1.071       0   0.0                                                                                 0.8494E-01
  20   -1.005     102  87.9 ********************************************************************************   0.9886E-01
  21  -0.9391       0   0.0                                                                                 0.1151
  22  -0.8732       0   0.0                                                                                 0.1339
  23  -0.8073       0   0.0                                                                                 0.1558
  24  -0.7414       0   0.0                                                                                 0.1814
  25  -0.6755       0   0.0                                                                                 0.2111
  26  -0.6096       0   0.0                                                                                 0.2457
  27  -0.5437       0   0.0                                                                                 0.2859
  28  -0.4778       0   0.0                                                                                 0.3328
  29  -0.4119       7   6.0 ******                                                                          0.3873
  30  -0.3460       0   0.0                                                                                 0.4508
  31  -0.2801       0   0.0                                                                                 0.5246
  32  -0.2143       2   1.7 **                                                                              0.6106
  33  -0.1484       3   2.6 ***                                                                             0.7106
  34  -0.8247E-01   0   0.0                                                                                 0.8271
  35  -0.1657E-01   1   0.9 *                                                                               0.9626
  36   0.4932E-01   0   0.0                                                                                   1.120
  37   0.1152       0   0.0                                                                                   1.304
  38   0.1811       1   0.9 *                                                                                 1.517
  39   0.2470       0   0.0                                                                                   1.766
  40   0.3129       0   0.0                                                                                   2.055
  41   0.3788       0   0.0                                                                                   2.392
```

```
T
I  PROGRAM:            PERCENTAGE CUMULATIVE FREQUENCY PLOTS           NAME          AG-SC
T
L  DATA:   DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY                    N               116
E  RUN:                                                                X BAR      -0.90616
S  TIME:     25/03/83 14:08:04                                         STD DEV     0.26358

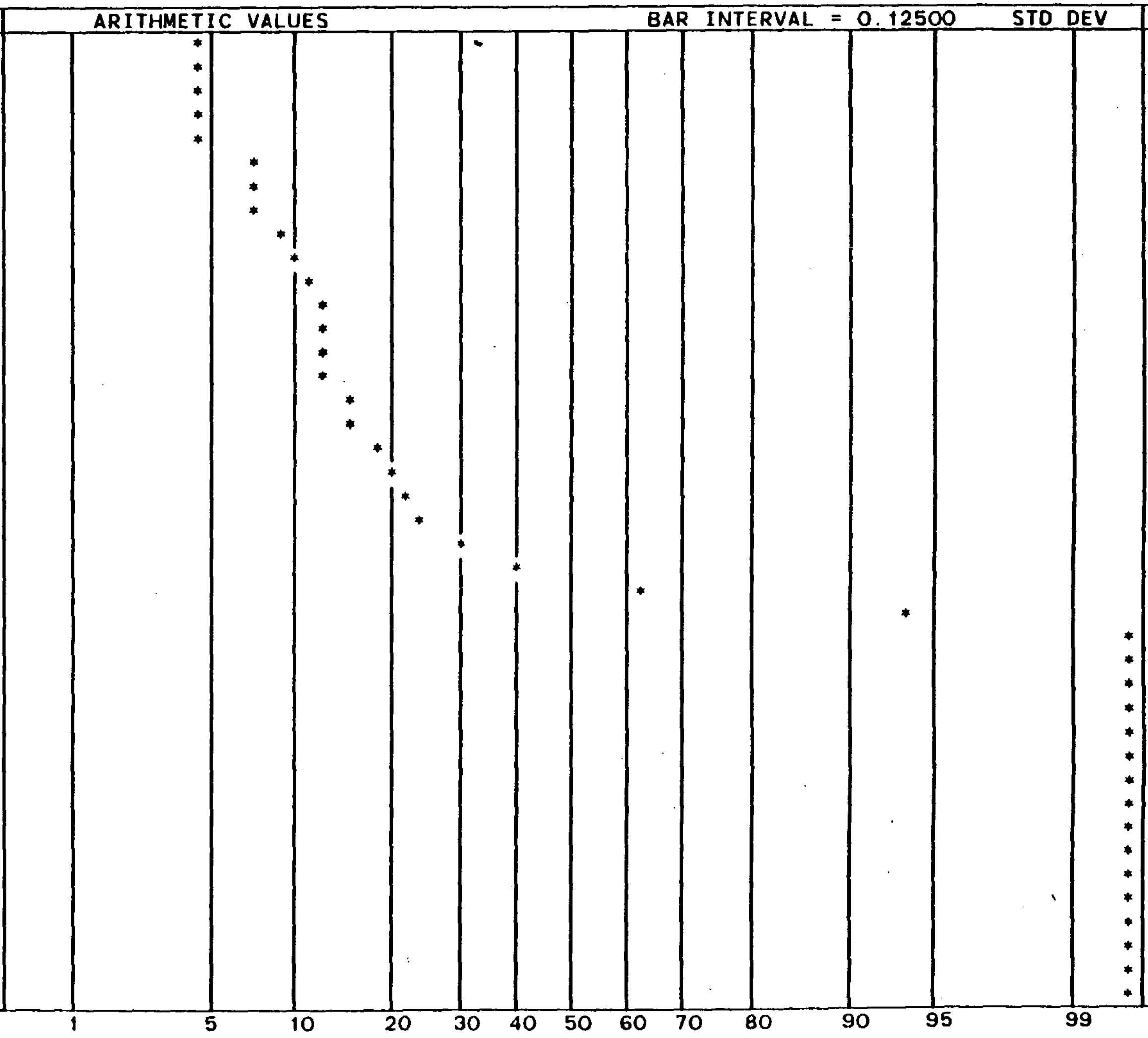
CELL LOWER LIMIT NMBR      % |  LOGARITHMIC VALUES         BAR INTERVAL = 0.12500   STD DEV | ARITH.LIMIT
   1     -0.2637    7    6.0 |            *                                               | 0.5449
   2     -0.2966    0    6.0 |            *                                               | 0.5051
   3     -0.3296    0    6.0 |            *                                               | 0.4682
   4     -0.3625    0    6.0 |            *                                               | 0.4340
   5     -0.3955    0    6.0 |            *                                               | 0.4023
   6     -0.4284    7   12.1 |                 *                                          | 0.3729
   7     -0.4614    0   12.1 |                 *                                          | 0.3456
   8     -0.4943    0   12.1 |                 *                                          | 0.3204
   9     -0.5273    0   12.1 |                 *                                          | 0.2970
  10     -0.5602    0   12.1 |                 *                                          | 0.2753
  11     -0.5932    0   12.1 |                 *                                          | 0.2552
  12     -0.6261    0   12.1 |                 *                                          | 0.2365
  13     -0.6590    0   12.1 |                 *                                          | 0.2193
  14     -0.6920    0   12.1 |                 *                                          | 0.2032
  15     -0.7249    0   12.1 |                 *                                          | 0.1884
  16     -0.7579    0   12.1 |                 *                                          | 0.1746
  17     -0.7908    0   12.1 |                 *                                          | 0.1619
  18     -0.8238    0   12.1 |                 *                                          | 0.1500
  19     -0.8567    0   12.1 |                 *                                          | 0.1391
  20     -0.8897    0   12.1 |                 *                                          | 0.1289
  21     -0.9226    0   12.1 |                 *                                          | 0.1195
  22     -0.9556    0   12.1 |                 *                                          | 0.1108
  23     -0.9885    0   12.1 |                 *                                          | 0.1027
  24      -1.021  102  100.0 |                                                          * | 0.9518E-01
  25      -1.054    0  100.0 |                                                          * | 0.8822E-01
  26      -1.087    0  100.0 |                                                          * | 0.8178E-01
  27      -1.120    0  100.0 |                                                          * | 0.7580E-01
  28      -1.153    0  100.0 |                                                          * | 0.7027E-01
  29      -1.186    0  100.0 |                                                          * | 0.6513E-01
  30      -1.219    0  100.0 |                                                          * | 0.6037E-01
  31      -1.252    0  100.0 |                                                          * | 0.5596E-01
  32      -1.285    0  100.0 |                                                          * | 0.5187E-01
  33      -1.318    0  100.0 |                                                          * | 0.4808E-01
  34      -1.351    0  100.0 |                                                          * | 0.4457E-01
  35      -1.384    0  100.0 |                                                          * | 0.4131E-01
  36      -1.417    0  100.0 |                                                          * | 0.3830E-01
  37      -1.450    0  100.0 |                                                          * | 0.3550E-01
  38      -1.483    0  100.0 |                                                          * | 0.3291E-01
  39      -1.516    0  100.0 |                                                          * | 0.3050E-01
  40      -1.549    0  100.0 |                                                          * | 0.2827E-01
  41                0  100.0 |                                                          * |
                              ----------------------------------------------------------
                                  1      5    10   20 30 40 50 60 70  80   90  95      99
```

```
T
I  PROGRAM:           PERCENTAGE HISTOGRAMS                                    NAME        CU-SC
T
L  DATA:     DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY                          N             116
E  RUN:                                                                        X BAR      91.272
S  TIME:     25/03/83 14:08:04                                                 STD DEV    144.42

CELL LOWER LIMIT NMBR    %   ARITHMETIC VALUES                  BAR INTERVAL = 0.25000   STD DEV ARITH.LIMIT
   1                0   0.0
   2   -612.8       0   0.0
   3   -576.7       0   0.0
   4   -540.6       0   0.0
   5   -504.5       0   0.0
   6   -468.4       0   0.0
   7   -432.2       0   0.0
   8   -396.1       0   0.0
   9   -360.0       0   0.0
  10   -323.9       0   0.0
  11   -287.8       0   0.0
  12   -251.7       0   0.0
  13   -215.6       0   0.0
  14   -179.5       0   0.0
  15   -143.4       0   0.0
  16   -107.3       0   0.0
  17   -71.20       0   0.0
  18   -35.09       0   0.0
  19    1.012      66  56.9 *********************************************************
  20    37.12      20  17.2 *****************
  21    73.22       5   4.3 ****
  22    109.3       7   6.0 ******
  23    145.4       3   2.6 ***
  24    181.5       1   0.9 *
  25    217.6       1   0.9 *
  26    253.7       3   2.6 ***
  27    289.8       2   1.7 **
  28    326.0       0   0.0
  29    362.1       3   2.6 ***
  30    398.2       0   0.0
  31    434.3       1   0.9 *
  32    470.4       0   0.0
  33    506.5       1   0.9 *
  34    542.6       1   0.9 *
  35    578.7       0   0.0
  36    614.8       1   0.9 *
  37    650.9       0   0.0
  38    687.0       0   0.0
  39    723.1       0   0.0
  40    759.2       0   0.0
  41    795.3       1   0.9 *
```

TITLES			
PROGRAM:	PERCENTAGE CUMULATIVE FREQUENCY PLOTS	NAME	CU-SC
DATA:	DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY	N	116
RUN:		X BAR	91.272
TIME:	25/03/83 14:08:04	STD DEV	144.42

CELL	LOWER LIMIT	NMBR	%	ARITH.LIMIT
1	443.3	5	4.3	
2	425.2	0	4.3	
3	407.2	0	4.3	
4	389.1	0	4.3	
5	371.1	0	4.3	
6	353.0	3	6.9	
7	335.0	0	6.9	
8	316.9	0	6.9	
9	298.9	2	8.6	
10	280.8	1	9.5	
11	262.8	2	11.2	
12	244.7	1	12.1	
13	226.7	0	12.1	
14	208.6	0	12.1	
15	190.6	1	12.9	
16	172.5	2	14.7	
17	154.5	0	14.7	
18	136.4	4	18.1	
19	118.4	3	20.7	
20	100.3	2	22.4	
21	82.25	2	24.1	
22	64.19	8	31.0	
23	46.14	9	38.8	
24	28.09	27	62.1	
25	10.04	37	94.0	
26	-8.016	7	100.0	
27	-26.07	0	100.0	
28	-44.12	0	100.0	
29	-62.17	0	100.0	
30	-80.23	0	100.0	
31	-98.28	0	100.0	
32	-116.3	0	100.0	
33	-134.4	0	100.0	
34	-152.4	0	100.0	
35	-170.5	0	100.0	
36	-188.5	0	100.0	
37	-206.6	0	100.0	
38	-224.6	0	100.0	
39	-242.7	0	100.0	
40	-260.7	0	100.0	
41		0	100.0	



```
T
I   PROGRAM:            PERCENTAGE HISTOGRAMS                                 NAME        CU-SC
T
L   DATA:     DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY                        N                116
E   RUN:                                                                      X BAR       1.6542
S   TIME:     25/03/83 14:08:04                                               STD DEV     0.47411

