Appendix B: Measured Section Descriptions

Introduction

This appendix provides a description of the measured sections that are included as the plates for this publication. I have attempted to describe the purpose and significance of each section, as well as any uncertainties that exist about stratigraphic correlations.

Plate 1. Blossom Lakes surface stratigraphic log

Exposures of the Revett Formation in cirques around Blossom and Revett Lakes are considered by many workers to be the type areas of the Revett Formation. Plate 1 shows the stratigraphy of the Burke and Revett Formations that is exposed in the cirque wall north of Blossom Lakes (fig. C-1). The section contains a thin interval with disseminated copper sulfide mineralization. At this time, I cannot subdivide the stratigraphy of the lower Revett, but future work may make subdivision possible. The middle and upper members of the Revett are not exposed at this location.

Plates 2 and 3. Big Creek I and II surface stratigraphic logs

The Big Creek area has a well-exposed sequence of lower, middle and upper Revett, and was critical in the early recognition of these informal members (White et al., 1977). The Big Creek I section describes part of the lower Revett Formation, which outcrops boldly at this site, but unfortunately has a thick covered interval from 195 to 535 feet. The Big Creek II section provides good exposures of LQ and MQ of the upper Revett.

While describing the Big Creek I section, I located an unmapped fault that offsets the section, decreasing the apparent thickness of the middle Revett by down-dropping the upper Revett. I used two cross-sections to estimate the thickness of the middle Revett. Figure C-2 shows the location of the two sections I measured and described in the Big Creek area, as well as the trace of the fault and the location of the two cross-sections. Figures B-1 and B-2 show cross-sections A-A' and B-B' respectively. In spite of the inherent inaccuracies in constructing these cross-sections, both indicate that the middle Revett is approximately 450 m thick. Although this figure is more than 120 m greater than the estimate of White et al. (1977), I believe it is a more reliable estimate+**.**

Plate 4. Deadwood Gulch surface stratigraphic log

This section is located on the Bunker Hill property and provides an opportunity to see some of the stratigraphy of the upper Revett at the surface (fig. C-3). Although it does contain some significant covered intervals, it nonetheless is a reasonably thick section that appears to show the MQ, US1, UQ1, US2 and UQ2 units of the upper Revett Formation. The section is notable for its abundant quartzite. Not surprisingly, the stratigraphy at Deadwood Gulch correlates moderately well with part of the upper Revett section at the Bunker Hill mine.

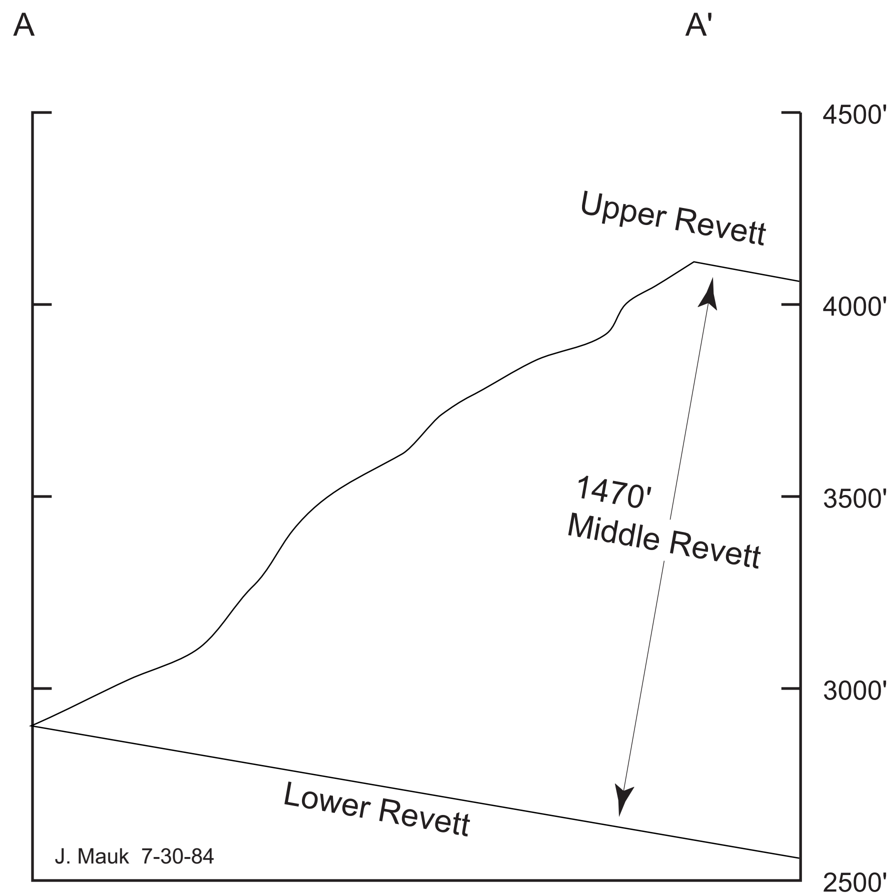

Figure B-1. Big Creek cross section A-A'. Average strike and dip: N 65 W; 27 SW. Angle between cross section and strike: 20 degrees. Apparent dip: 10 degrees. Apparent dip projected on section by method of Lahee (1941).

