



CONTINUOUS VERTICALITY ANALYSIS

739

CLIENT_____

QUINTETTE COAL

BOREHOLE_

QHR-87-036

AREA_____

TRANSFER

COUNTRY_____

CANADA

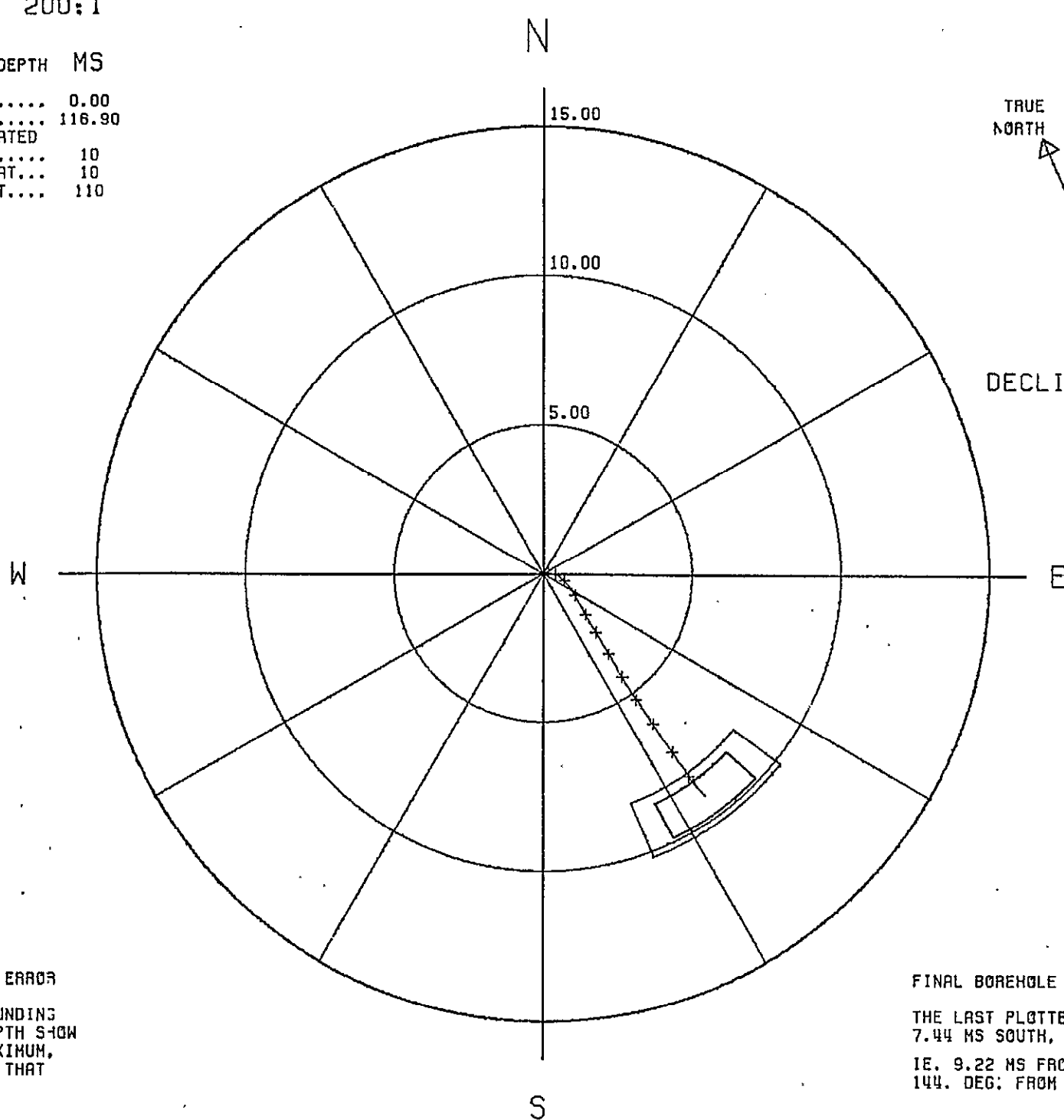
DATE LOGGED.....10-AUG-87
DATE PROCESSED..08-JAN-88
UPPER REFERENCE POINT....
LOWER REFERENCE POINT....T.D.

CROSS-SECTION

SCALE: 200:1

ALL FIGURES IN LOG DEPTH MS

TARGET ORIGIN DEPTH..... 0.00
 LAST PLOTTED DEPTH..... 116.90
 DEPTH MARKERS ANNOTATED
 IN MULTIPLES OF..... 10
 FIRST DEPTH MARKER AT... 10
 LAST DEPTH MARKER AT.... 110



MAGNETIC NORTH
 TRUE NORTH
 DECLINATION 24.0 DEG.

BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT 7.44 MS SOUTH, 5.45 MS EAST
 IE. 9.22 MS FROM THE ORIGIN, 144. DEG. FROM MAGNETIC NORTH

N-S SECTION

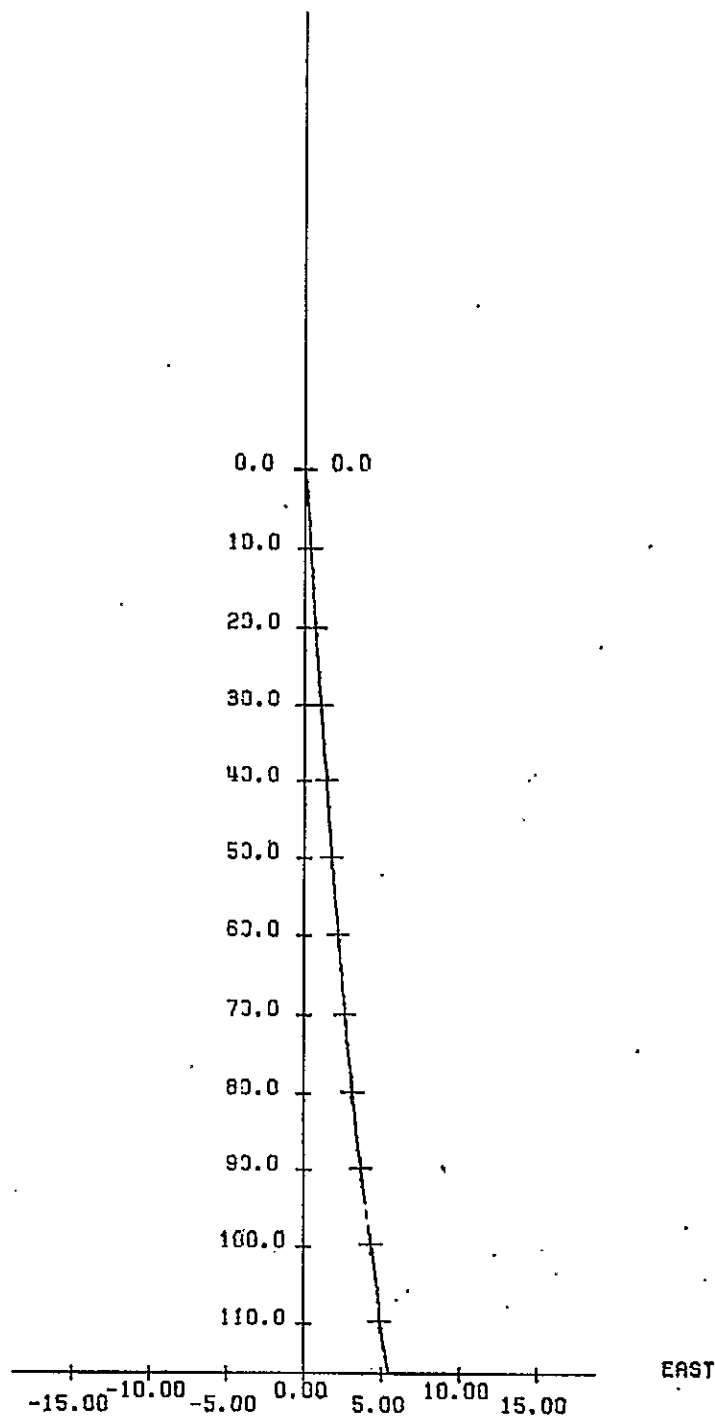
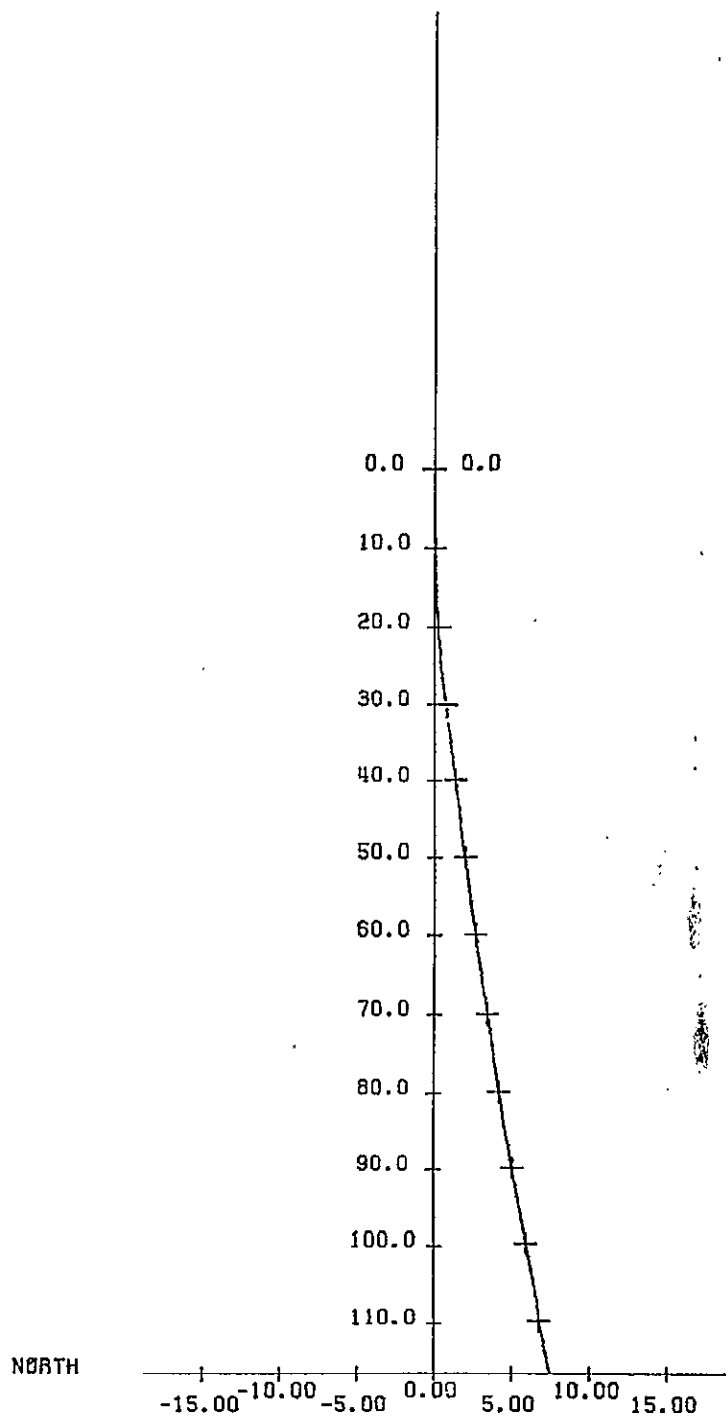
VERTICAL SECTIONS