CELL LOWER LIMIT NMBR    %     LOGARITHMIC VALUES                     BAR INTERVAL = 0.25000    STD DEV  ARITH.LIMIT
   1                0   0.0
   2 -0.6570        0   0.0                                                                                  0.2203
   3 -0.5385        0   0.0                                                                                  0.2894
   4 -0.4200        0   0.0                                                                                  0.3802
   5 -0.3014        0   0.0                                                                                  0.4995
   6 -0.1829        0   0.0                                                                                  0.6563
   7 -0.6439E-01    0   0.0                                                                                  0.8622
   8  0.5413E-01    0   0.0                                                                                   1.133
   9  0.1727        0   0.0                                                                                   1.488
  10  0.2912        1   0.9 *                                                                                 1.955
  11  0.4097        0   0.0                                                                                   2.569
  12  0.5282        0   0.0                                                                                   3.375
  13  0.6468        0   0.0                                                                                   4.434
  14  0.7653        0   0.0                                                                                   5.825
  15  0.8838        6   5.2 *****                                                                             7.653
  16   1.002        0   0.0                                                                                   10.05
  17   1.121        9   7.8 ********                                                                          13.21
  18   1.239       17  14.7 ***************                                                                   17.35
  19   1.358       11   9.5 *********                                                                         22.80
  20   1.476       22  19.0 *******************                                                               29.95
  21   1.595       10   8.6 *********                                                                         39.35
  22   1.714        9   7.8 ********                                                                          51.70
  23   1.832        4   3.4 ***                                                                               67.93
  24   1.951        3   2.6 ***                                                                               89.24
  25   2.069        7   6.0 ******                                                                            117.2
  26   2.188        3   2.6 ***                                                                               154.0
  27   2.306        1   0.9 *                                                                                 202.4
  28   2.425        5   4.3 ****                                                                              265.9
  29   2.543        4   3.4 ***                                                                               349.3
  30   2.662        2   1.7 **                                                                                458.9
  31   2.780        1   0.9 *                                                                                 602.9
  32   2.899        1   0.9 *                                                                                 792.1
  33   3.017        0   0.0                                                                                   1041.
  34   3.136        0   0.0                                                                                   1367.
  35   3.254        0   0.0                                                                                   1796.
  36   3.373        0   0.0                                                                                   2360.
  37   3.491        0   0.0                                                                                   3100.
  38   3.610        0   0.0                                                                                   4073.
  39   3.728        0   0.0                                                                                   5351.
  40   3.847        0   0.0                                                                                   7030.
  41   3.966        0   0.0                                                                                   9236.
```

TITLES

PROGRAM: PERCENTAGE CUMULATIVE FREQUENCY PLOTS

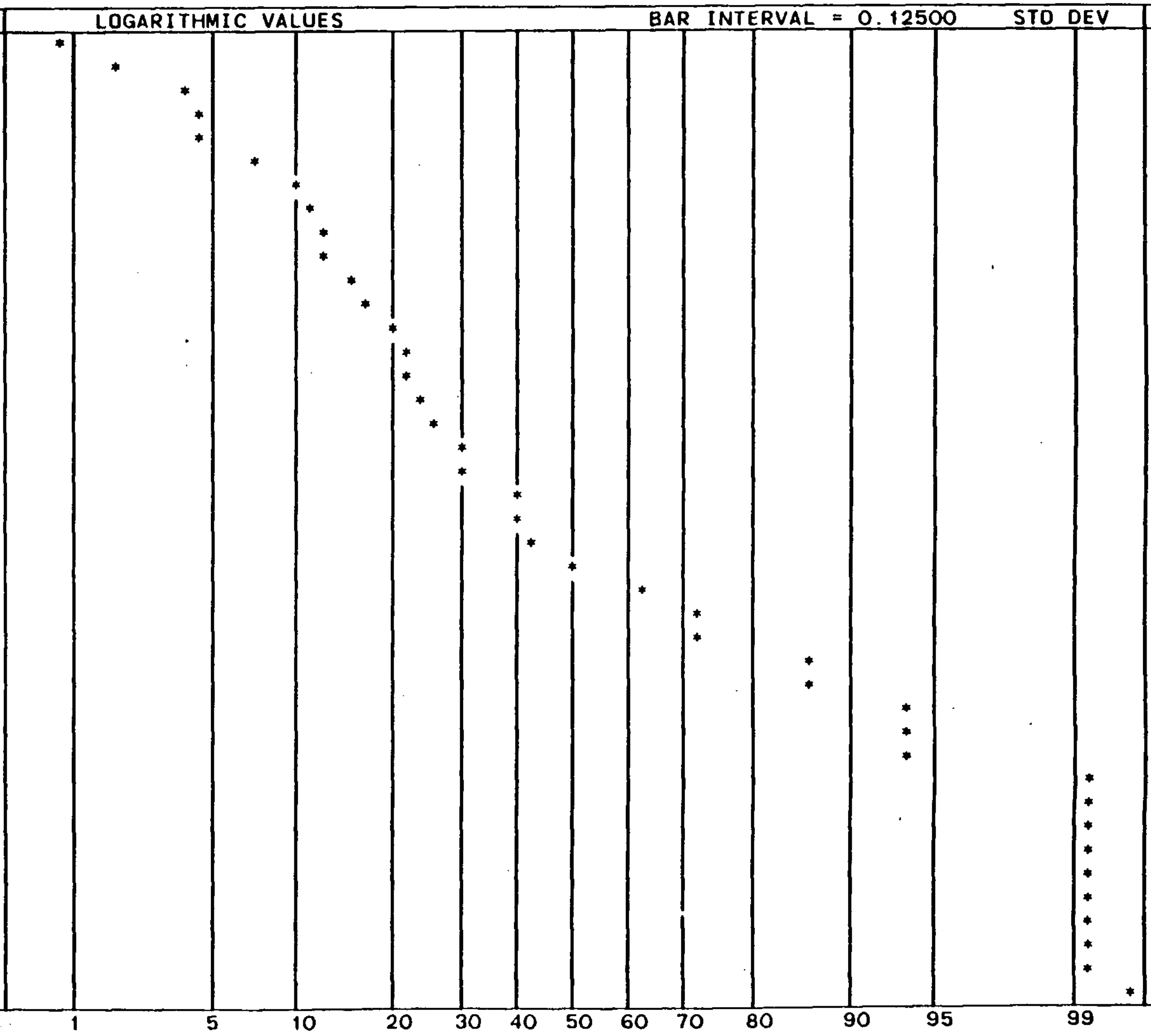
DATA: DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY

RUN:

TIME: 25/03/83 14:08:04

NAME	CU-SC
N	116
X BAR	1.6542
STD DEV	0.47411

CELL	LOWER LIMIT	NMBR	%	ARITH.LIMIT
1	2.810	1	0.9	645.5
2	2.751	1	1.7	563.1
3	2.691	2	3.4	491.3
4	2.632	1	4.3	428.6
5	2.573	0	4.3	374.0
6	2.514	3	6.9	326.3
7	2.454	3	9.5	284.6
8	2.395	2	11.2	248.3
9	2.336	1	12.1	216.7
10	2.277	1	12.9	189.0
11	2.217	2	14.7	164.9
12	2.158	2	16.4	143.9
13	2.099	4	19.8	125.5
14	2.039	2	21.6	109.5
15	1.980	1	22.4	95.54
16	1.921	2	24.1	83.35
17	1.862	2	25.9	72.72
18	1.802	6	31.0	63.45
19	1.743	0	31.0	55.35
20	1.684	9	38.8	48.29
21	1.625	2	40.5	42.13
22	1.565	3	43.1	36.76
23	1.506	9	50.9	32.07
24	1.447	13	62.1	27.98
25	1.388	11	71.6	24.41
26	1.328	0	71.6	21.30
27	1.269	17	86.2	18.58
28	1.210	0	86.2	16.21
29	1.151	9	94.0	14.14
30	1.091	0	94.0	12.34
31	1.032	0	94.0	10.76
32	0.9727	6	99.1	9.391
33	0.9135	0	99.1	8.193
34	0.8542	0	99.1	7.148
35	0.7949	0	99.1	6.236
36	0.7357	0	99.1	5.441
37	0.6764	0	99.1	4.747
38	0.6171	0	99.1	4.141
39	0.5579	0	99.1	3.613
40	0.4986	0	99.1	3.152
41		1	100.0	



```
T
I  PROGRAM:          PERCENTAGE HISTOGRAMS                    NAME       PB-SC
T
L  DATA:    DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY          N                116
E  RUN:                                                       X BAR         43.966
S  TIME:    25/03/83 14:08:04                                 STD DEV       154.17

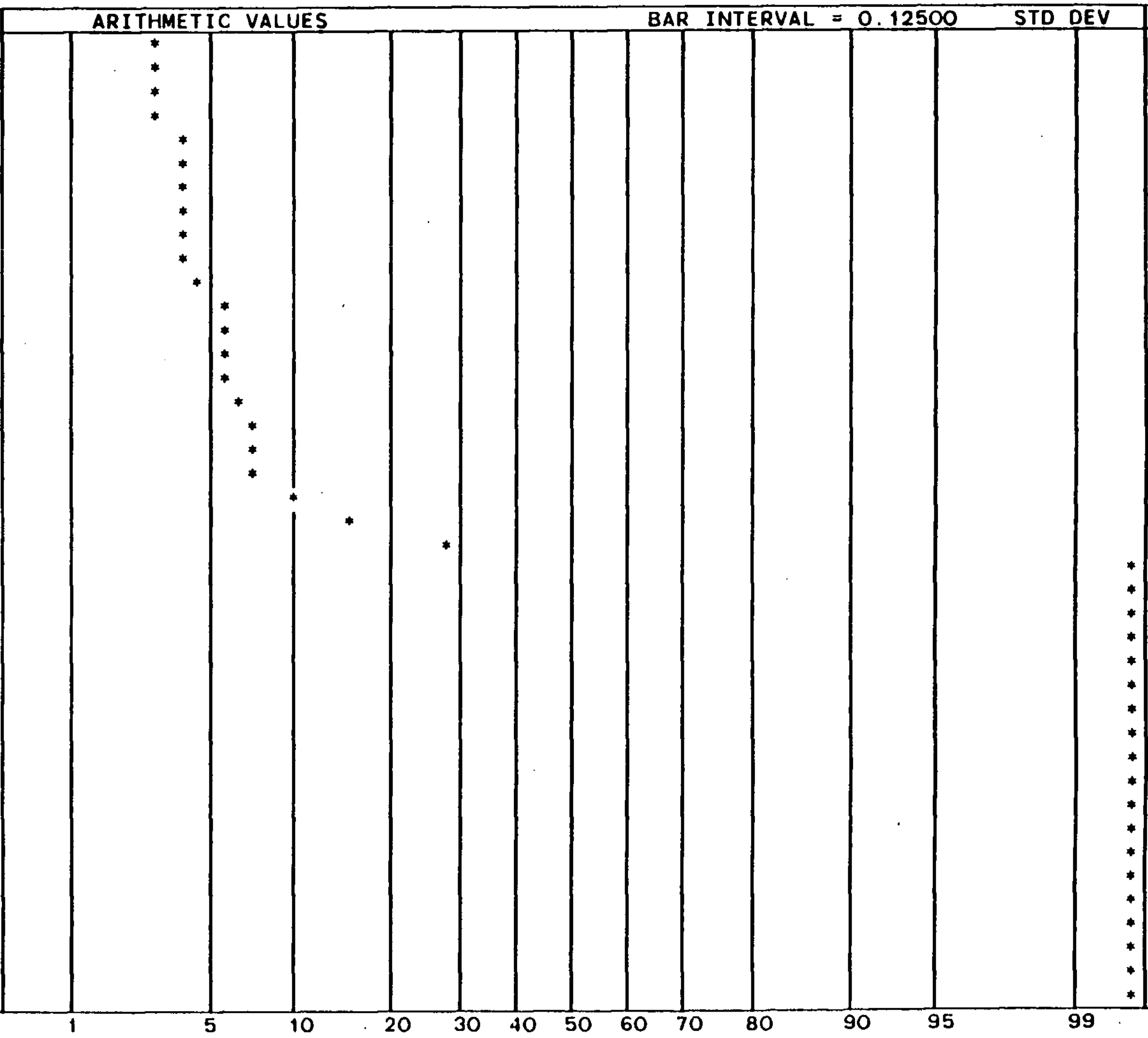
CELL LOWER LIMIT NMBR    %          ARITHMETIC VALUES                      BAR INTERVAL = 0.25000    STD DEV ARITH.LIMIT
   1                0   0.0
   2    -707.6      0   0.0
   3    -669.1      0   0.0
   4    -630.5      0   0.0
   5    -592.0      0   0.0
   6    -553.4      0   0.0
   7    -514.9      0   0.0
   8    -476.4      0   0.0
   9    -437.8      0   0.0
  10    -399.3      0   0.0
  11    -360.7      0   0.0
  12    -322.2      0   0.0
  13    -283.6      0   0.0
  14    -245.1      0   0.0
  15    -206.6      0   0.0
  16    -168.0      0   0.0
  17    -129.5      0   0.0
  18    -90.93      0   0.0
  19    -52.39      0   0.0
  20    -13.85     92  79.3 ********************************************************************************
  21     24.70     15  12.9 *************
  22     63.24      1   0.9 *
  23     101.8      1   0.9 *
  24     140.3      1   0.9 *
  25     178.9      1   0.9 *
  26     217.4      1   0.9 *
  27     255.9      0   0.0
  28     294.5      0   0.0
  29     333.0      1   0.9 *
  30     371.6      0   0.0
  31     410.1      0   0.0
  32     448.7      0   0.0
  33     487.2      0   0.0
  34     525.7      0   0.0
  35     564.3      0   0.0
  36     602.8      0   0.0
  37     641.4      1   0.9 *
  38     679.9      0   0.0
  39     718.5      0   0.0
  40     757.0      0   0.0
  41     795.5      2   1.7 **
```

TITLES

PROGRAM: PERCENTAGE CUMULATIVE FREQUENCY PLOTS
DATA: DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY
RUN:
TIME: 25/03/83 14:08:04

NAME	PB-SC
N	116
X BAR	43.966
STD DEV	154.17

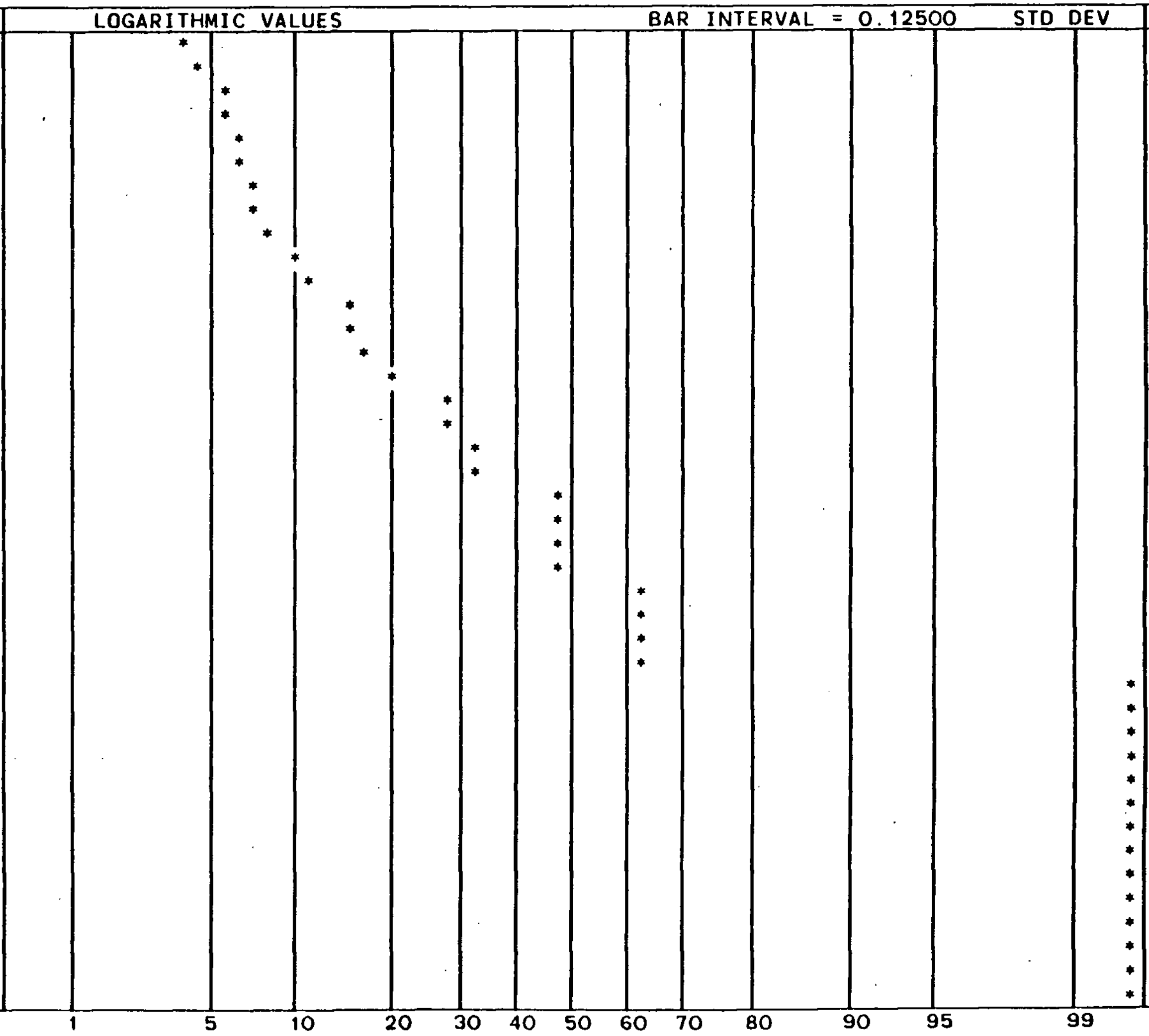
CELL	LOWER LIMIT	NMBR	%	ARITH.LIMIT
1	419.8	3	2.6	
2	400.5	0	2.6	
3	381.2	0	2.6	
4	361.9	0	2.6	
5	342.7	1	3.4	
6	323.4	0	3.4	
7	304.1	0	3.4	
8	284.9	0	3.4	
9	265.6	0	3.4	
10	246.3	0	3.4	
11	227.0	1	4.3	
12	207.8	1	5.2	
13	188.5	0	5.2	
14	169.2	0	5.2	
15	150.0	0	5.2	
16	130.7	1	6.0	
17	111.4	1	6.9	
18	92.14	0	6.9	
19	72.87	0	6.9	
20	53.60	4	10.3	
21	34.33	6	15.5	
22	15.06	15	28.4	
23	-4.212	83	100.0	
24	-23.48	0	100.0	
25	-42.75	0	100.0	
26	-62.03	0	100.0	
27	-81.30	0	100.0	
28	-100.6	0	100.0	
29	-119.8	0	100.0	
30	-139.1	0	100.0	
31	-158.4	0	100.0	
32	-177.7	0	100.0	
33	-196.9	0	100.0	
34	-216.2	0	100.0	
35	-235.5	0	100.0	
36	-254.7	0	100.0	
37	-274.0	0	100.0	
38	-293.3	0	100.0	
39	-312.6	0	100.0	
40	-331.8	0	100.0	
41		0	100.0	