Plate 5. Lookout Pass surface stratigraphic log

Alleman (1983) described a section near Lookout Pass that he interpreted as upper Revett Formation (fig. C-4). However, the section consists primarily of medium-bedded to laminated siltite with rare interbeds of medium-bedded sericitic quartzite. The entire interval contains magnetite, which is not characteristic of the upper Revett in nearby areas. Therefore, I interpret this section as part of the lower St Regis Formation.

Plate 6. Military Gulch surface stratigraphic log

The Military Gulch section (Plate 6) provides an important control on the stratigraphy of the Revett Formation north of the Osburn fault in the eastern portion of the Coeur d'Alene district (fig. C-5). It also exposes part of the upper Revett that contains sediment hosted stratiform copper mineralization of the Western Montana copper sulfide belt. Unfortunately, the large covered interval from 114 to 266 feet may include part of the upper Revett, so the

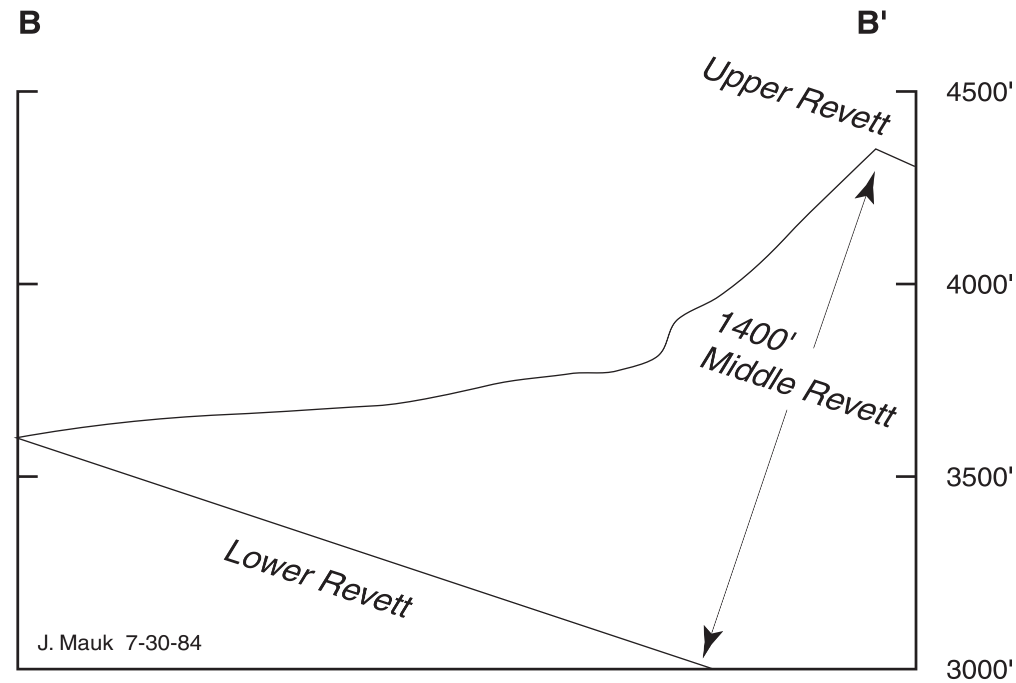

Figure B-2. Big Creek cross section B-B'. Average strike and dip: N 74 E; 25 SE. Angle between cross section and strike: 46 degrees. Apparent dip: 18.5 degrees. Apparent dip projected on section by method of Lahee (1941).

thicknesses of the upper and middle Revett may be suspect at this location. However, in most places, quartzite units crop out fairly well, and it is therefore likely that the subdivisions shown in Plate 6 are valid. In any event, the combined thickness of the middle and upper Revett appears to be approximately 110 m.

The contact at 390 feet may be the contact between the lower and middle Revett, but I believe it is the Revett/St Regis contact for three reasons.

-- The contact at 390 feet is part of a fining upward sequence, whereas the contact at 63 feet is extremely sharp. A sharp contact is most characteristic of the middle Revett/lower Revett boundary.

-- Walking upstream from the top of the section, I saw no other quartzite, indicating that the overlying unit is indeed St Regis Formation.

-- The top of the lower Revett is characterized by bold, clean, white, hard vitreous quartzite, such as that found at the base of the section.

Plate 7. Silver Hill surface stratigraphic log

Silver Hill lies south of the Osburn Fault, south of the Bunker Hill mine, and southwest of the Big Creek sections (fig. C-6). The large covered interval in the Silver Hill section makes it difficult to correlate with other nearby stratigraphic sections, and therefore it is not used in any correlation diagrams. I believe it may be part of the lower Revett Fm, because it appears to be stratigraphically lower than talus on a nearby rib that probably represents the upper Revett Fm.