(TRUE DEPTH VS. DISPLACEMENT)

W-E SECTION

VERTICAL SCALE 1000 : 1

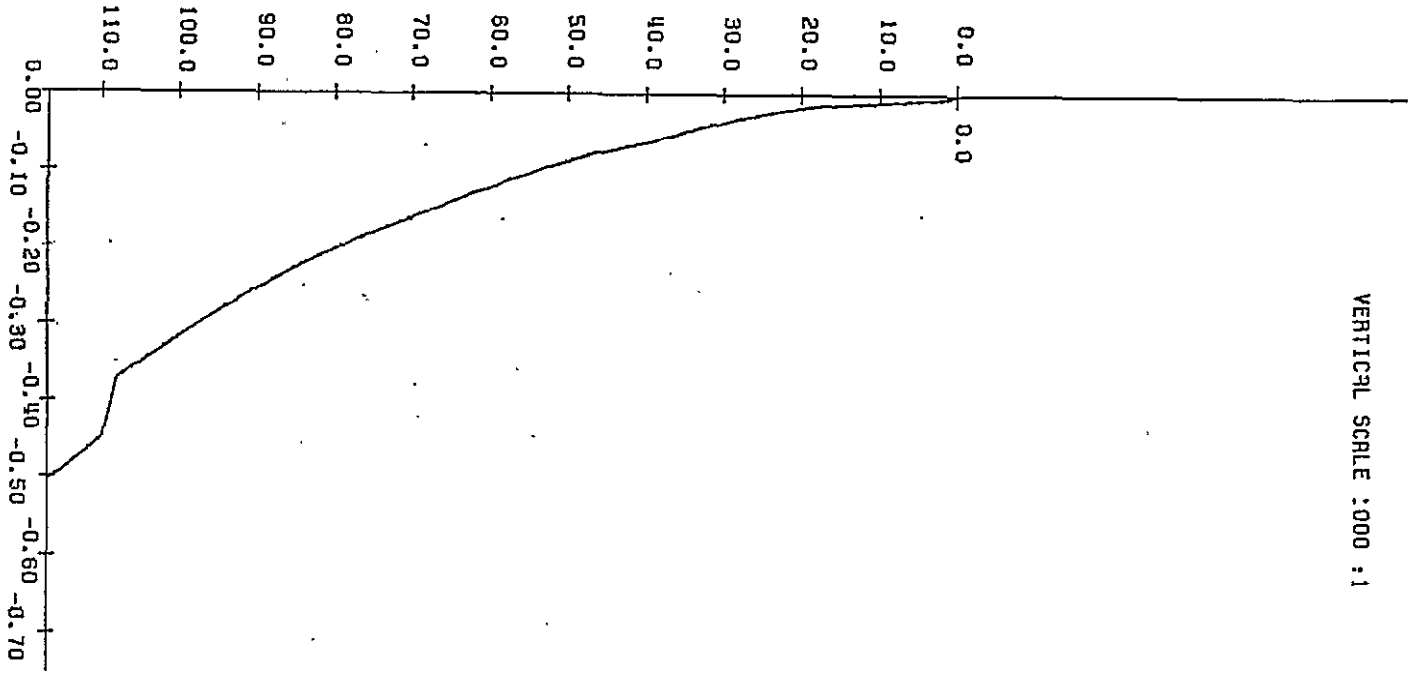
MARKERS ANNOTATED
AS ABOVE



HORIZONTAL SCALE 500 : 1

DEPTH CORRECTION ANALYSIS

VERTICAL SCALE : 000 : 1



CORRECTION FOR TRUE DEPTH
SCALE 10 : 1

| DEPTHS: | | DEPTHS: | |
|---------|--------|---------|--------|
| LOG | TRUE | LOG | TRUE |
| 1.00 | 1.99 | 71.00 | 83.83 |
| 2.00 | 3.99 | 72.00 | 87.72 |
| 3.00 | 5.99 | 73.00 | 91.61 |
| 4.00 | 7.99 | 74.00 | 95.50 |
| 5.00 | 9.99 | 75.00 | 99.39 |
| 6.00 | 11.99 | 76.00 | 103.28 |
| 7.00 | 13.99 | 77.00 | 107.17 |
| 8.00 | 15.99 | 78.00 | 111.06 |
| 9.00 | 17.99 | 79.00 | 114.95 |
| 10.00 | 19.99 | 80.00 | 118.84 |
| 11.00 | 21.99 | 81.00 | 122.73 |
| 12.00 | 23.99 | 82.00 | 126.62 |
| 13.00 | 25.99 | 83.00 | 130.51 |
| 14.00 | 27.99 | 84.00 | 134.40 |
| 15.00 | 29.99 | 85.00 | 138.29 |
| 16.00 | 31.99 | 86.00 | 142.18 |
| 17.00 | 33.99 | 87.00 | 146.07 |
| 18.00 | 35.99 | 88.00 | 149.96 |
| 19.00 | 37.99 | 89.00 | 153.85 |
| 20.00 | 39.99 | 90.00 | 157.74 |
| 21.00 | 41.99 | 91.00 | 161.63 |
| 22.00 | 43.99 | 92.00 | 165.52 |
| 23.00 | 45.99 | 93.00 | 169.41 |
| 24.00 | 47.99 | 94.00 | 173.30 |
| 25.00 | 49.99 | 95.00 | 177.19 |
| 26.00 | 51.99 | 96.00 | 181.08 |
| 27.00 | 53.99 | 97.00 | 184.97 |
| 28.00 | 55.99 | 98.00 | 188.86 |
| 29.00 | 57.99 | 99.00 | 192.75 |
| 30.00 | 59.99 | 100.00 | 196.64 |
| 31.00 | 61.99 | 101.00 | 200.53 |