```
T
I   PROGRAM:            PERCENTAGE HISTOGRAMS                      NAME       PB-SC
T
L   DATA:    DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY              N                116
E   RUN:                                                           X BAR      0.94320
S   TIME:    25/03/83 14:08:04                                     STD DEV    0.61899

CELL LOWER LIMIT NMBR   %    LOGARITHMIC VALUES                    BAR INTERVAL = 0.25000   STD DEV ARITH.LIMIT
   1                0   0.0
   2   -2.074       0   0.0                                                                          0.8426E-02
   3   -1.920       0   0.0                                                                          0.1203E-01
   4   -1.765       0   0.0                                                                          0.1718E-01
   5   -1.610       0   0.0                                                                          0.2454E-01
   6   -1.455       0   0.0                                                                          0.3505E-01
   7   -1.301       0   0.0                                                                          0.5005E-01
   8   -1.146       0   0.0                                                                          0.7147E-01
   9 -0.9911        0   0.0                                                                          0.1021
  10 -0.8364        0   0.0                                                                          0.1458
  11 -0.6816        0   0.0                                                                          0.2081
  12 -0.5269        0   0.0                                                                          0.2972
  13 -0.3721        0   0.0                                                                          0.4245
  14 -0.2174        0   0.0                                                                          0.6062
  15 -0.6265E-01    0   0.0                                                                          0.8657
  16  0.9209E-01    0   0.0                                                                            1.236
  17  0.2468       44  37.9 **************************************                                     1.765
  18  0.4016        0   0.0                                                                            2.521
  19  0.5563       18  15.5 ****************                                                           3.600
  20  0.7111        0   0.0                                                                            5.141
  21  0.8658       16  13.8 **************                                                             7.342
  22    1.021       0   0.0                                                                            10.49
  23    1.175      14  12.1 ************                                                               14.97
  24    1.330       6   5.2 *****                                                                      21.38
  25    1.485       4   3.4 ***                                                                        30.54
  26    1.640       5   4.3 ****                                                                       43.61
  27    1.794       1   0.9 *                                                                          62.27
  28    1.949       1   0.9 *                                                                          88.93
  29    2.104       1   0.9 *                                                                          127.0
  30    2.259       2   1.7 **                                                                         181.4
  31    2.413       1   0.9 *                                                                          259.0
  32    2.568       0   0.0                                                                            369.9
  33    2.723       1   0.9 *                                                                          528.2
  34    2.878       1   0.9 *                                                                          754.3
  35    3.032       1   0.9 *                                                                          1077.
  36    3.187       0   0.0                                                                            1538.
  37    3.342       0   0.0                                                                            2197.
  38    3.497       0   0.0                                                                            3137.
  39    3.651       0   0.0                                                                            4480.
  40    3.806       0   0.0                                                                            6397.
  41    3.961       0   0.0                                                                            9136.
```

```
T
I   PROGRAM:          PERCENTAGE CUMULATIVE FREQUENCY PLOTS          NAME      PB-SC
T
L   DATA:   DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY                 N           116
E   RUN:                                                             X BAR     0.94320
S   TIME:   25/03/83 14:08:04                                        STD DEV   0.61899
```



```
CELL  LOWER LIMIT  NMBR    %     ARITH.LIMIT
  1   2.452          4     3.4     283.1
  2   2.375          1     4.3     236.9
  3   2.297          1     5.2     198.3
  4   2.220          0     5.2     165.9
  5   2.142          1     6.0     138.8
  6   2.065          0     6.0     116.2
  7   1.988          1     6.9     97.21
  8   1.910          0     6.9     81.35
  9   1.833          1     7.8     68.07
 10   1.756          2     9.5     56.96
 11   1.678          2    11.2     47.67
 12   1.601          4    14.7     39.89
 13   1.523          1    15.5     33.38
 14   1.446          2    17.2     27.93
 15   1.369          4    20.7     23.37
 16   1.291          9    28.4     19.56
 17   1.214          0    28.4     16.37
 18   1.137          5    32.8     13.70
 19   1.059          0    32.8     11.46
 20   0.9819        16    46.6     9.591
 21   0.9045         0    46.6     8.026
 22   0.8271         0    46.6     6.716
 23   0.7498         0    46.6     5.620
 24   0.6724        18    62.1     4.703
 25   0.5950         0    62.1     3.936
 26   0.5176         0    62.1     3.293
 27   0.4403         0    62.1     2.756
 28   0.3629        44   100.0     2.306
 29   0.2855         0   100.0     1.930
 30   0.2082         0   100.0     1.615
 31   0.1308         0   100.0     1.351
 32   0.5340E-01     0   100.0     1.131
 33  -0.2397E-01     0   100.0     0.9463
 34  -0.1013         0   100.0     0.7919
 35  -0.1787         0   100.0     0.6627
 36  -0.2561         0   100.0     0.5545
 37  -0.3335         0   100.0     0.4640
 38  -0.4108         0   100.0     0.3883
 39  -0.4882         0   100.0     0.3249
 40  -0.5656         0   100.0     0.2719
 41                  0   100.0
```

```
T
I  PROGRAM:          PERCENTAGE HISTOGRAMS                                  NAME        ZN-SC
T
L  DATA:    DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY                        N              116
E  RUN:                                                                     X BAR       53.922
S  TIME:    25/03/83 14:08:04                                               STD DEV     17.418

CELL LOWER LIMIT NMBR   %        ARITHMETIC VALUES          BAR INTERVAL = 0.25000   STD DEV   ARITH.LIMIT
   1                0   0.0
   2   -30.99       0   0.0
   3   -26.64       0   0.0
   4   -22.28       0   0.0
   5   -17.93       0   0.0
   6   -13.57       0   0.0
   7   -9.219       0   0.0
   8   -4.864       0   0.0
   9  -0.5094       0   0.0
  10    3.845       0   0.0
  11    8.200       0   0.0
  12    12.55       0   0.0
  13    16.91       1   0.9 *
  14    21.26       1   0.9 *
  15    25.62       0   0.0
  16    29.97       7   6.0 ******
  17    34.33      10   8.6 *********
  18    38.68       8   6.9 *******
  19    43.04      21  18.1 ******************
  20    47.39      18  15.5 ****************
  21    51.75      10   8.6 *********
  22    56.10       8   6.9 *******
  23    60.45       0   0.0
  24    64.81       7   6.0 ******
  25    69.16      10   8.6 *********
  26    73.52       4   3.4 ***
  27    77.87       3   2.6 ***
  28    82.23       2   1.7 **
  29    86.58       2   1.7 **
  30    90.94       2   1.7 **
  31    95.29       0   0.0
  32    99.64       0   0.0
  33    104.0       1   0.9 *
  34    108.4       0   0.0
  35    112.7       1   0.9 *
  36    117.1       0   0.0
  37    121.4       0   0.0
  38    125.8       0   0.0
  39    130.1       0   0.0
  40    134.5       0   0.0
  41    138.8       0   0.0
```

TITLES

PROGRAM: PERCENTAGE CUMULATIVE FREQUENCY PLOTS

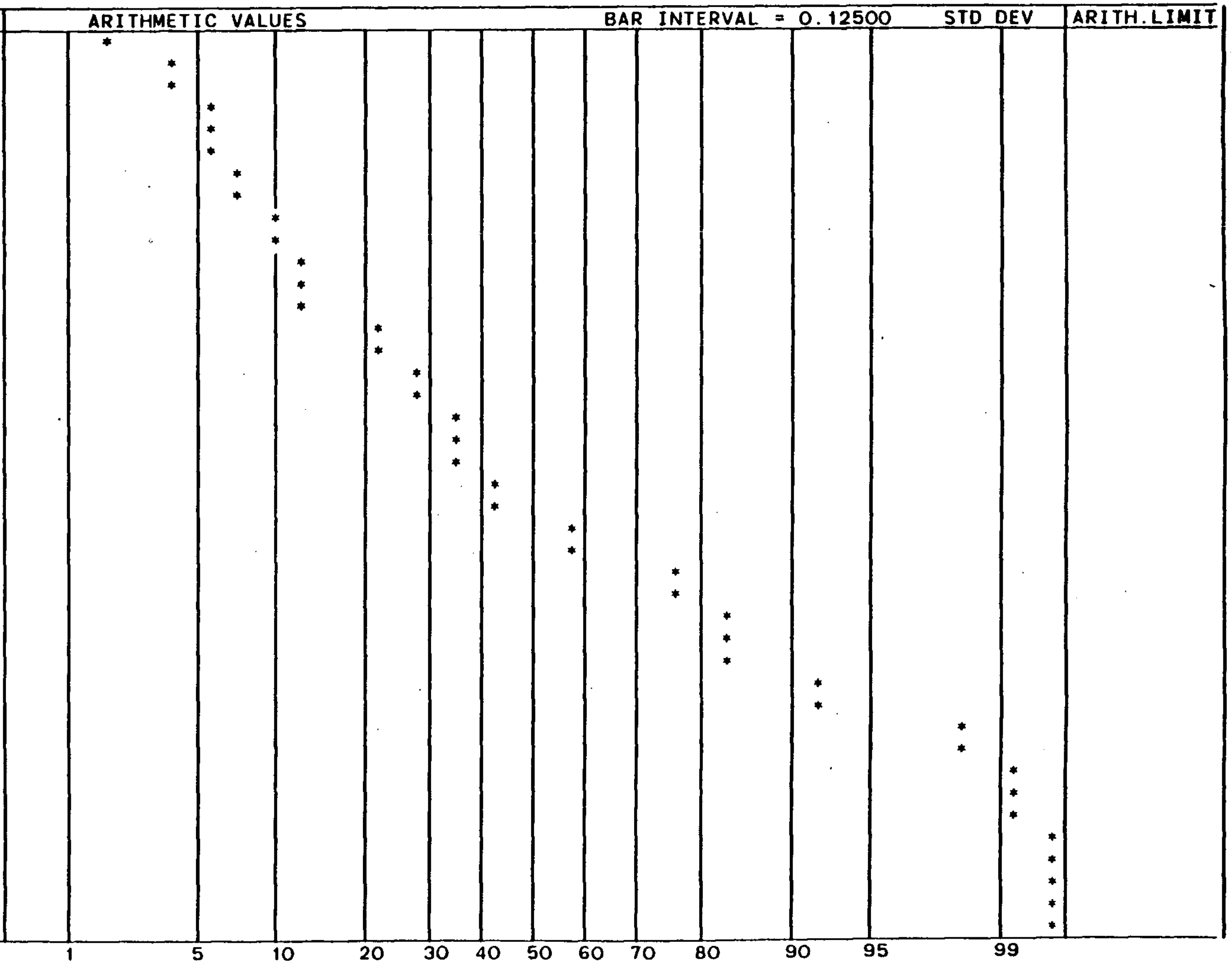
DATA: DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY

RUN:

TIME: 25/03/83 14:08:04

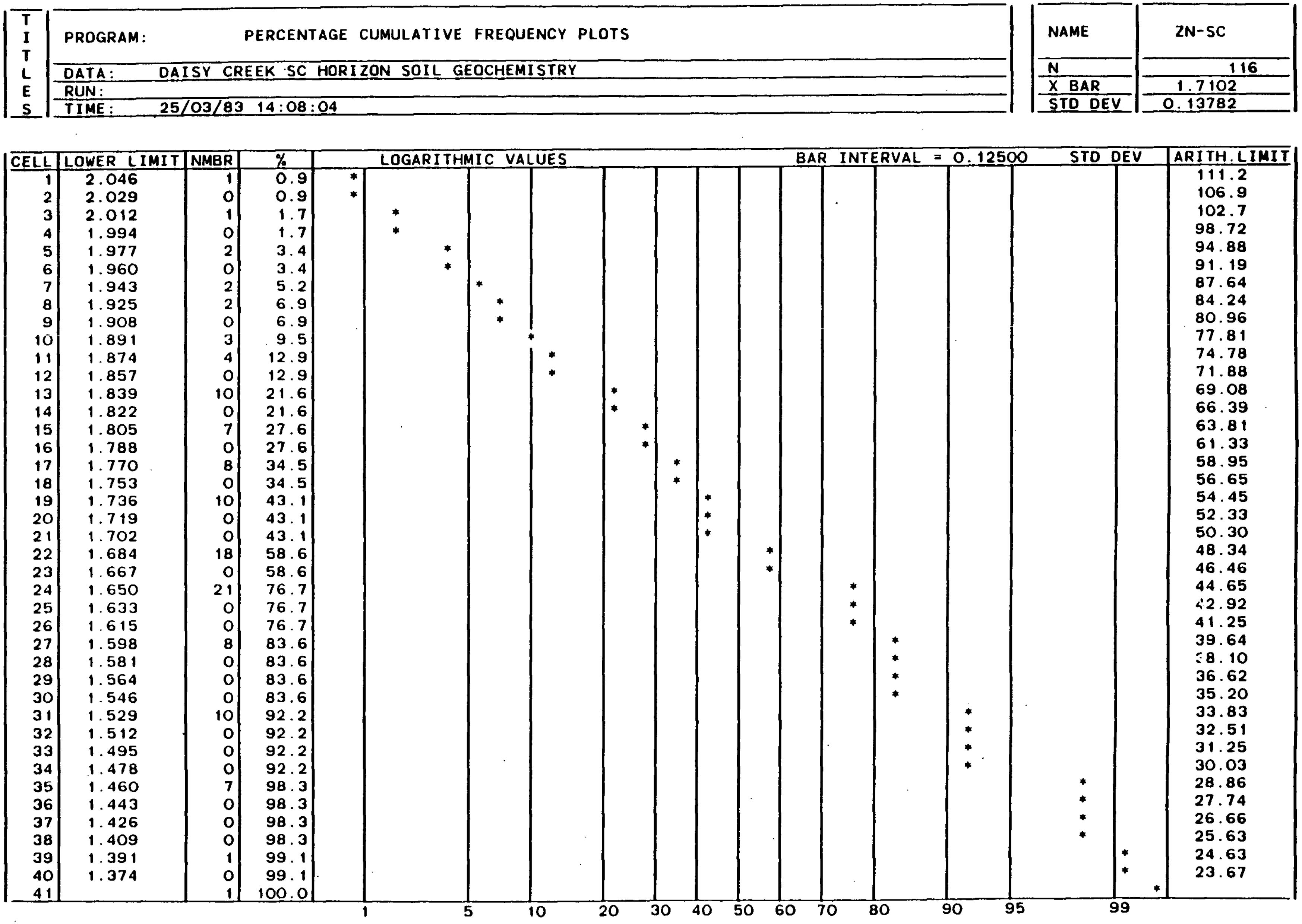
NAME	ZN-SC
N	116
X BAR	53.922
STD DEV	17.418

CELL	LOWER LIMIT	NMBR	%
1	96.38	2	1.7
2	94.20	2	3.4
3	92.02	0	3.4
4	89.85	2	5.2
5	87.67	0	5.2
6	85.49	0	5.2
7	83.32	2	6.9
8	81.14	0	6.9
9	78.96	3	9.5
10	76.78	0	9.5
11	74.61	4	12.9
12	72.43	0	12.9
13	70.25	0	12.9
14	68.07	10	21.6
15	65.90	0	21.6
16	63.72	7	27.6
17	61.54	0	27.6
18	59.37	8	34.5
19	57.19	0	34.5
20	55.01	0	34.5
21	52.83	10	43.1
22	50.66	0	43.1
23	48.48	18	58.6
24	46.30	0	58.6
25	44.12	21	76.7
26	41.95	0	76.7
27	39.77	8	83.6
28	37.59	0	83.6
29	35.42	0	83.6
30	33.24	10	92.2
31	31.06	0	92.2
32	28.88	7	98.3
33	26.71	0	98.3
34	24.53	1	99.1
35	22.35	0	99.1
36	20.17	0	99.1
37	18.00	1	100.0
38	15.82	0	100.0
39	13.64	0	100.0
40	11.47	0	100.0
41		0	100.0