Plate 8. Two Mile Creek surface stratigraphic log

The Two Mile Creek section was measured along a road, north of the Osburn fault in the Two Mile Creek drainage (fig. C-7). Stratigraphic thicknesses were derived trigonometrically, using the following formula. In doing so, I ignored any change in elevation of the road, assuming that this was only a minor factor.

Stratigraphic feet = (road feet) (cos a) (sin d)

a = angle between road direction and dip direction

d = angle of dip

This section exposes virtually all of the lower Revett, and the middle and upper Revett are discernable in float. The quartzite units in the lower Revett show a general coarsening upward sequence: quartzite near the base of the section (0'-650') tends to be sericitic; quartzite in the middle of the section (650'-1150') tends to be subvitreous; and quartzite near the top of the section (1150'-1320') is commonly vitreous. Concomitant with these changes, the amount of argillitic siltite appears to decrease upward.

From 1320 to 1610 feet, float is rare, and is dominated by argillitic siltite, which is probably the middle Revett. The upper Revett likely occurs between 1610 and 1865 feet, where fist-sized chunks of sericitic quartzite float appear in the road cut. The Big 20 fault cuts the section in this interval, thinning the upper Revett to 70 m (225 feet). Mapping and drilling by Coeur d'Alene Mines indicate that the upper Revett is actually closer to 120 m thick in this area. Above 1865 feet, the float in the section consists of lavender thin-bedded argillite of the lower St Regis Fm.

Plate 9. West Fork of Big Creek surface stratigraphic log

This section lies south of the Osburn fault, to the west of the Big Creek section and south of the Crescent mine, and provides a nearly complete exposure of the upper Revett Fm (fig. C-8).

Although the section appears to be unfaulted, the abundance of quartz veins and fractures in the lower portion of the section suggest that it may be close to a fault. Perhaps the east-west trending unnamed fault mapped by Hobbs et al. (1965) on the hillside to the west of this stratigraphic section (SW $^{1}/_{4}$ of section 21 and NW $^{1}/_{4}$ of section 28, T48N, R3E) extends to the east across the West Fork of Big Creek and continues subparallel to the measured section. Figure C-8 shows the proposed extension of this fault.

Plate 10. West Fork of Pine Creek surface stratigraphic log

This is the most southwestern section that I examined during this study. It lies in the eastern portion of the Twin Crags quadrangle (fig. C-9), which was mapped by Campbell and Good (1963). My work indicates that in the area of this measured section, the middle Revett was mapped as Burke, and the upper Revett was mapped as the entire Revett. In addition, the lower Revett was probably also mapped as the entire Revett.

Figure B-3 shows calculated thicknesses of the middle and upper Revett Fm, based on my interpretation of the stratigraphy. The middle Revett at the West Fork of Pine Creek appears to be approximately 400 m thick, which agrees moderately well with the estimated 450 m of middle Revett at Big Creek. The section contains a nearly complete exposure of an approximately 670 m thick upper Revett Fm that contains well-defined alternating quartzite and siltite units. This thickness agrees well with the 650 to 670 m of upper Revett at the Bunker Hill mine.

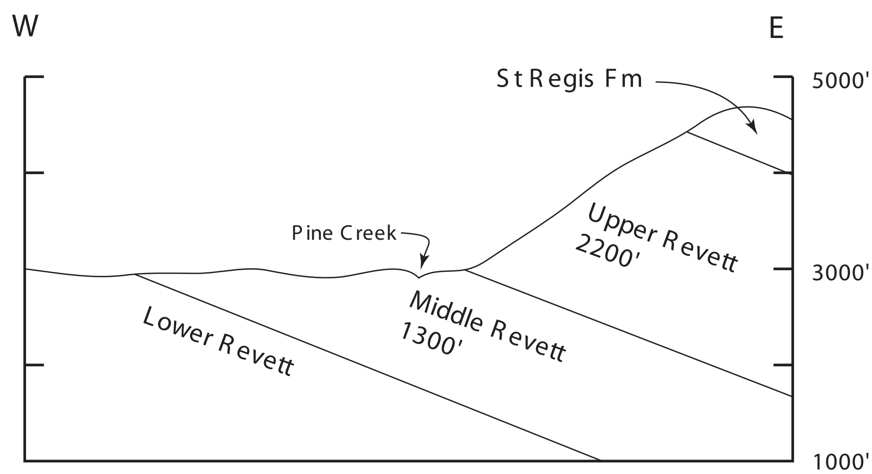

Figure B-3. Cross section showing the thickness of the middle and upper Revett Fm from the NW1/4 of section 14, T48N, R1E, to the north-central portion of section 18, T48N, R1E of the Twin Crags quadrangle.