| 32.00 | 63.99 | 102.00 | 204.42 |
| 33.00 | 65.99 | 103.00 | 208.31 |
| 34.00 | 67.99 | 104.00 | 212.20 |
| 35.00 | 69.99 | 105.00 | 216.09 |
| 36.00 | 71.99 | 106.00 | 219.98 |
| 37.00 | 73.99 | 107.00 | 223.87 |
| 38.00 | 75.99 | 108.00 | 227.76 |
| 39.00 | 77.99 | 109.00 | 231.65 |
| 40.00 | 79.99 | 110.00 | 235.54 |
| 41.00 | 81.99 | 111.00 | 239.43 |
| 42.00 | 83.99 | 112.00 | 243.32 |
| 43.00 | 85.99 | 113.00 | 247.21 |
| 44.00 | 87.99 | 114.00 | 251.10 |
| 45.00 | 89.99 | 115.00 | 254.99 |
| 46.00 | 91.99 | 116.00 | 258.88 |
| 47.00 | 93.99 | 117.00 | 262.77 |
| 48.00 | 95.99 | 118.00 | 266.66 |
| 49.00 | 97.99 | 119.00 | 270.55 |
| 50.00 | 99.99 | 120.00 | 274.44 |
| 51.00 | 101.99 | 121.00 | 278.33 |
| 52.00 | 103.99 | 122.00 | 282.22 |
| 53.00 | 105.99 | 123.00 | 286.11 |
| 54.00 | 107.99 | 124.00 | 290.00 |
| 55.00 | 109.99 | 125.00 | 293.89 |
| 56.00 | 111.99 | 126.00 | 297.78 |
| 57.00 | 113.99 | 127.00 | 301.67 |
| 58.00 | 115.99 | 128.00 | 305.56 |
| 59.00 | 117.99 | 129.00 | 309.45 |
| 60.00 | 119.99 | 130.00 | 313.34 |
| 61.00 | 121.99 | 131.00 | 317.23 |
| 62.00 | 123.99 | 132.00 | 321.12 |
| 63.00 | 125.99 | 133.00 | 325.01 |
| 64.00 | 127.99 | 134.00 | 328.90 |
| 65.00 | 129.99 | 135.00 | 332.79 |
| 66.00 | 131.99 | 136.00 | 336.68 |
| 67.00 | 133.99 | 137.00 | 340.57 |
| 68.00 | 135.99 | 138.00 | 344.46 |
| 69.00 | 137.99 | 139.00 | 348.35 |
| 70.00 | 139.99 | 140.00 | 352.24 |