```
T
I  PROGRAM:          PERCENTAGE HISTOGRAMS                                NAME      ZN-SC
T
L  DATA:    DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY                      N              116
E  RUN:                                                                   X BAR      1.7102
S  TIME:    25/03/83 14:08:04                                             STD DEV    0.13782

CELL LOWER LIMIT NMBR    %   LOGARITHMIC VALUES          BAR INTERVAL = 0.25000   STD DEV  ARITH.LIMIT
   1                0   0.0
   2    1.038       0   0.0                                                                   10.92
   3    1.073       0   0.0                                                                   11.82
   4    1.107       0   0.0                                                                   12.80
   5    1.142       0   0.0                                                                   13.86
   6    1.176       0   0.0                                                                   15.00
   7    1.211       0   0.0                                                                   16.24
   8    1.245       0   0.0                                                                   17.58
   9    1.279       1   0.9 *                                                                 19.03
  10    1.314       0   0.0                                                                   20.60
  11    1.348       0   0.0                                                                   22.30
  12    1.383       1   0.9 *                                                                 24.15
  13    1.417       0   0.0                                                                   26.14
  14    1.452       7   6.0 ******                                                            28.30
  15    1.486       0   0.0                                                                   30.63
  16    1.521      10   8.6 *********                                                         33.16
  17    1.555       0   0.0                                                                   35.90
  18    1.590       8   6.9 *******                                                           38.86
  19    1.624      21  18.1 ******************                                                42.07
  20    1.658       0   0.0                                                                   45.55
  21    1.693      18  15.5 ****************                                                  49.31
  22    1.727      10   8.6 *********                                                         53.38
  23    1.762       8   6.9 *******                                                           57.79
  24    1.796       7   6.0 ******                                                            62.56
  25    1.831      10   8.6 *********                                                         67.72
  26    1.865       4   3.4 ***                                                               73.32
  27    1.900       5   4.3 ****                                                              79.37
  28    1.934       2   1.7 **                                                                85.92
  29    1.969       2   1.7 **                                                                93.02
  30    2.003       1   0.9 *                                                                 100.7
  31    2.037       1   0.9 *                                                                 109.0
  32    2.072       0   0.0                                                                   118.0
  33    2.106       0   0.0                                                                   127.8
  34    2.141       0   0.0                                                                   138.3
  35    2.175       0   0.0                                                                   149.7
  36    2.210       0   0.0                                                                   162.1
  37    2.244       0   0.0                                                                   175.5
  38    2.279       0   0.0                                                                   190.0
  39    2.313       0   0.0                                                                   205.6
  40    2.348       0   0.0                                                                   222.6
  41    2.382       0   0.0                                                                   241.0
```



```
T
I  PROGRAM:            PERCENTAGE CUMULATIVE FREQUENCY PLOTS          NAME      ZN-SC
T
L  DATA:   DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY                   N            116
E  RUN:                                                               X BAR     1.7102
S  TIME:   25/03/83 14:08:04                                          STD DEV   0.13782

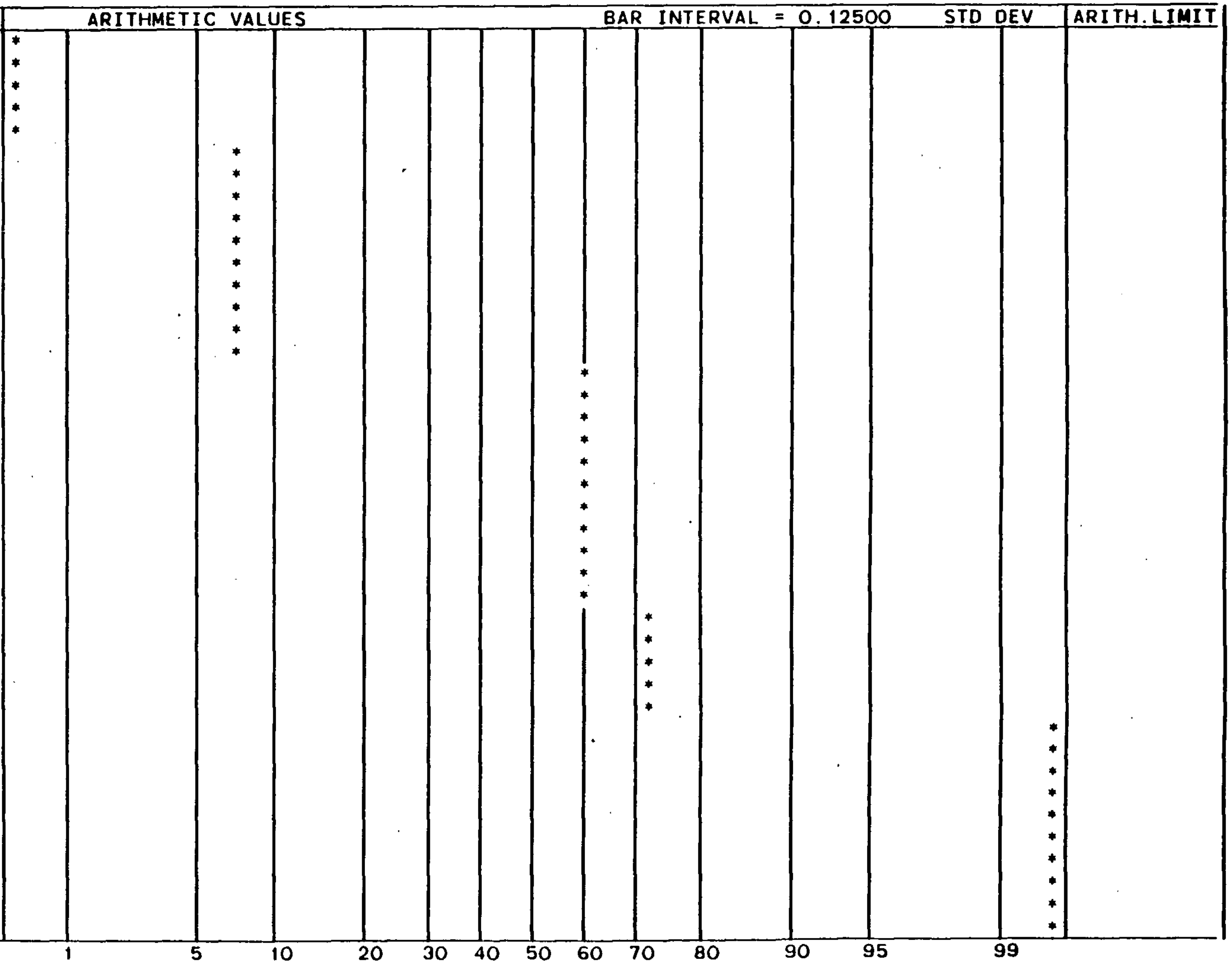
CELL LOWER LIMIT NMBR     %    LOGARITHMIC VALUES   BAR INTERVAL = 0.12500   STD DEV  ARITH.LIMIT
  1    2.046        1    0.9                                                            111.2
  2    2.029        0    0.9                                                            106.9
  3    2.012        1    1.7                                                            102.7
  4    1.994        0    1.7                                                            98.72
  5    1.977        2    3.4                                                            94.88
  6    1.960        0    3.4                                                            91.19
  7    1.943        2    5.2                                                            87.64
  8    1.925        2    6.9                                                            84.24
  9    1.908        0    6.9                                                            80.96
 10    1.891        3    9.5                                                            77.81
 11    1.874        4   12.9                                                            74.78
 12    1.857        0   12.9                                                            71.88
 13    1.839       10   21.6                                                            69.08
 14    1.822        0   21.6                                                            66.39
 15    1.805        7   27.6                                                            63.81
 16    1.788        0   27.6                                                            61.33
 17    1.770        8   34.5                                                            58.95
 18    1.753        0   34.5                                                            56.65
 19    1.736       10   43.1                                                            54.45
 20    1.719        0   43.1                                                            52.33
 21    1.702        0   43.1                                                            50.30
 22    1.684       18   58.6                                                            48.34
 23    1.667        0   58.6                                                            46.46
 24    1.650       21   76.7                                                            44.65
 25    1.633        0   76.7                                                            42.92
 26    1.615        0   76.7                                                            41.25
 27    1.598        8   83.6                                                            39.64
 28    1.581        0   83.6                                                            38.10
 29    1.564        0   83.6                                                            36.62
 30    1.546        0   83.6                                                            35.20
 31    1.529       10   92.2                                                            33.83
 32    1.512        0   92.2                                                            32.51
 33    1.495        0   92.2                                                            31.25
 34    1.478        0   92.2                                                            30.03
 35    1.460        7   98.3                                                            28.86
 36    1.443        0   98.3                                                            27.74
 37    1.426        0   98.3                                                            26.66
 38    1.409        0   98.3                                                            25.63
 39    1.391        1   99.1                                                            24.63
 40    1.374        0   99.1                                                            23.67
 41                 1  100.0
                               1    5   10   20  30  40  50  60  70  80   90  95    99
```

```
T
I  PROGRAM:           PERCENTAGE HISTOGRAMS                              NAME         CO-SC
T
L  DATA:    DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY                     N              116
E  RUN:                                                                  X BAR       7.7155
S  TIME:    25/03/83 14:08:04                                            STD DEV     3.8669

CELL LOWER LIMIT NMBR   %    ARITHMETIC VALUES                BAR INTERVAL = 0.25000    STD DEV   ARITH.LIMIT
   1                0   0.0
   2   -11.14       0   0.0
   3   -10.17       0   0.0
   4   -9.202       0   0.0
   5   -8.236       0   0.0
   6   -7.269       0   0.0
   7   -6.302       0   0.0
   8   -5.335       0   0.0
   9   -4.369       0   0.0
  10   -3.402       0   0.0
  11   -2.435       0   0.0
  12   -1.468       0   0.0
  13  -0.5017       0   0.0
  14   0.4650       0   0.0
  15    1.432       0   0.0
  16    2.398      32  27.6 ****************************
  17    3.365       0   0.0
  18    4.332      13  11.2 ***********
  19    5.299       0   0.0
  20    6.265       0   0.0
  21    7.232       0   0.0
  22    8.199       0   0.0
  23    9.166      63  54.3 ******************************************************
  24    10.13       0   0.0
  25    11.10       0   0.0
  26    12.07       0   0.0
  27    13.03       0   0.0
  28    14.00       0   0.0
  29    14.97       8   6.9 *******
  30    15.93       0   0.0
  31    16.90       0   0.0
  32    17.87       0   0.0
  33    18.83       0   0.0
  34    19.80       0   0.0
  35    20.77       0   0.0
  36    21.73       0   0.0
  37    22.70       0   0.0
  38    23.67       0   0.0
  39    24.63       0   0.0
  40    25.60       0   0.0
  41    26.57       0   0.0
```

```
T
I   PROGRAM:            PERCENTAGE CUMULATIVE FREQUENCY PLOTS           NAME      CO-SC
T
L   DATA:    DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY                   N               116
E   RUN:                                                                X BAR     7.7155
S   TIME:    25/03/83 14:08:04                                          STD DEV   3.8669

CELL LOWER LIMIT NMBR    %     ARITHMETIC VALUES     BAR INTERVAL = 0.12500   STD DEV   ARITH.LIMIT
   1    17.14      0     0.0
   2    16.66      0     0.0
   3    16.17      0     0.0
   4    15.69      0     0.0
   5    15.21      0     0.0
   6    14.72      8     6.9
   7    14.24      0     6.9
   8    13.76      0     6.9
   9    13.27      0     6.9
  10    12.79      0     6.9
  11    12.31      0     6.9
  12    11.82      0     6.9
  13    11.34      0     6.9
  14    10.86      0     6.9
  15    10.37      0     6.9
  16    9.891     63    61.2
  17    9.407      0    61.2
  18    8.924      0    61.2
  19    8.441      0    61.2
  20    7.957      0    61.2
  21    7.474      0    61.2
  22    6.990      0    61.2
  23    6.507      0    61.2
  24    6.024      0    61.2
  25    5.540      0    61.2
  26    5.057      0    61.2
  27    4.574     13    72.4
  28    4.090      0    72.4
  29    3.607      0    72.4
  30    3.124      0    72.4
  31    2.640      0    72.4
  32    2.157     32   100.0
  33    1.673      0   100.0
  34    1.190      0   100.0
  35   0.7067      0   100.0
  36   0.2233      0   100.0
  37  -0.2600      0   100.0
  38  -0.7434      0   100.0
  39   -1.227      0   100.0
  40   -1.710      0   100.0
  41               0   100.0
```



```
T
I    PROGRAM:          PERCENTAGE HISTOGRAMS                         NAME        CO-SC
T
L    DATA:    DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY               N                116
E    RUN:                                                            X BAR       0.81231
S    TIME:    25/03/83 14:08:04                                      STD DEV     0.27882