Plate 11. West Fork of Placer Creek surface stratigraphic log

This section lies almost due south of the Caladay property, on the south side of the Osburn fault, and provides a complete exposure of the upper Revett Fm (fig. C-10). While measuring and describing the Placer Creek section, I identified three probable faults of indeterminate offset. The lowest fault, at 760 feet, appears to cut off part of the MQ unit of the upper Revett, so that it is approximately 40 m thinner than the same unit at the Sunshine mine and Big Creek. Work at the Caladay project, however, indicates that MQ may indeed be thinner in eastern exposures than in the central portion of the silver belt. The two other faults in the section, at 895 and 1210 feet, were identified on the basis of rapid strike changes. Alternatively, these changes may reflect folding, but more work would be required to distinguish between these two possibilities.

Plates 12 and 13. Allied Silver DDH #83-1 drill core log and true thickness

Sunshine Mining Company drilled this hole (figs. C-11, C-12, C-13), which lies immediately to the west of the Lucky Friday mine (fig. 3). Therefore, as expected, the stratigraphy in the hole closely matches the stratigraphy at the Lucky Friday mine.

Plate 14. Bunker Hill composite stratigraphic section

This section is taken from Brian White's (1977a) work at the Bunker Hill mine (fig. 3). During the course of my investigation, I reexamined many of his measured sections at the Bunker Hill mine, and generally concurred with his descriptions. Thus, I did not redescribe any of his sections, nor did I revise his composite section, which is shown as Plate 14.

Plate 15. Caladay composite section

The Caladay property is at the eastern end of the silver belt (fig. 3). This composite stratigraphic section is based on Caladay DDH 30-1, DDH 30-2, and the geology in the 3000 station of the Caladay project (fig. C-14, C-15). Drill core depths have been converted to stratigraphic thicknesses using trigonometry. The stratigraphy here correlates well with the stratigraphy at the West Fork of Placer Creek, in spite of the uncertainties about the magnitude and affect of faulting at both locations. Nonetheless, future work may provide a better picture of the stratigraphic framework at the Caladay property.

Plate 16. Caladay DDH 30-1 drill core log

Plate 16 shows the stratigraphy exposed in Caladay DDH 30-1 (fig. C-14). Although several faults occur in this section, the only significant known fault is the Kilbuck, at 1440 to 1548 feet. Therefore, the stratigraphy represented in most of the drill hole should be relatively continuous. This relatively intact interval represents most of the upper Revett, from the contact with the middle Revett up into the UQ2 unit.

The LS unit contains three interesting features: 1) up to 25% carbonate occurs locally; 2) barite occurs locally in the interval; and 3) several strange disruption structures occur in this interval, as illustrated in Plate 16. Taken together, these factors may indicate that this interval represents a sabkha environment. The abundant carbonate and possible evaporite minerals may reflect evaporation from a saline body of water. The strange disruption structures may represent evapoturbation: disruption of sediment formed by the growth of evaporite minerals.

Plate 17. Caladay DDH 30-2 drill core log

I examined the core from this drill hole (fig. C-15) to locate the Revett/St Regis contact, which I place at 188 feet. Above this contact, the lower St Regis is dominated by blocky to massive, medium-bedded siltite. This dominance of siltite in the lower St Regis Fm highlights the need to use the highest coset of thick sets of quartzite to mark the Revett/St Regis boundary, rather than the presence of thin-bedded argillite. Indeed, thin-bedded argillite occurs within UQ2 about 50 m below the Revett/St Regis boundary, and next appears within the St Regis, about 50 m above the Revett/St Regis boundary.

Plate 18. Camp composite section

This section portrays the stratigraphy of part of the upper Revett Fm at the Camp tunnel, near the center of the Silver Belt (fig. 3). This composite section is based on two drill holes, Camp DDH CU-24 and DDH CU-25 (figs. C-16, C-17), plus the stratigraphy that outcrops in the tunnel. I used trigonometry to convert distance along the core to stratigraphic thickness.

The Camp Tunnel is close to the old Coeur d'Alene mine (fig. 3), so the stratigraphy of the Revett Fm should be relatively similar at the two properties. Unfortunately, the Camp drilling only exposes part of the upper Revett Fm, from somewhere within MQ through to part of the US2 unit. The section is notable for containing significant quantities of thin-bedded argillite within the upper Revett, and for the presence of lavender rocks within the upper quartzite and upper siltite units.

Plates 19 and 20. Camp DDH CU-24 and CU-25 drill core logs

The only significant structure in these holes is the Polaris fault, which cuts DDH CU-25 at 360 feet, placing the Wallace Fm against the MQ unit of the upper Revett Fm. Therefore, the stratigraphy in these holes should be fairly intact, and representative of the stratigraphy in this portion of the Coeur d'Alene mining district.

Plates 21 and 22 Consolidated Silver composite stratigraphic section and correlation diagram

The Consolidated Silver (Con Sil) mine is near the center of the Silver Belt (fig. 3), and like the Camp property, contains significant thin-bedded argillite and lavender rocks in the upper Revett Fm. The composite section shown in Plate 21 was pieced together from the least faulted portions of stratigraphic sections that I measured on the 5400 and 4000 levels of the mine. Plate 22 shows inferred stratigraphic correlations at the property. Note that the appearance of thin-bedded argillite and, to a lesser extent, sericitic quartzite seems to be quite variable within the same stratigraphic units that are located only 430 m (1400 feet) apart. This may reflect inconsistent or inaccurate logging of lithologies, or more likely, it may reflect rapid facies changes in this portion of the Silver Belt.