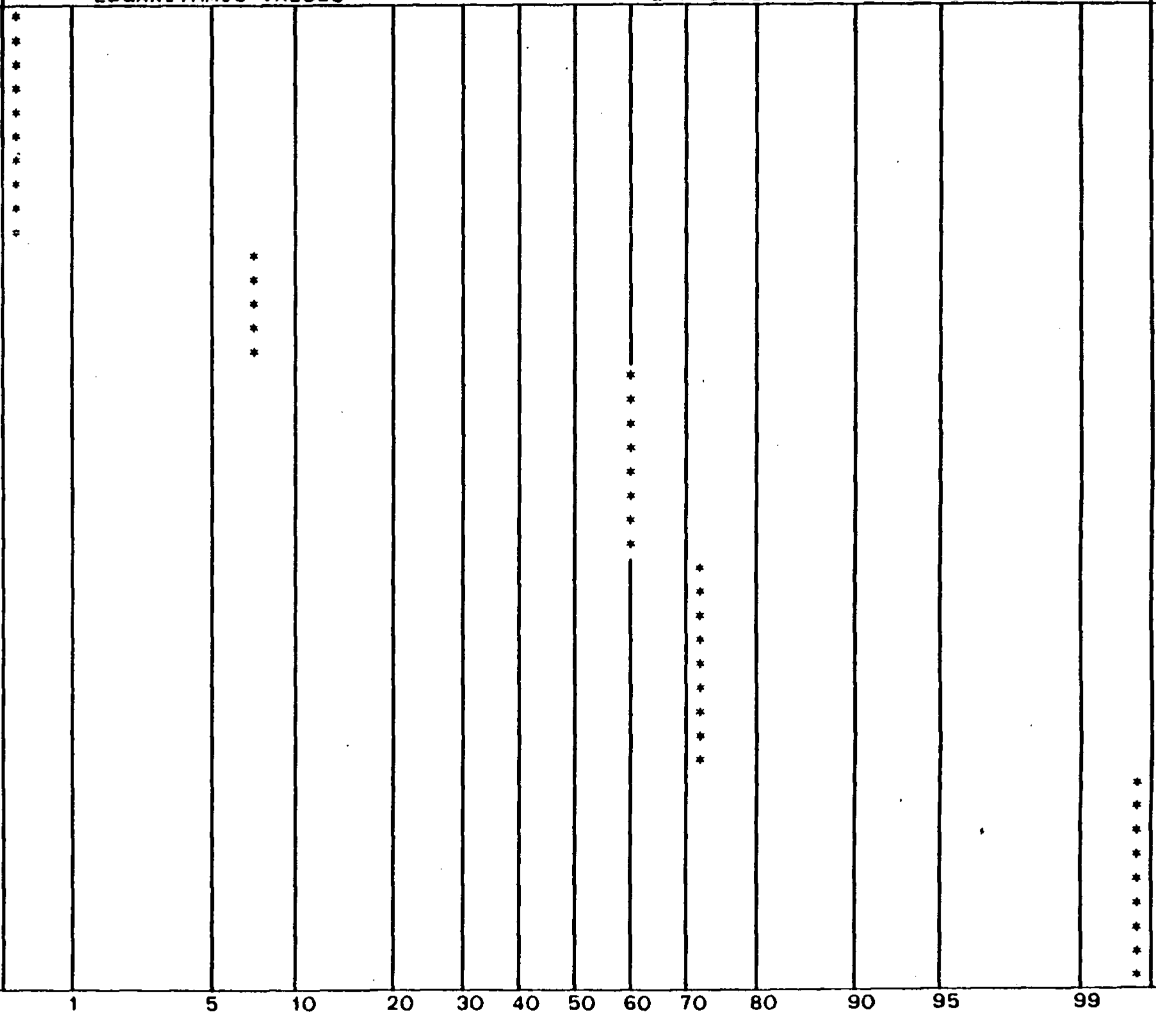
CELL LOWER LIMIT NMBR    %   LOGARITHMIC VALUES                BAR INTERVAL = 0.25000   STD DEV  ARITH.LIMIT
   1                0   0.0
   2 -0.5469        0   0.0                                                                         0.2838
   3 -0.4772        0   0.0                                                                         0.3332
   4 -0.4075        0   0.0                                                                         0.3913
   5 -0.3378        0   0.0                                                                         0.4594
   6 -0.2681        0   0.0                                                                         0.5394
   7 -0.1984        0   0.0                                                                         0.6333
   8 -0.1287        0   0.0                                                                         0.7435
   9 -0.5901E-01    0   0.0                                                                         0.8730
  10  0.1070E-01    0   0.0                                                                          1.025
  11  0.8041E-01    0   0.0                                                                          1.203
  12  0.1501        0   0.0                                                                          1.413
  13  0.2198        0   0.0                                                                          1.659
  14  0.2895        0   0.0                                                                          1.948
  15  0.3592       32  27.6 ****************************                                             2.287
  16  0.4289        0   0.0                                                                          2.685
  17  0.4986        0   0.0                                                                          3.152
  18  0.5683        0   0.0                                                                          3.701
  19  0.6380       13  11.2 ***********                                                              4.346
  20  0.7078        0   0.0                                                                          5.102
  21  0.7775        0   0.0                                                                          5.990
  22  0.8472        0   0.0                                                                          7.033
  23  0.9169        0   0.0                                                                          8.258
  24  0.9866       63  54.3 ******************************************************                   9.696
  25    1.056       0   0.0                                                                          11.38
  26    1.126       8   6.9 *******                                                                  13.37
  27    1.196       0   0.0                                                                          15.69
  28    1.265       0   0.0                                                                          18.42
  29    1.335       0   0.0                                                                          21.63
  30    1.405       0   0.0                                                                          25.40
  31    1.475       0   0.0                                                                          29.82
  32    1.544       0   0.0                                                                          35.01
  33    1.614       0   0.0                                                                          41.11
  34    1.684       0   0.0                                                                          48.26
  35    1.753       0   0.0                                                                          56.67
  36    1.823       0   0.0                                                                          66.53
  37    1.893       0   0.0                                                                          78.12
  38    1.962       0   0.0                                                                          91.72
  39    2.032       0   0.0                                                                          107.7
  40    2.102       0   0.0                                                                          126.4
  41    2.172       0   0.0                                                                          148.4
```

TITLES		
PROGRAM:	PERCENTAGE CUMULATIVE FREQUENCY PLOTS	
DATA:	DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY	
RUN:		
TIME:	25/03/83 14:08:04	

NAME	CQ-SC
N	116
X BAR	0.81231
STD DEV	0.27882

LOGARITHMIC VALUES BAR INTERVAL = 0.12500 STD DEV

CELL	LOWER LIMIT	NMBR	%	ARITH.LIMIT
1	1.492	0	0.0	31.04
2	1.457	0	0.0	28.65
3	1.422	0	0.0	26.44
4	1.387	0	0.0	24.40
5	1.353	0	0.0	22.52
6	1.318	0	0.0	20.78
7	1.283	0	0.0	19.18
8	1.248	0	0.0	17.70
9	1.213	0	0.0	16.33
10	1.178	0	0.0	15.08
11	1.143	8	6.9	13.91
12	1.109	0	6.9	12.84
13	1.074	0	6.9	11.85
14	1.039	0	6.9	10.94
15	1.004	0	6.9	10.09
16	0.9691	63	61.2	9.314
17	0.9343	0	61.2	8.596
18	0.8994	0	61.2	7.933
19	0.8646	0	61.2	7.321
20	0.8297	0	61.2	6.757
21	0.7949	0	61.2	6.236
22	0.7600	0	61.2	5.755
23	0.7252	0	61.2	5.311
24	0.6903	13	72.4	4.901
25	0.6555	0	72.4	4.523
26	0.6206	0	72.4	4.175
27	0.5858	0	72.4	3.853
28	0.5509	0	72.4	3.556
29	0.5161	0	72.4	3.281
30	0.4812	0	72.4	3.028
31	0.4464	0	72.4	2.795
32	0.4115	0	72.4	2.579
33	0.3767	32	100.0	2.380
34	0.3418	0	100.0	2.197
35	0.3069	0	100.0	2.027
36	0.2721	0	100.0	1.871
37	0.2372	0	100.0	1.727
38	0.2024	0	100.0	1.594
39	0.1675	0	100.0	1.471
40	0.1327	0	100.0	1.357
41		0	100.0	



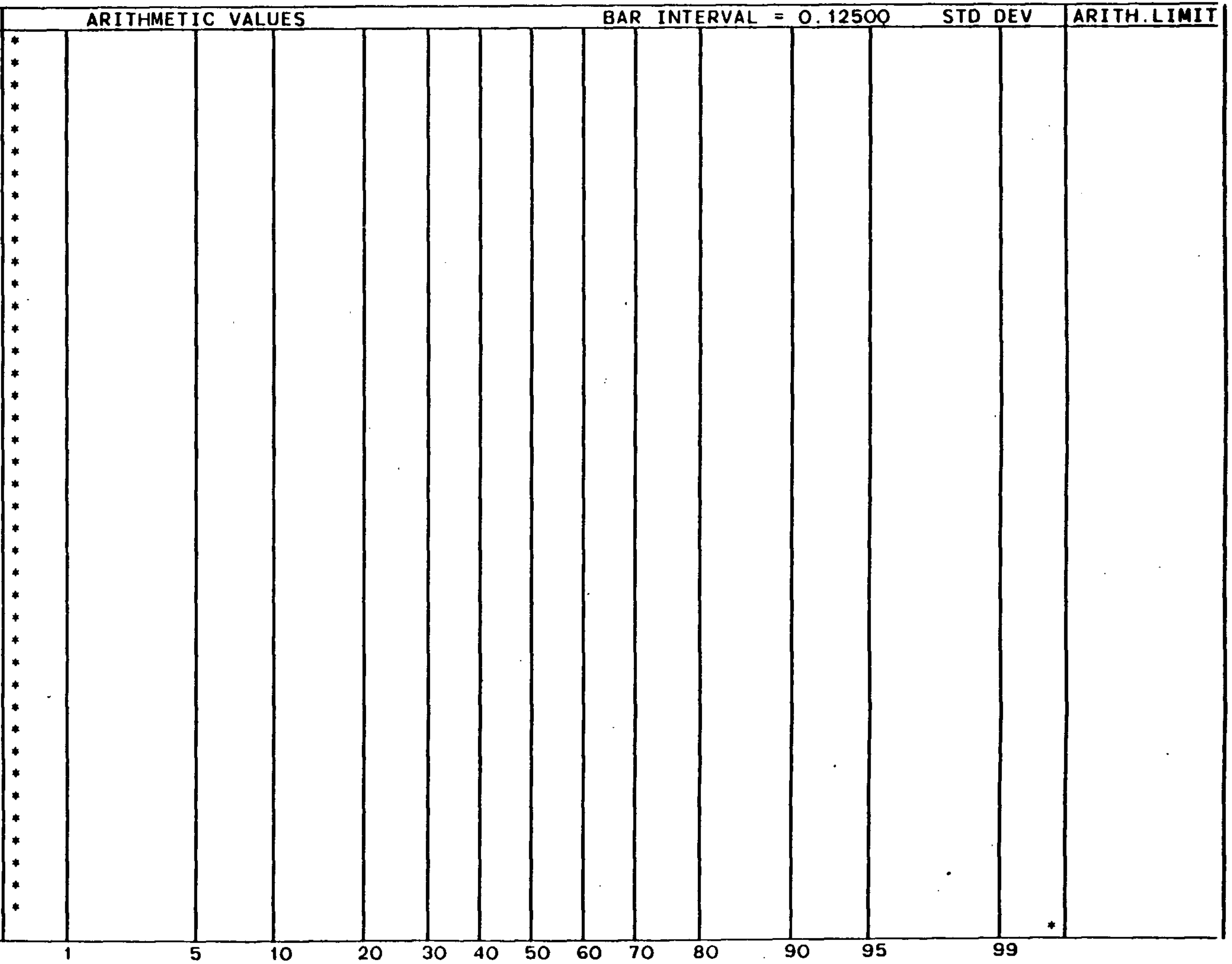
```
T
I  PROGRAM:          PERCENTAGE HISTOGRAMS                              NAME      MO-SC
T
L  DATA:    DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY                    N              116
E  RUN:                                                                 X BAR       1.0000
S  TIME:    25/03/83 14:08:04                                           STD DEV   0.0

CELL LOWER LIMIT NMBR    %          ARITHMETIC VALUES                     BAR INTERVAL = 0.25000    STD DEV  ARITH.LIMIT
   1              116  100.0 ******************************************************************************************
   2    1.000       0    0.0
   3    1.000       0    0.0
   4    1.000       0    0.0
   5    1.000       0    0.0
   6    1.000       0    0.0
   7    1.000       0    0.0
   8    1.000       0    0.0
   9    1.000       0    0.0
  10    1.000       0    0.0
  11    1.000       0    0.0
  12    1.000       0    0.0
  13    1.000       0    0.0
  14    1.000       0    0.0
  15    1.000       0    0.0
  16    1.000       0    0.0
  17    1.000       0    0.0
  18    1.000       0    0.0
  19    1.000       0    0.0
  20    1.000       0    0.0
  21    1.000       0    0.0
  22    1.000       0    0.0
  23    1.000       0    0.0
  24    1.000       0    0.0
  25    1.000       0    0.0
  26    1.000       0    0.0
  27    1.000       0    0.0
  28    1.000       0    0.0
  29    1.000       0    0.0
  30    1.000       0    0.0
  31    1.000       0    0.0
  32    1.000       0    0.0
  33    1.000       0    0.0
  34    1.000       0    0.0
  35    1.000       0    0.0
  36    1.000       0    0.0
  37    1.000       0    0.0
  38    1.000       0    0.0
  39    1.000       0    0.0
  40    1.000       0    0.0
  41    1.000       0    0.0
```

TITLES	PROGRAM:	PERCENTAGE CUMULATIVE FREQUENCY PLOTS	
	DATA:	DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY	
	RUN:		
	TIME:	25/03/83 14:08:04	

NAME	MO-SC
N	116
X BAR	1.0000
STD DEV	0.0

CELL	LOWER LIMIT	NMBR	%
1	1.000	0	0.0
2	1.000	0	0.0
3	1.000	0	0.0
4	1.000	0	0.0
5	1.000	0	0.0
6	1.000	0	0.0
7	1.000	0	0.0
8	1.000	0	0.0
9	1.000	0	0.0
10	1.000	0	0.0
11	1.000	0	0.0
12	1.000	0	0.0
13	1.000	0	0.0
14	1.000	0	0.0
15	1.000	0	0.0
16	1.000	0	0.0
17	1.000	0	0.0
18	1.000	0	0.0
19	1.000	0	0.0
20	1.000	0	0.0
21	1.000	0	0.0
22	1.000	0	0.0
23	1.000	0	0.0
24	1.000	0	0.0
25	1.000	0	0.0
26	1.000	0	0.0
27	1.000	0	0.0
28	1.000	0	0.0
29	1.000	0	0.0
30	1.000	0	0.0
31	1.000	0	0.0
32	1.000	0	0.0
33	1.000	0	0.0
34	1.000	0	0.0
35	1.000	0	0.0
36	1.000	0	0.0
37	1.000	0	0.0
38	1.000	0	0.0
39	1.000	0	0.0
40	1.000	0	0.0
41		116	100.0



```
T
I  PROGRAM:            PERCENTAGE HISTOGRAMS                          NAME       MO-SC
T
L  DATA:    DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY                  N                  116
E  RUN:                                                               X BAR      0.0
S  TIME:    25/03/83 14:08:04                                         STD DEV    0.0

CELL LOWER LIMIT NMBR    %         LOGARITHMIC VALUES                      BAR INTERVAL = 0.25000     STD DEV  ARITH.LIMIT
   1              116  100.0 **********************************************************************************
   2                0    0.0                                                                                      1.000
   3  0.0           0    0.0                                                                                      1.000
   4  0.0           0    0.0                                                                                      1.000
   5  0.0           0    0.0                                                                                      1.000
   6  0.0           0    0.0                                                                                      1.000
   7  0.0           0    0.0                                                                                      1.000
   8  0.0           0    0.0                                                                                      1.000
   9  0.0           0    0.0                                                                                      1.000
  10  0.0           0    0.0                                                                                      1.000
  11  0.0           0    0.0                                                                                      1.000
  12  0.0           0    0.0                                                                                      1.000
  13  0.0           0    0.0                                                                                      1.000
  14  0.0           0    0.0                                                                                      1.000
  15  0.0           0    0.0                                                                                      1.000
  16  0.0           0    0.0                                                                                      1.000
  17  0.0           0    0.0                                                                                      1.000
  18  0.0           0    0.0                                                                                      1.000
  19  0.0           0    0.0                                                                                      1.000
  20  0.0           0    0.0                                                                                      1.000
  21  0.0           0    0.0                                                                                      1.000
  22  0.0           0    0.0                                                                                      1.000
  23  0.0           0    0.0                                                                                      1.000
  24  0.0           0    0.0                                                                                      1.000
  25  0.0           0    0.0                                                                                      1.000
  26  0.0           0    0.0                                                                                      1.000
  27  0.0           0    0.0                                                                                      1.000
  28  0.0           0    0.0                                                                                      1.000
  29  0.0           0    0.0                                                                                      1.000
  30  0.0           0    0.0                                                                                      1.000
  31  0.0           0    0.0                                                                                      1.000
  32  0.0           0    0.0                                                                                      1.000
  33  0.0           0    0.0                                                                                      1.000
  34  0.0           0    0.0                                                                                      1.000
  35  0.0           0    0.0                                                                                      1.000
  36  0.0           0    0.0                                                                                      1.000
  37  0.0           0    0.0                                                                                      1.000
  38  0.0           0    0.0                                                                                      1.000
  39  0.0           0    0.0                                                                                      1.000
  40  0.0           0    0.0                                                                                      1.000
  41  0.0           0    0.0                                                                                      1.000
```

```
T |
I | PROGRAM:          PERCENTAGE CUMULATIVE FREQUENCY PLOTS          | NAME    |  MO-SC
T |                                                                  |         |
L | DATA:    DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY                | N       |        116
E | RUN:                                                             | X BAR   |  0.0
S | TIME:    25/03/83 14:08:04                                       | STD DEV |  0.0

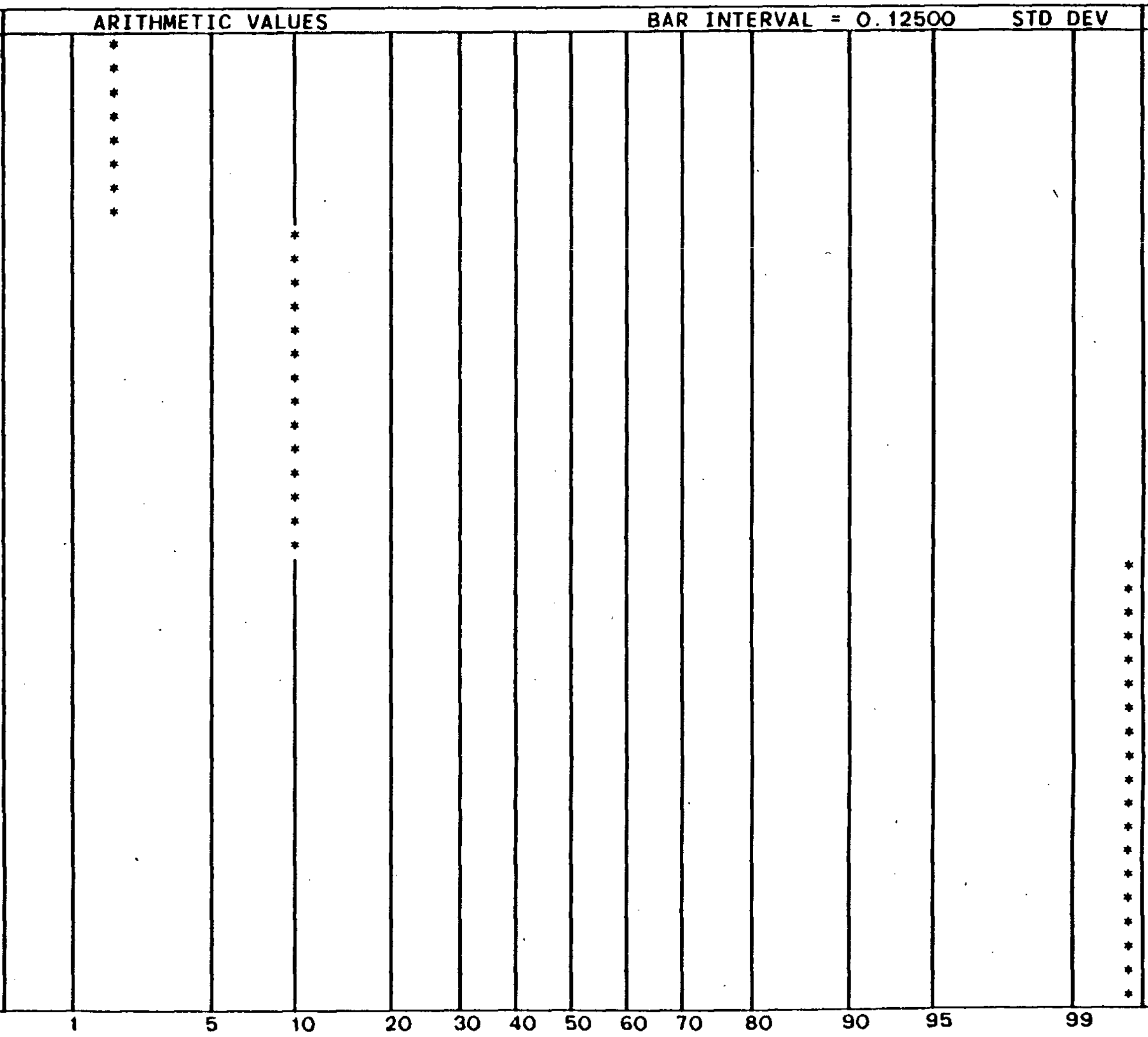
CELL|LOWER LIMIT|NMBR|    %  |      LOGARITHMIC VALUES               BAR INTERVAL = 0.12500    STD DEV    |ARITH.LIMIT
   1| 0.0       |   0|   0.0 |*                                                                           |   1.000
   2| 0.0       |   0|   0.0 |*                                                                           |   1.000
   3| 0.0       |   0|   0.0 |*                                                                           |   1.000
   4| 0.0       |   0|   0.0 |*                                                                           |   1.000
   5| 0.0       |   0|   0.0 |*                                                                           |   1.000
   6| 0.0       |   0|   0.0 |*                                                                           |   1.000
   7| 0.0       |   0|   0.0 |*                                                                           |   1.000
   8| 0.0       |   0|   0.0 |*                                                                           |   1.000
   9| 0.0       |   0|   0.0 |*                                                                           |   1.000
  10| 0.0       |   0|   0.0 |*                                                                           |   1.000
  11| 0.0       |   0|   0.0 |*                                                                           |   1.000
  12| 0.0       |   0|   0.0 |*                                                                           |   1.000
  13| 0.0       |   0|   0.0 |*                                                                           |   1.000
  14| 0.0       |   0|   0.0 |*                                                                           |   1.000
  15| 0.0       |   0|   0.0 |*                                                                           |   1.000
  16| 0.0       |   0|   0.0 |*                                                                           |   1.000
  17| 0.0       |   0|   0.0 |*                                                                           |   1.000
  18| 0.0       |   0|   0.0 |*                                                                           |   1.000
  19| 0.0       |   0|   0.0 |*                                                                           |   1.000
  20| 0.0       |   0|   0.0 |*                                                                           |   1.000
  21| 0.0       |   0|   0.0 |*                                                                           |   1.000
  22| 0.0       |   0|   0.0 |*                                                                           |   1.000
  23| 0.0       |   0|   0.0 |*                                                                           |   1.000
  24| 0.0       |   0|   0.0 |*                                                                           |   1.000
  25| 0.0       |   0|   0.0 |*                                                                           |   1.000
  26| 0.0       |   0|   0.0 |*                                                                           |   1.000
  27| 0.0       |   0|   0.0 |*                                                                           |   1.000
  28| 0.0       |   0|   0.0 |*                                                                           |   1.000
  29| 0.0       |   0|   0.0 |*                                                                           |   1.000
  30| 0.0       |   0|   0.0 |*                                                                           |   1.000
  31| 0.0       |   0|   0.0 |*                                                                           |   1.000
  32| 0.0       |   0|   0.0 |*                                                                           |   1.000
  33| 0.0       |   0|   0.0 |*                                                                           |   1.000
  34| 0.0       |   0|   0.0 |*                                                                           |   1.000
  35| 0.0       |   0|   0.0 |*                                                                           |   1.000
  36| 0.0       |   0|   0.0 |*                                                                           |   1.000
  37| 0.0       |   0|   0.0 |*                                                                           |   1.000
  38| 0.0       |   0|   0.0 |*                                                                           |   1.000
  39| 0.0       |   0|   0.0 |*                                                                           |   1.000
  40|           |   0|   0.0 |*                                                                           |   1.000
  41|           | 116| 100.0 |                                                                          * |
                                1        5     10      20    30   40   50   60   70    80     90    95       99
```

```
T
I  PROGRAM:          PERCENTAGE HISTOGRAMS                               NAME       AS-SC
T
L  DATA:   DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY                      N                116
E  RUN:                                                                  X BAR      5.7328
S  TIME:   25/03/83 14:08:04                                             STD DEV    2.9675

CELL LOWER LIMIT NMBR   %            ARITHMETIC VALUES               BAR INTERVAL = 0.25000    STD DEV   ARITH.LIMIT
   1                0   0.0
   2   -8.734       0   0.0
   3   -7.992       0   0.0
   4   -7.250       0   0.0
   5   -6.508       0   0.0
   6   -5.766       0   0.0
   7   -5.025       0   0.0
   8   -4.283       0   0.0
   9   -3.541       0   0.0
  10   -2.799       0   0.0
  11   -2.057       0   0.0
  12   -1.315       0   0.0
  13  -0.5732       0   0.0
  14   0.1686       0   0.0
  15   0.9105       0   0.0
  16    1.652       0   0.0
  17    2.394       0   0.0
  18    3.136       0   0.0
  19    3.878       0   0.0
  20    4.620     105  90.5 ********************************************************************************
  21    5.362       0   0.0
  22    6.104       0   0.0
  23    6.846       0   0.0
  24    7.587       0   0.0
  25    8.329       0   0.0
  26    9.071       0   0.0
  27    9.813       9   7.8 ********
  28    10.55       0   0.0
  29    11.30       0   0.0
  30    12.04       0   0.0
  31    12.78       0   0.0
  32    13.52       0   0.0
  33    14.26       0   0.0
  34    15.01       0   0.0
  35    15.75       0   0.0
  36    16.49       0   0.0
  37    17.23       0   0.0
  38    17.97       0   0.0
  39    18.72       0   0.0
  40    19.46       1   0.9 *
  41    20.20       1   0.9 *
```

TITLES			
PROGRAM:	PERCENTAGE CUMULATIVE FREQUENCY PLOTS	NAME	AS-SC
DATA:	DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY	N	116
RUN:		X BAR	5.7328
TIME:	25/03/83 14:08:04	STD DEV	2.9675

CELL	LOWER LIMIT	NMBR	%	ARITH.LIMIT
1	12.97	2	1.7	
2	12.60	0	1.7	
3	12.22	0	1.7	
4	11.85	0	1.7	
5	11.48	0	1.7	
6	11.11	0	1.7	
7	10.74	0	1.7	
8	10.37	0	1.7	
9	9.999	9	9.5	
10	9.628	0	9.5	
11	9.257	0	9.5	
12	8.886	0	9.5	
13	8.515	0	9.5	
14	8.144	0	9.5	
15	7.773	0	9.5	
16	7.402	0	9.5	
17	7.031	0	9.5	
18	6.660	0	9.5	
19	6.289	0	9.5	
20	5.918	0	9.5	
21	5.547	0	9.5	
22	5.176	0	9.5	
23	4.805	105	100.0	
24	4.434	0	100.0	
25	4.064	0	100.0	
26	3.693	0	100.0	
27	3.322	0	100.0	
28	2.951	0	100.0	
29	2.580	0	100.0	
30	2.209	0	100.0	
31	1.838	0	100.0	
32	1.467	0	100.0	
33	1.096	0	100.0	
34	0.7251	0	100.0	
35	0.3541	0	100.0	
36	-0.1683E-01	0	100.0	
37	-0.3878	0	100.0	
38	-0.7587	0	100.0	
39	-1.130	0	100.0	
40	-1.501	0	100.0	
41		0	100.0	



```
T |                                                                  |  NAME      |  AS-SC
I | PROGRAM:           PERCENTAGE HISTOGRAMS                         |            |
T |                                                                  |            |
L | DATA:    DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY                |  N         |         116
E | RUN:                                                             |  X BAR     |  0.73422
S | TIME:    25/03/83 14:08:04                                       |  STD DEV   |  0.11944

CELL|LOWER LIMIT|NMBR|   %  |       LOGARITHMIC VALUES                    BAR INTERVAL = 0.25000    STD DEV  |ARITH.LIMIT
   1|           |   0|   0.0|                                                                                   |
   2|  0.1519   |   0|   0.0|                                                                                   |   1.419
   3|  0.1818   |   0|   0.0|                                                                                   |   1.520
   4|  0.2117   |   0|   0.0|                                                                                   |   1.628
   5|  0.2415   |   0|   0.0|                                                                                   |   1.744
   6|  0.2714   |   0|   0.0|                                                                                   |   1.868
   7|  0.3012   |   0|   0.0|                                                                                   |   2.001
   8|  0.3311   |   0|   0.0|                                                                                   |   2.143
   9|  0.3610   |   0|   0.0|                                                                                   |   2.296
  10|  0.3908   |   0|   0.0|                                                                                   |   2.459
  11|  0.4207   |   0|   0.0|                                                                                   |   2.634
  12|  0.4505   |   0|   0.0|                                                                                   |   2.822
  13|  0.4804   |   0|   0.0|                                                                                   |   3.023
  14|  0.5103   |   0|   0.0|                                                                                   |   3.238
  15|  0.5401   |   0|   0.0|                                                                                   |   3.468
  16|  0.5700   |   0|   0.0|                                                                                   |   3.715
  17|  0.5998   |   0|   0.0|                                                                                   |   3.980
  18|  0.6297   |   0|   0.0|                                                                                   |   4.263
  19|  0.6596   |   0|   0.0|                                                                                   |   4.566
  20|  0.6894   | 105|  90.5|*******************************************************************************************|   4.891
  21|  0.7193   |   0|   0.0|                                                                                   |   5.239
  22|  0.7491   |   0|   0.0|                                                                                   |   5.612
  23|  0.7790   |   0|   0.0|                                                                                   |   6.012
  24|  0.8089   |   0|   0.0|                                                                                   |   6.440
  25|  0.8387   |   0|   0.0|                                                                                   |   6.898
  26|  0.8686   |   0|   0.0|                                                                                   |   7.389
  27|  0.8984   |   0|   0.0|                                                                                   |   7.915
  28|  0.9283   |   0|   0.0|                                                                                   |   8.478
  29|  0.9582   |   0|   0.0|                                                                                   |   9.082
  30|  0.9880   |   9|   7.8|********                                                                           |   9.728
  31|    1.018  |   0|   0.0|                                                                                   |   10.42
  32|    1.048  |   0|   0.0|                                                                                   |   11.16
  33|    1.078  |   0|   0.0|                                                                                   |   11.96
  34|    1.107  |   0|   0.0|                                                                                   |   12.81
  35|    1.137  |   0|   0.0|                                                                                   |   13.72
  36|    1.167  |   0|   0.0|                                                                                   |   14.70
  37|    1.197  |   0|   0.0|                                                                                   |   15.74
  38|    1.227  |   0|   0.0|                                                                                   |   16.86
  39|    1.257  |   0|   0.0|                                                                                   |   18.06
  40|    1.287  |   1|   0.9|*                                                                                  |   19.35
  41|    1.316  |   1|   0.9|*                                                                                  |   20.72
```