Plate 23. Consolidated Silver 4000 C, A, B underground stratigraphic log

Plate 23 illustrates the stratigraphy of Consolidated Silver sections 4000C, A, and B (fig. C-18, C-19). These sections correlate moderately well with Sunshine sections 2700A, B, C, D and 3700 A. The most noticeable difference is that the quartzite near the top of the Consolidated Silver section is extremely sericitic, very silty, and much softer than the quartzite at the top of the comparable Sunshine sections. Nonetheless, the thick-bedded nature of the rocks exposed at the top of the Consolidated Silver section indicate that they are quartzitic. Thin-bedded argillite occurs at a much lower stratigraphic level at Consolidated Silver than at the Sunshine mine. This, coupled with the finer-grained nature of the quartzite, shows that the eastward-fining tendancy of the upper Revett Fm between the Bunker Hill and Sunshine mines continues to the east. In addition, rocks at the Consolidated Silver mine are chemically oxidized, i.e. gray or lavender, much more pervasively than at the Sunshine mine. Although some of this color variation may reflect local hydrothermal bleaching, the overall change appears to represent diagenetic color variations. This oxidation front cuts down section within the upper Revett Fm from west to east, so that rocks in the eastern sections are oxidized at a deeper stratigraphic level than rocks to the west.

Plate 24. Consolidated Silver 4000 D underground stratigraphic log

This section, which lies between the Merger D and Silver Summit faults (fig. C-20), appears to correlate fairly well with part of the MQ and US1 units of the Sunshine sections.

Most of the quartzite in this section is subvitreous quartzite, or hard sericitic quartzite, which is typical of much of the middle quartzite unit at Sunshine. The fault zones near the base of the section may have significant offset, but these do not affect the apparent offset of the Merger D fault, which lies at the top of the section. The central portion of the section appears to be unfaulted, and therefore its stratigraphy should be intact.

Plate 25. Consolidated Silver 4000 E underground stratigraphic log

The rocks in this section (fig. C-21) probably are part of the MQ or LQ units of the upper Revett because they contain vitreous and subvitreous quartzite. However, because the section is relatively short, these correlations are rather speculative.

Plate 26. Consolidated Silver 5400 C, B, A underground stratigraphic log

Plate 26 shows the stratigraphy of the upper Revett that is exposed on the 5400 level of the Consolidated Silver mine (figs. C-22 to C-24), which correlates moderately well with the stratigraphy on the 4000 level of the mine. Comparison of the stratigraphy from the two levels suggests that the fault associated with the mafic dike eliminates approximately 12 m (40 feet) of stratigraphic section. On the 5400 level, the unfaulted UQ2 unit is 65 m (214 feet) thick. On the 4000 level, where it is cut by the mafic dike, it is 11 m thinner, or only 54 m (177 feet) thick. The unfaulted US2 unit of the upper Revett is 62 m (202 feet) thick on the 4000 level, but is 13 m thinner on the 5400 level where it is cut by the mafic dike.

Stratigraphic data also allow us to place constraints on the likely offset of the Merger D fault zone, by using data from the Sunshine mine and from Consolidated Silver. The Merger D fault zone on the 4000 level cuts the US1 unit, whose combined thickness on either side of the fault is 58 m (191 feet). In the first case, comparison with the Sunshine stratigraphy suggests that the Merger D has negligible offset, for the US1 unit at Sunshine is 60 m thick in the Sunshine 3100 level sections and 62 m thick in the Sunshine 2700 level sections. Using these numbers, the inferred stratigraphic offset of the Merger D fault (2 to 4 m) is probably less than the error of measuring the sections. In the second case, data from the 5400 level of Consolidated Silver indicate that the US1 unit is 98 m (323 feet) thick, or 60 percent thicker than at the Sunshine mine. This suggests that the Merger D fault has removed 40 m of stratigraphy from the 4000 level of the Consolidated Silver mine. Based on the available data, this second estimate appears most likely.

Plate 27. Consolidated Silver 5400 F, E, D underground stratigraphic log

I described these short and highly faulted sections (fig. C-25) in an attempt to link Consolidated Silver 5400 C, B, A to a drill hole that Hecla drilled to the north from the 5400 level. However, this area contains both the Merger D and Silver Summit faults, so I cannot correlate the stratigraphy in this area with the stratigraphy elsewhere in the mine.

Plate 28. Consolidated Silver DDH 54-2 drill core log

Plate 28 depicts the stratigraphy exposed in Consolidated Silver DDH 54-2. This drill hole was collared near the contact of the upper and middle Revett, and penetrated southward from the 5400 level of the mine (figs. C-26, C-27). Three major structures were crossed in the hole. The Transverse fault was projected at approximately 210 m (700 feet), but I did not locate this structure when logging the core. The Big Creek anticline was crossed at 480 m (1574 feet), as indicated by leucoxene laminae that paralleled the core axis. The third structure, the Silver Summit Vein #1 fault, may coincide with a fracture zone from 510 to 516 m (1673 to 1694 feet).

Plate 29. Consolidated Silver DDH 54-2 converted to true thickness

Extension of the cross-cut where this hole was collared subsequent to drilling indicates that the first few hundred feet of this drill hole contains more quartzite than I have logged (Rich Leep and Steve Murray, verbal communication, 1985). Nonetheless, this plate provides perhaps the best view of the stratigraphy of the middle Revett Fm in the area south of the Osburn fault. In this hole, the middle Revett may be divided into two subdivisions, with an upper subdivision dominated by argillitic siltite and a lower subdivision consisting of blocky to massive siltite interbedded with sericitic quartzite. Although this hole does not intercept the lower Revett, it seems likely that the top of the lower Revett may be close to the hole where it crosses the axis of the Big Creek anticline.

Plate 30. Crescent composite section

Reexamining White's (1997b) measured sections at the Crescent mine, I found that I usually agreed with his descriptions, so I did not redescribe any of his sections at the mine. However, his correlations between the 3100 and 3700 levels seemed somewhat tenuous, because the stratigraphic sections at these levels do not overlap significantly. In order to substantiate these correlations, I logged 340 m (1107 feet) of Crescent DDH 1379, which was drilled northward from 3700 level through the stratigraphy that is exposed on the 3100 level. Although the stratigraphy in this hole correlates well with stratigraphy on the 3100 level, I modified the Crescent composite section by substituting my data from this drill hole for the 3100 level data. In addition, I lengthened the composite section to reflect data from three other drill holes (1685, 3355, and 4001).

Plate 31. Crescent 3500 A, B, C underground stratigraphic log

I described this short section (figs. C-28, C-29) in an effort to verify White's (1977b) correlations between the 3100 and 3700 levels of the Crescent mine. However, this section was too short to achieve its aim.

Plates 32 and 33. Crescent DDH#1379 Drill core log and hole converted to true thickness

As discussed above, I examined this drill hole to test White's (1977b) correlations between the 3100 and 3700 levels of the Crescent mine. Because this hole was drilled northward from the 3100 level (fig. C-30), it provided a perfect opportunity to do so. In the end, even though White's correlations do hold up well, I used this hole for constructing part of the Crescent composite stratigraphic section.

Plates 34, 35, and 36. Crescent DDH # 1685, 3355, and 4001 drill core logs

I examined these three drill holes (figs. C-31, C-32, C-33) to test whether or not the upper Revett Fm is thicker at the Crescent mine than White (1977b) indicated. The only major structure in these holes is the South Vein Fault, and I terminated all three logs where the fault was intercepted. I logged all three holes very rapidly, so they do not contain as much detail as most of my other logs, but the lithologic sequences should be reasonably accurate.

Plate 37. Crescent DDH # 1685, 3355, and 4001 correlation diagram

This correlation diagram, combined with White's (19977b) previous work, indicates that the upper Revett Fm is thicker at the Crescent mine than previously recognized. I revised the Crescent composite section (Plate 30) by incorporating data from these drill holes with White's previous work.

Plate 38. Lucky Friday composite section

Plate 38 is based on work by Brian White, and shows a generalized composite section for part of the Revett and St Regis Formations at the Lucky Friday mine (fig. 3). Because of the structural complexity at Lucky Friday, this section is based on detailed mapping, not measured sections.

To check the section, I spent one day going over maps and sections with Dr White, and two days underground. Plate 38 includes minor modifications of White's work that we documented during field checking.

Plates 39 and 40. Royal Apex DDH # RA-57 drill core log, and core log converted to stratigraphic thickness

This drill hole (fig. C-34) penetrates part of the lower and middle Revett Fm. and its collar is on the road where I logged the Two Mile Creek section (Plate 8).

Three faults and a major breccia zone occur in this drill hole. The lower Revett in this drill hole contains more quartzite and is more homogeneous than at the Two Mile Creek section

(Plate 8). Nonetheless, both sections show a general coarsening-upward sequence. The middle Revett is dominated by blocky siltite, but also contains subordinate intervals of quartzite. These quartzite intervals are much thinner than quartzite intervals in the middle Revett at the Lucky Friday mine (Plate 38) or the Allied Silver property (Plate 13).

Plate 41. Star Tunnel underground stratigraphic log

The walls of this section (figs. C-35, C-36, C-37) are covered with a thick layer of dirt that made it very difficult to see bed thicknesses and sedimentary structures. I therefore had to rely heavily on color and hardness when describing this section, and my log may be inaccurate. To add to this uncertainty, there are several faults with indeterminate offsets that cut this section, so the stratigraphy here may have significant interruptions. Therefore, I have not tried to correlate this section with others that I described north of the Osburn fault.