```
T
I   PROGRAM:          PERCENTAGE CUMULATIVE FREQUENCY PLOTS            NAME       AS-SC
T
L   DATA:   DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY                   N            116
E   RUN:                                                               X BAR     0.73422
S   TIME:   25/03/83 14:08:04                                          STD DEV   0.11944

CELL LOWER LIMIT NMBR      % |   LOGARITHMIC VALUES         BAR INTERVAL = 0.12500  STD DEV|ARITH.LIMIT
   1 1.025          2    1.7 |      *                                                       | 10.60
   2 1.010          0    1.7 |      *                                                       | 10.24
   3 0.9955         9    9.5 |                *                                             | 9.897
   4 0.9806         0    9.5 |                *                                             | 9.562
   5 0.9656         0    9.5 |                *                                             | 9.239
   6 0.9507         0    9.5 |                *                                             | 8.927
   7 0.9358         0    9.5 |                *                                             | 8.625
   8 0.9208         0    9.5 |                *                                             | 8.334
   9 0.9059         0    9.5 |                *                                             | 8.052
  10 0.8910         0    9.5 |                *                                             | 7.780
  11 0.8760         0    9.5 |                *                                             | 7.517
  12 0.8611         0    9.5 |                *                                             | 7.263
  13 0.8462         0    9.5 |                *                                             | 7.018
  14 0.8313         0    9.5 |                *                                             | 6.780
  15 0.8163         0    9.5 |                *                                             | 6.551
  16 0.8014         0    9.5 |                *                                             | 6.330
  17 0.7865         0    9.5 |                *                                             | 6.116
  18 0.7715         0    9.5 |                *                                             | 5.909
  19 0.7566         0    9.5 |                *                                             | 5.710
  20 0.7417         0    9.5 |                *                                             | 5.517
  21 0.7267         0    9.5 |                *                                             | 5.330
  22 0.7118         0    9.5 |                *                                             | 5.150
  23 0.6969       105  100.0 |                                                             *| 4.976
  24 0.6820         0  100.0 |                                                             *| 4.808
  25 0.6670         0  100.0 |                                                             *| 4.645
  26 0.6521         0  100.0 |                                                             *| 4.488
  27 0.6372         0  100.0 |                                                             *| 4.337
  28 0.6222         0  100.0 |                                                             *| 4.190
  29 0.6073         0  100.0 |                                                             *| 4.049
  30 0.5924         0  100.0 |                                                             *| 3.912
  31 0.5775         0  100.0 |                                                             *| 3.780
  32 0.5625         0  100.0 |                                                             *| 3.652
  33 0.5476         0  100.0 |                                                             *| 3.529
  34 0.5327         0  100.0 |                                                             *| 3.409
  35 0.5177         0  100.0 |                                                             *| 3.294
  36 0.5028         0  100.0 |                                                             *| 3.183
  37 0.4879         0  100.0 |                                                             *| 3.075
  38 0.4729         0  100.0 |                                                             *| 2.971
  39 0.4580         0  100.0 |                                                             *| 2.871
  40 0.4431         0  100.0 |                                                             *| 2.774
  41                0  100.0 |                                                             *|
                                 1      5    10   20  30 40 50 60 70  80   90   95     99
```

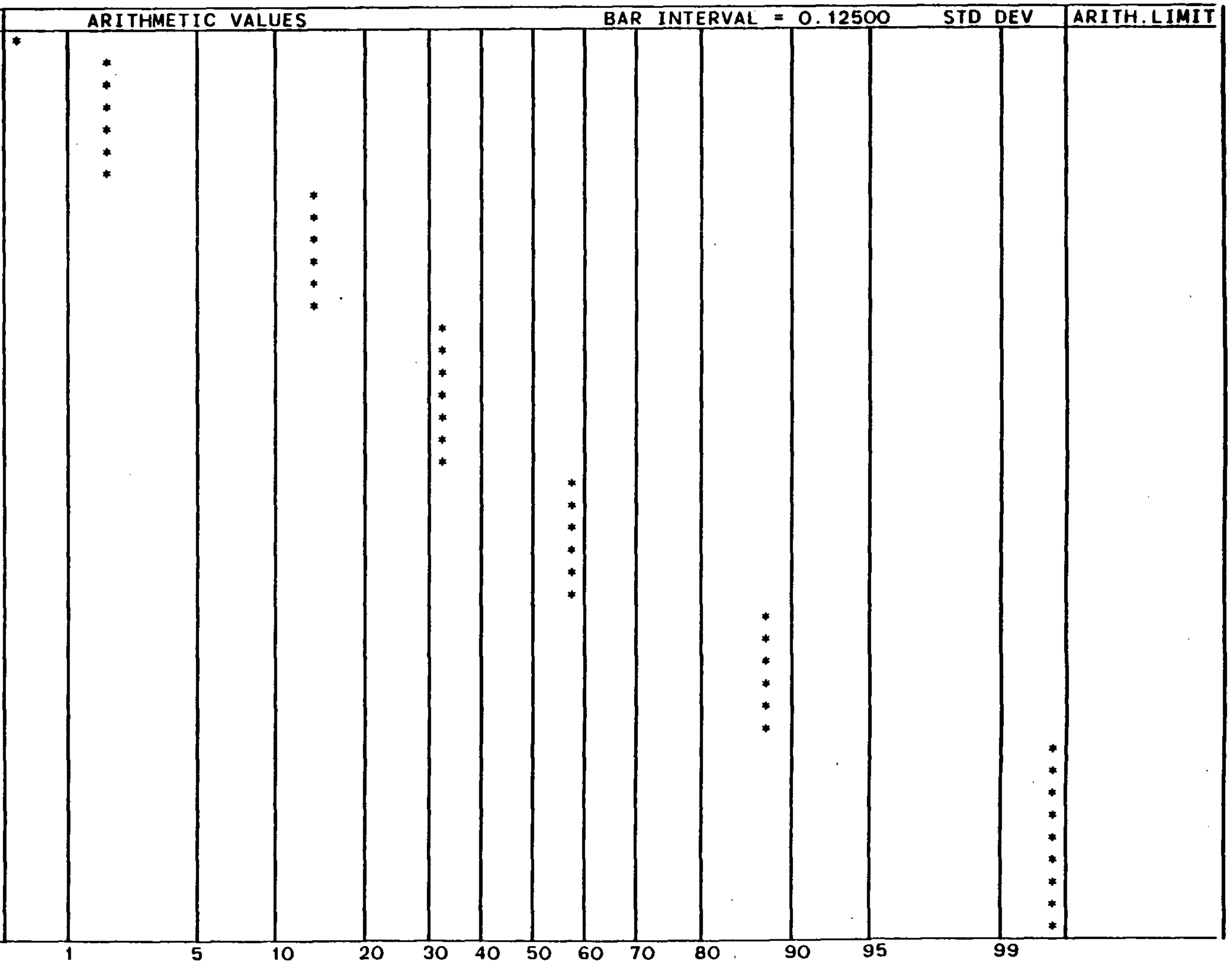
```
T
I  PROGRAM:          PERCENTAGE HISTOGRAMS                                   NAME        HG-SC
T
L  DATA:     DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY                        N                116
E  RUN:                                                                      X BAR        29.310
S  TIME:     25/03/83 14:08:04                                               STD DEV      12.767

CELL LOWER LIMIT NMBR    %              ARITHMETIC VALUES                  BAR INTERVAL = 0.25000    STD DEV  ARITH.LIMIT
   1                0   0.0
   2   -32.93       0   0.0
   3   -29.74       0   0.0
   4   -26.55       0   0.0
   5   -23.35       0   0.0
   6   -20.16       0   0.0
   7   -16.97       0   0.0
   8   -13.78       0   0.0
   9   -10.59       0   0.0
  10   -7.395       0   0.0
  11   -4.203       0   0.0
  12   -1.011       0   0.0
  13    2.180       0   0.0
  14    5.372       0   0.0
  15    8.564      15  12.9 *************
  16    11.76       0   0.0
  17    14.95       0   0.0
  18    18.14      33  28.4 ****************************
  19    21.33       0   0.0
  20    24.52       0   0.0
  21    27.71      31  26.7 ***************************
  22    30.91       0   0.0
  23    34.10       0   0.0
  24    37.29      21  18.1 ******************
  25    40.48       0   0.0
  26    43.67       0   0.0
  27    46.87      14  12.1 ************
  28    50.06       0   0.0
  29    53.25       0   0.0
  30    56.44       0   0.0
  31    59.63       2   1.7 **
  32    62.82       0   0.0
  33    66.02       0   0.0
  34    69.21       0   0.0
  35    72.40       0   0.0
  36    75.59       0   0.0
  37    78.78       0   0.0
  38    81.97       0   0.0
  39    85.17       0   0.0
  40    88.36       0   0.0
  41    91.55       0   0.0
```

T I T L E S		
PROGRAM:	PERCENTAGE CUMULATIVE FREQUENCY PLOTS	
DATA:	DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY	
RUN:		
TIME:	25/03/83 14:08:04	

NAME	HG-SC
N	116
X BAR	29.310
STD DEV	12.767

CELL	LOWER LIMIT	NMBR	%
1	60.43	0	0.0
2	58.83	2	1.7
3	57.24	0	1.7
4	55.64	0	1.7
5	54.05	0	1.7
6	52.45	0	1.7
7	50.85	0	1.7
8	49.26	14	13.8
9	47.66	0	13.8
10	46.07	0	13.8
11	44.47	0	13.8
12	42.88	0	13.8
13	41.28	0	13.8
14	39.68	21	31.9
15	38.09	0	31.9
16	36.49	0	31.9
17	34.90	0	31.9
18	33.30	0	31.9
19	31.70	0	31.9
20	30.11	0	31.9
21	28.51	31	58.6
22	26.92	0	58.6
23	25.32	0	58.6
24	23.72	0	58.6
25	22.13	0	58.6
26	20.53	0	58.6
27	18.94	33	87.1
28	17.34	0	87.1
29	15.75	0	87.1
30	14.15	0	87.1
31	12.55	0	87.1
32	10.96	0	87.1
33	9.362	15	100.0
34	7.766	0	100.0
35	6.170	0	100.0
36	4.574	0	100.0
37	2.978	0	100.0
38	1.382	0	100.0
39	-0.2136	0	100.0
40	-1.809	0	100.0
41		0	100.0



```
T
I   PROGRAM:           PERCENTAGE HISTOGRAMS                          NAME      HG-SC
T
L   DATA:    DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY                 N              116
E   RUN:                                                              X BAR       1.4199
S   TIME:    25/03/83 14:08:04                                        STD DEV    0.21383