Plate 42. Sunshine composite section

This section is based on the least faulted portions of the stratigraphic sections that I examined at the Sunshine mine in the Silver Belt south of the Osburn fault (fig. 3). As discussed below, my original (1985) composite section included some miscorrelations, so this plate has been revised to accommodate new data that were acquired in 2000.

Plate 43. Sunshine Correlation diagram

Plate 43 shows correlations among the stratigraphic sections that I described at the Sunshine mine, and has been revised to include data that were acquired in 2000.

Plate 44. Sunshine 2700 A,B,C,D underground stratigraphic log

In order to test early correlations in the Sunshine mine, which were based on Plates 45-47, I measured four sections on the 2700 level of the Sunshine mine (figs. C-38 to C-41). that overlapped with stratigraphy that I had previously measured and described on the 3100 and 3700 levels. As shown in Plate 43, the stratigraphy above 750 feet in the 2700 level composite section closely matches the stratigraphy that I described from the 3700 level. Stratigraphy below 700 feet in the 2700 level composite section correlates fairly well with the stratigraphy that I described on the 3100 level. Unfortunately, several faults, a mafic dike, as well as one or more folds complicate the stratigraphy on the 2700 level. In addition, a fold repeats part of the UQ2 unit, so the top part of this section has been omitted from the Sunshine correlation diagram (Plate 43). Therefore, the exact stratigraphic sequence at Sunshine is still in question, though a composite based on Plate 43 may represent a reasonable approximation.

Plate 45. Sunshine 3100 A,B,C underground stratigraphic log

Although this section (figs. C-42 to C-45) crosses several faults, most of them probably have insignificant offsets. However, my 1985 correlations for this section are in error. What I logged as LQ and MQ are actually MQ and UQ1, respectively. Plate 43 shows the revised correlations.

Plate 46. Sunshine 3700 A underground stratigraphic log

This section clearly illustrates the Revett/St Regis transition zone at the Sunshine mine (figs. C-46, C-47). The transition zone in this section is approximately 60 m (200 feet) thick, beginning around 350 feet, and ending around 550 feet, at the top of the upper Revett. This section also contains three fining upward sequences. The first, from 235 to 248 feet, is a fining-upward sequence within a siltite unit. The second, from 259 to 275 feet, is a fining-upward sequence within a quartzite unit. The third, at 350 to 390 feet, is a fining-upward sequence within thin-bedded argillite.

Plate 47. Sunshine 3700 B,C underground stratigraphic log

This relatively short section contains part of the lower and middle Revett (figs. C-48, C-49). The middle Revett here is dominated by argillitic siltite, although minor quartzite is also present.

Plate 48. Missoula Tunnel underground stratigraphic log

This short section was begun to examine the stratigraphy of the middle and upper Revet Fm, as well as part of the lower Revett Fm. However, the section in the Missoula Tunnel (fig. C-50) contains numerous faults, and early snowfall in the autumn of 1984 prevented completion of this section.

Plate 49. Generalized stratigraphic section of part of the Revett Formation at the Idaho-Montana Silver property

This section is based on work that I performed in 1983 for Noranda Exploration, Inc. The section is somewhat schematic because I was not able to consult my original field notes, but the general stratigraphic sequence is valid. The interval of thin-bedded argillite that occurs on this property appears to thicken to the east, towards the Idaho-Montana border. The top 15 m (50 feet) of the upper Revett contains magnetite at this location, and therefore this interval is chemically oxidized. The 140 m (450 feet) thick upper Revett and 120 m (400 feet) thick middle Revett correspond closely to thicknesses for these members at the Lucky Friday mine.

Plate 50. Stratigraphic correlations between the Caladay Project and the West Fork of Placer Creek

Plate 50 shows stratigraphic correlations between the Caladay project and the West Fork of Placer Creek (fig. 3). The Caladay section, which is based on DDH # 30-1, and DDH # 30-2, as well as exposures in the 3000 level station, is corrected to true thickness. The correlation is remarkably good from the LQ unit through the US 2 unit, but the UQ2 unit correlates rather poorly. This suggests that unrecognized faulting cuts the section at the West Fork of Placer Creek, at the Caladay project, or both. Because the geology of the Caladay Project is relatively well known, I suspect that an unidentified fault cuts the UQ2 unit at the West Fork of Placer Creek, shortening this unit by approximately 60 m (200 feet). I am confident that the quartzite units at the top of the Caladay section do not occur up-section at the West Fork of Placer Creek, because I examined the overlying 50 m (160 feet), which consists of siltite (Plate 11).

Plate 51. Generalized cross-section showing probable correlations and possible facies changes between the West Fork of Pine Creek and the Bunker Hill mine

This plate was designed to complement other correlation diagrams south of the Osburn fault. Note the good correlation of stratigraphic units between these two locations.

Plates 52 and 53. Sunshine DDH # 31-1854

Core from this drill hole (fig. C-51) was logged in 2000 to provide stratigraphic information about the lower part of the upper Revett and part of the middle Revett Formation.

Plate 54. Stratigraphy of part of the middle and upper Revett Fm in the Bismark cross-cut of the Sunshine mine

In order to validate correlations at the Sunshine mine, I mapped lithologies in the Bismark cross-cut with Bob Doler and Lisa Hardy in 2000 (fig. C-52, C-53). This cross-cut extends south from LS, through LQ and into the middle Revett, eventually crossing the axis of the Big Creek anticline. The section presented here terminates at its southern end at a zone of complex folding and faulting.

Plate 55. Composite stratigraphic section of part of the upper Revett Fm at the Coeur mine

In 1985, I worked on the stratigraphy of the Revett Formation at the Coeur mine (fig. 3) with Steve Murray of Coeur d'Alene Mines Corporation. We examined eight underground stratigraphic sections, and logged three drill holes. Plate 55 presents my interpretation of the composite section from this portion of the silver belt.

The lowest stratigraphic unit of the upper Revett that we examined at the Coeur mine was the LQ unit, but it was not completely exposed. Both the MQ and LQ units are characterized by relatively thick, homogeneous packages of relatively hard, subvitreous to vitreous quartzite. This contrasts markedly with the UQ1 and UQ2 units, whose quartzite packages typically consist of more impure, softer sericitic quartzite. The LS, US1 and US2 units are dominated by siltite with subordinate sericitic quartzite, although the LS unit may also contain minor vitreous quartzite.

In contrast with the Camp project, and the Sunshine and Consolidated Silver mines, the Coeur mine does not contain intervals of thin-bedded argillite in the upper Revett, and therefore does not contain a Revett-St. Regis transition zone, using the restrictive definition advocated in this report. This therefore supports the concept that the central portion of the Silver Belt contains more fine-grained and oxidized sediments than the areas immediately to the west, south and east of the belt.

The lowest oxidized units in the upper Revett Fm at the Coeur mine are within the US1 unit, similar to their position to the west at the Sunshine mine and the Camp property.

Plate 56. Coeur 3400 A, B stratigraphic log

Although this section (Fig. C-54) contains several faults, the only one that probably has any significant offset is the fault at the top of the section. Additional work at the Coeur mine indicated that this fault repeats approximately 80 meters (260 feet) of stratigraphy. This section appears to contain fairly representative sequence of the US1, UQ1 and MQ units, so was used in construction of the Coeur Composite section shown in Plate 55. Subvitreous quartzite dominates the MQ unit, whereas sericitic quartzite is most abundant in stratigraphically higher units. The lowest chemically oxidized, lavender strata in this section occur just above the MQ unit, which is similar to their position at the Camp project and in parts of the Sunshine mine.

Plate 57. Stratigraphy of Coeur 3400 E, based on underground mapping

This plate shows the stratigraphy of part of the upper Revett and lower St Regis Formations on the 3400 level of the Coeur mine, to the north of section 3400B. As discussed above, this section is separated from 3400B by a fault that appears to repeat stratigraphy. The stratigraphy in 3400E (fig. C-54) was established by mapping lithologies underground, then using trigonometry to convert mapped distances to stratigraphic thicknesses.

Plate 58. Stratigraphy of Coeur 3400 F, based on underground mapping

Plate 58 shows the stratigraphy of part of the upper Revett Formation on the 3400 level of the Coeur mine, south of section 3400A (Fig. C-54). This section is based on mapping by Steve Murray, and I therefore used trigonometry to convert mapped distances to stratigraphic thicknesses.

Plates 59 and 60. Reindeer Queen DDH #85-1 drill core log

In 1985, Anaconda drilled a 3275 foot drill hole at the Reindeer Queen property in the southeastern portion of the Coeur d'Alene mining district (fig. 3). At the time, I was working for Coeur d'Alene Mines, who allowed me to log this important drill hole. The stratigraphy exposed in this hole is remarkably similar to the stratigraphy of the upper Revett elsewhere south of the Osburn fault, thereby strengthening correlations made elsewhere in this report.

There are several other notable aspects to this drill hole. First, the LQ unit is in fault contact with the middle Revett near the end of this hole. The fault area is altered and weakly mineralized, and core/bedding angles change remarkably across the fault. Second, the Reindeer Queen hole contains an anomalously high abundance of calcite veins and calcite nodules, and a relative dearth of quartz veins. Further interpretation of the significance of this observation awaits further understanding of the nature of alteration in the Coeur d'Alene district, but it should be noted that the vein style in this hole is markedly atypical. Finally, many parts of the upper Revett in the Reindeer Queen hole contain disseminated magnetite, in spite of the fact that the rocks are gray to green in color. Nonetheless, these rocks are considered to be oxidized. Therefore, the redox boundary between oxidized and reduced strata, which is approximately at the Revett/St. Regis contact at Caladay and the West Fork of Placer Creek, has cut down section by approximately 500 m in a horizontal distance of 13 km. This highlights the abrupt changes in redox state that occur within the Revett Formation in the Coeur d'Alene district.

Have a good life.