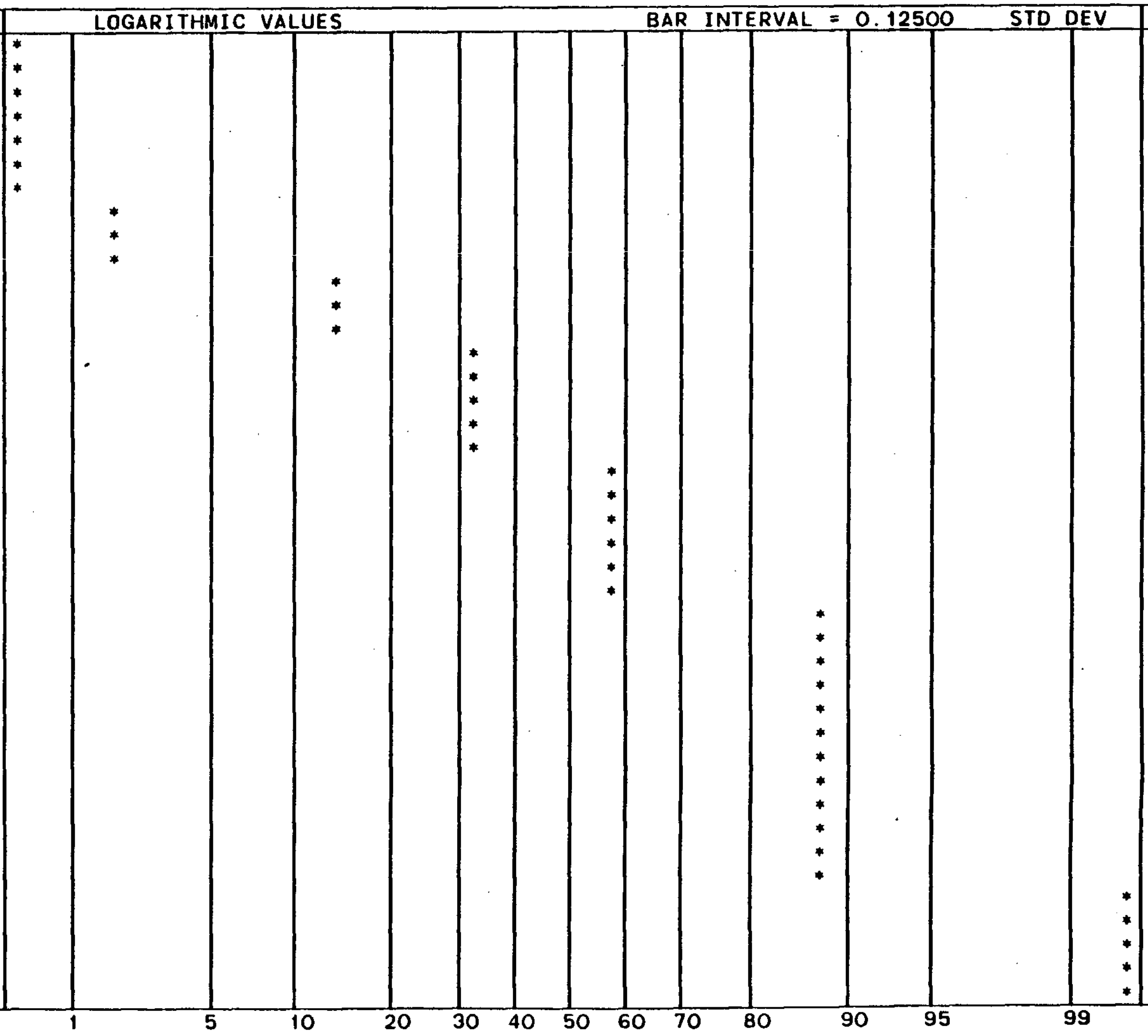
CELL LOWER LIMIT NMBR    %    LOGARITHMIC VALUES                 BAR INTERVAL = 0.25000    STD DEV   ARITH.LIMIT
   1                0   0.0
   2  0.3775        0   0.0                                                                            2.385
   3  0.4309        0   0.0                                                                            2.697
   4  0.4844        0   0.0                                                                            3.051
   5  0.5379        0   0.0                                                                            3.450
   6  0.5913        0   0.0                                                                            3.902
   7  0.6448        0   0.0                                                                            4.413
   8  0.6982        0   0.0                                                                            4.992
   9  0.7517        0   0.0                                                                            5.645
  10  0.8051        0   0.0                                                                            6.385
  11  0.8586        0   0.0                                                                            7.221
  12  0.9121        0   0.0                                                                            8.167
  13  0.9655       15  12.9   *************                                                            9.237
  14   1.019        0   0.0                                                                            10.45
  15   1.072        0   0.0                                                                            11.81
  16   1.126        0   0.0                                                                            13.36
  17   1.179        0   0.0                                                                            15.11
  18   1.233        0   0.0                                                                            17.09
  19   1.286       33  28.4   ****************************                                             19.33
  20   1.340        0   0.0                                                                            21.86
  21   1.393        0   0.0                                                                            24.73
  22   1.447       31  26.7   ***************************                                              27.97
  23   1.500        0   0.0                                                                            31.63
  24   1.554       21  18.1   ******************                                                       35.77
  25   1.607        0   0.0                                                                            40.46
  26   1.660       14  12.1   ************                                                             45.76
  27   1.714        0   0.0                                                                            51.75
  28   1.767        2   1.7   **                                                                       58.53
  29   1.821        0   0.0                                                                            66.20
  30   1.874        0   0.0                                                                            74.87
  31   1.928        0   0.0                                                                            84.67
  32   1.981        0   0.0                                                                            95.76
  33   2.035        0   0.0                                                                            108.3
  34   2.088        0   0.0                                                                            122.5
  35   2.142        0   0.0                                                                            138.5
  36   2.195        0   0.0                                                                            156.7
  37   2.248        0   0.0                                                                            177.2
  38   2.302        0   0.0                                                                            200.4
  39   2.355        0   0.0                                                                            226.7
  40   2.409        0   0.0                                                                            256.4
  41   2.462        0   0.0                                                                            289.9
```

TITLES

PROGRAM: PERCENTAGE CUMULATIVE FREQUENCY PLOTS
DATA: DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY
RUN:
TIME: 25/03/83 14:08:04

NAME	HG-SC
N	116
X BAR	1.4199
STD DEV	0.21383

CELL	LOWER LIMIT	NMBR	%	ARITH.LIMIT
1	1.941	0	0.0	87.32
2	1.914	0	0.0	82.11
3	1.888	0	0.0	77.21
4	1.861	0	0.0	72.60
5	1.834	0	0.0	68.27
6	1.807	0	0.0	64.19
7	1.781	0	0.0	60.36
8	1.754	2	1.7	56.76
9	1.727	0	1.7	53.37
10	1.701	0	1.7	50.18
11	1.674	14	13.8	47.19
12	1.647	0	13.8	44.37
13	1.620	0	13.8	41.72
14	1.594	21	31.9	39.23
15	1.567	0	31.9	36.89
16	1.540	0	31.9	34.69
17	1.513	0	31.9	32.62
18	1.487	0	31.9	30.67
19	1.460	31	58.6	28.84
20	1.433	0	58.6	27.12
21	1.407	0	58.6	25.50
22	1.380	0	58.6	23.98
23	1.353	0	58.6	22.55
24	1.326	0	58.6	21.20
25	1.300	33	87.1	19.94
26	1.273	0	87.1	18.75
27	1.246	0	87.1	17.63
28	1.219	0	87.1	16.57
29	1.193	0	87.1	15.59
30	1.166	0	87.1	14.65
31	1.139	0	87.1	13.78
32	1.113	0	87.1	12.96
33	1.086	0	87.1	12.18
34	1.059	0	87.1	11.46
35	1.032	0	87.1	10.77
36	1.006	0	87.1	10.13
37	0.9789	15	100.0	9.525
38	0.9522	0	100.0	8.957
39	0.9254	0	100.0	8.422
40	0.8987	0	100.0	7.919
41		0	100.0	

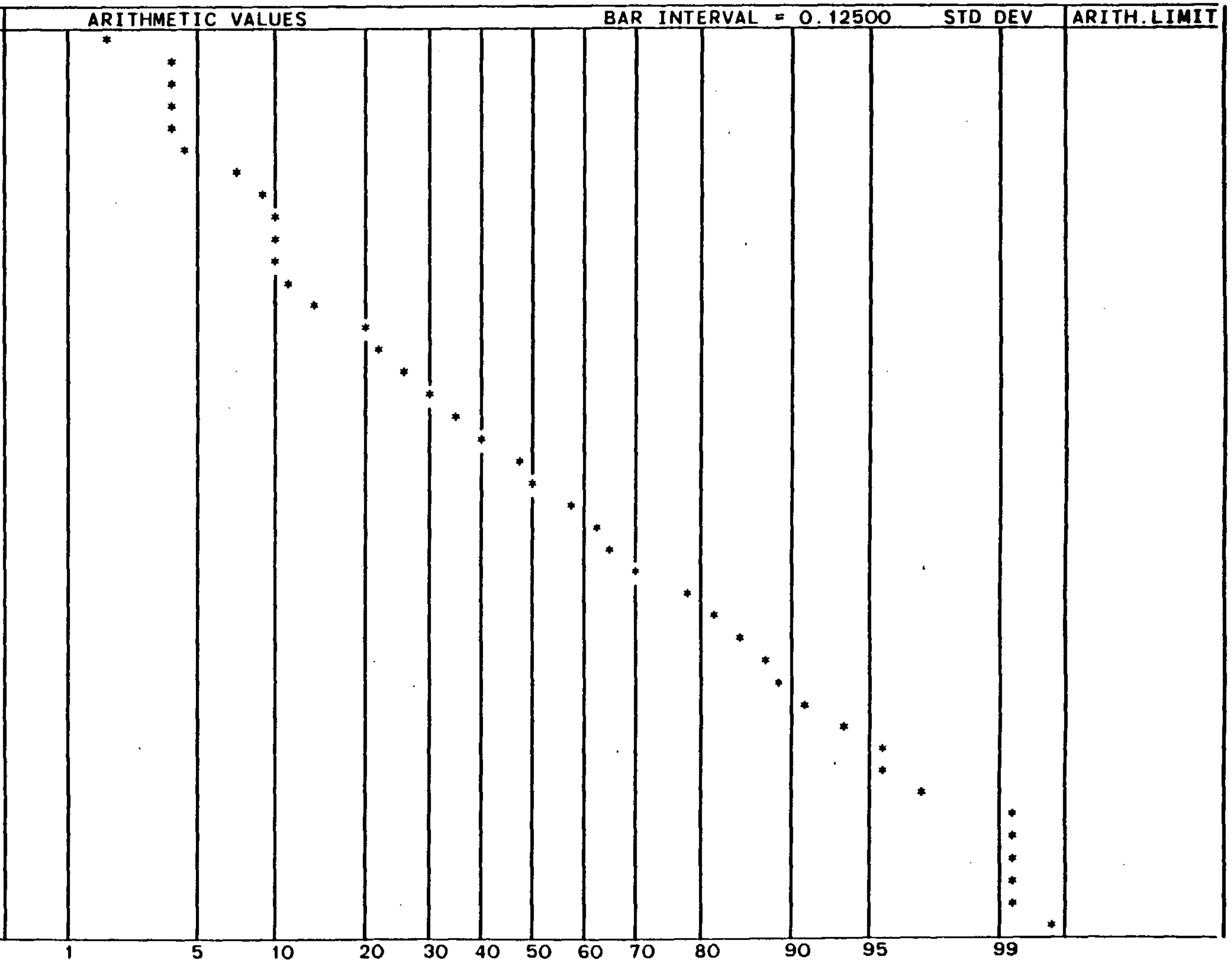


```
T | PROGRAM:          PERCENTAGE HISTOGRAMS                        | NAME    | BA-SC
I |                                                                |         |
T |----------------------------------------------------------------|---------|--------
L | DATA:    DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY              | N       |     116
E | RUN:                                                           | X BAR   |  642.33
S | TIME:    25/03/83 14:08:04                                     | STD DEV |  118.33

CELL|LOWER LIMIT|NMBR|  %  |     ARITHMETIC VALUES                         BAR INTERVAL = 0.25000   STD DEV  |ARITH.LIMIT
   1|           |   0|  0.0|
   2|   65.45   |   0|  0.0|
   3|   95.04   |   0|  0.0|
   4|   124.6   |   0|  0.0|
   5|   154.2   |   0|  0.0|
   6|   183.8   |   0|  0.0|
   7|   213.4   |   1|  0.9|*
   8|   243.0   |   0|  0.0|
   9|   272.5   |   0|  0.0|
  10|   302.1   |   0|  0.0|
  11|   331.7   |   0|  0.0|
  12|   361.3   |   0|  0.0|
  13|   390.9   |   2|  1.7|**
  14|   420.5   |   2|  1.7|**
  15|   450.0   |   2|  1.7|**
  16|   479.6   |   6|  5.2|*****
  17|   509.2   |   4|  3.4|***
  18|   538.8   |   9|  7.8|********
  19|   568.4   |  14| 12.1|************
  20|   598.0   |  10|  8.6|*********
  21|   627.5   |  19| 16.4|****************
  22|   657.1   |   9|  7.8|********
  23|   686.7   |  13| 11.2|***********
  24|   716.3   |   4|  3.4|***
  25|   745.9   |   8|  6.9|*******
  26|   775.5   |   2|  1.7|**
  27|   805.0   |   3|  2.6|***
  28|   834.6   |   3|  2.6|***
  29|   864.2   |   1|  0.9|*
  30|   893.8   |   1|  0.9|*
  31|   923.4   |   3|  2.6|***
  32|   953.0   |   0|  0.0|
  33|   982.5   |   0|  0.0|
  34|   1012.   |   0|  0.0|
  35|   1042.   |   0|  0.0|
  36|   1071.   |   0|  0.0|
  37|   1101.   |   0|  0.0|
  38|   1130.   |   0|  0.0|
  39|   1160.   |   0|  0.0|
  40|   1190.   |   0|  0.0|
  41|   1219.   |   0|  0.0|
```

```
T |
I | PROGRAM:         PERCENTAGE CUMULATIVE FREQUENCY PLOTS      || NAME    | BA-SC
T |                                                              ||
L | DATA:   DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY            || N       |    116
E | RUN:                                                         || X BAR   | 642.33
S | TIME:   25/03/83 14:08:04                                    || STD DEV | 118.33
```

CELL	LOWER LIMIT	NMBR	%
1	930.8	2	1.7
2	916.0	2	3.4
3	901.2	0	3.4
4	886.4	0	3.4
5	871.6	0	3.4
6	856.8	1	4.3
7	842.0	3	6.9
8	827.2	2	8.6
9	812.4	1	9.5
10	797.6	0	9.5
11	782.8	0	9.5
12	768.1	2	11.2
13	753.3	3	13.8
14	738.5	7	19.8
15	723.7	2	21.6
16	708.9	6	26.7
17	694.1	3	29.3
18	679.3	6	34.5
19	664.5	6	39.7
20	649.7	8	46.6
21	634.9	5	50.9
22	620.1	7	56.9
23	605.3	7	62.9
24	590.6	3	65.5
25	575.8	5	69.8
26	561.0	9	77.6
27	546.2	5	81.9
28	531.4	4	85.3
29	516.6	3	87.9
30	501.8	1	88.8
31	487.0	3	91.4
32	472.2	3	94.0
33	457.4	2	95.7
34	442.6	0	95.7
35	427.8	2	97.4
36	413.1	2	99.1
37	398.3	0	99.1
38	383.5	0	99.1
39	368.7	0	99.1
40	353.9	0	99.1
41		1	100.0



```
T
I  PROGRAM:          PERCENTAGE HISTOGRAMS                          NAME      BA-SC
T
L  DATA:    DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY                N              116
E  RUN:                                                             X BAR     2.7999
S  TIME:    25/03/83 14:08:04                                       STD DEV   0.85470E-01

CELL LOWER LIMIT NMBR    %   LOGARITHMIC VALUES          BAR INTERVAL = 0.25000   STD DEV   ARITH.LIMIT
   1                1   0.9 *
   2    2.383       0   0.0                                                                    241.7
   3    2.405       0   0.0                                                                    253.9
   4    2.426       0   0.0                                                                    266.7
   5    2.447       0   0.0                                                                    280.1
   6    2.469       0   0.0                                                                    294.3
   7    2.490       0   0.0                                                                    309.1
   8    2.511       0   0.0                                                                    324.7
   9    2.533       0   0.0                                                                    341.1
  10    2.554       0   0.0                                                                    358.3
  11    2.576       0   0.0                                                                    376.3
  12    2.597       0   0.0                                                                    395.3
  13    2.618       2   1.7 **                                                                 415.3
  14    2.640       2   1.7 **                                                                 436.2
  15    2.661       5   4.3 ****                                                               458.2
  16    2.682       3   2.6 ***                                                                481.3
  17    2.704       4   3.4 ***                                                                505.6
  18    2.725       7   6.0 ******                                                             531.1
  19    2.747      12  10.3 **********                                                         557.8
  20    2.768      11   9.5 *********                                                          586.0
  21    2.789      15  12.9 *************                                                      615.5
  22    2.811      14  12.1 ************                                                       646.6
  23    2.832      15  12.9 *************                                                      679.2
  24    2.853       4   3.4 ***                                                                713.4
  25    2.875      10   8.6 *********                                                          749.4
  26    2.896       1   0.9 *                                                                  787.2
  27    2.917       5   4.3 ****                                                               826.9
  28    2.939       1   0.9 *                                                                  868.6
  29    2.960       4   3.4 ***                                                                912.4
  30    2.982       0   0.0                                                                    958.4
  31    3.003       0   0.0                                                                    1007.
  32    3.024       0   0.0                                                                    1058.
  33    3.046       0   0.0                                                                    1111.
  34    3.067       0   0.0                                                                    1167.
  35    3.088       0   0.0                                                                    1226.
  36    3.110       0   0.0                                                                    1288.
  37    3.131       0   0.0                                                                    1352.
  38    3.152       0   0.0                                                                    1421.
  39    3.174       0   0.0                                                                    1492.
  40    3.195       0   0.0                                                                    1568.
  41    3.217       0   0.0                                                                    1647.
```

TITLES

PROGRAM: PERCENTAGE CUMULATIVE FREQUENCY PLOTS

DATA: DAISY CREEK SC HORIZON SOIL GEOCHEMISTRY

RUN:

TIME: 25/03/83 14:08:04

NAME	BA-SC
N	116
X BAR	2.7999
STD DEV	0.85470E-01

CELL	LOWER LIMIT	NMBR	%	ARITH.LIMIT
1	3.008	0	0.0	1019.
2	2.998	0	0.0	994.4
3	2.987	0	0.0	970.2
4	2.976	1	0.9	946.7
5	2.966	2	2.6	923.7
6	2.955	1	3.4	901.2
7	2.944	0	3.4	879.3
8	2.933	1	4.3	858.0
9	2.923	3	6.9	837.1
10	2.912	3	9.5	816.8
11	2.901	0	9.5	796.9
12	2.891	2	11.2	777.6
13	2.880	3	13.8	758.7
14	2.869	5	18.1	740.2
15	2.859	4	21.6	722.2
16	2.848	6	26.7	704.7
17	2.837	7	32.8	687.6
18	2.827	2	34.5	670.9
19	2.816	7	40.5	654.6
20	2.805	12	50.9	638.7
21	2.795	7	56.9	623.1
22	2.784	7	62.9	608.0
23	2.773	3	65.5	593.2
24	2.763	5	69.8	578.8
25	2.752	9	77.6	564.7
26	2.741	2	79.3	551.0
27	2.730	7	85.3	537.6
28	2.720	2	87.1	524.6
29	2.709	1	87.9	511.8
30	2.698	3	90.5	499.4
31	2.688	1	91.4	487.3
32	2.677	3	94.0	475.4
33	2.666	2	95.7	463.9
34	2.656	0	95.7	452.6
35	2.645	0	95.7	441.6
36	2.634	2	97.4	430.9
37	2.624	0	97.4	420.4
38	2.613	2	99.1	410.2
39	2.602	0	99.1	400.2
40	2.592	0	99.1	390.5
41		1	100.0