BPB VERTICALITY ANALYSIS
INTERPRETATION NOTES

1. All plotted output is automatically scaled to obtain the best visual effect within the physical space available. The maximum scales being 50000:1 (metric) & 48000:1 (imperial), and the minimum 1:1.
 2. The analysis is derived by integrating 10 cm./6" sampled data down the borehole. However the listing supplied will contain a maximum of 200 points in multiples of 1,2,5,10,20,25,50, or 100 metres/feet depending upon the total range of the analysis. However the analysis is calculated for the entire range of the borehole, and the final borehole position is included in the listing.
 3. Computed verticality may only be fully derived in open sections of the borehole, away from the influence of any magnetic media (as the azimuth calculations are derived from three solid state magnetometers). So the analysis will generally begin at the end of the casing, and all borehole positional information will relate to this depth.
 4. Up to ten cross-sections may be requested for any borehole to be displayed at any scale (the default scale is that of the cross-section for the entire hole).
 5. Borehole positional error is derived assuming the following parameters:

| | | |
|---------------|---------------|------------------|
| | TILT(degrees) | AZIMUTH(degrees) |
| Typical Error | +/- 0.33333 | +/- 10.0 |
| Maximum Error | +/- 0.5 | +/- 15.0 |
 6. Error analysis may be calculated and plotted from the data listing as follows:
 - a) Plot the four coordinates from the error listing (based upon zero azimuth error) on a target plot, origin at the start of the analysis.
 - b) Describe arcs of +/- 10 degrees & +/- 15 degrees (centre at the origin) through the inner and outer points respectively.
 - c) Connect the respective arcs together with straight lines to give the typical & maximum borehole positional error.
 7. Given below is a full description of the parameters displayed on the ensuing listing:

| | |
|---------------------|--|
| LOG DEPTH | the depth recorded on the field logs for the borehole |
| TRUE DEPTH | the true vertical depth corresponding to the above depth, corrected from the start of the analysis |
| HOLE TILT & AZIMUTH | the SAMPLED borehole orientation |
| AXIAL COORDINATES | the coordinates North & East from the target origin |
| POLAR COORDINATES | the polar, or radial, coordinates of the borehole |
| ERROR COORDINATES | the polar coordinates corresponding to the typical and maximum tilt error |
- N.B. The reference point for ALL bearing angles on this listing is given at the top of each sheet

Verticality Data Listing

All co-ordinates with respect to True North

| DEPTHS | | BOREHOLE | | AXIAL CO-ORDS. | | POLAR | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | |
|--------|-------|----------|------|----------------|------|-------|--------|--|--------|------|--------|------|--------|------|--------|
| log | true | tilt | AZI | North | East | brng | radius | brng | radius | brng | radius | brng | radius | brng | radius |
| 1.00 | 1.00 | 4.8 | 107. | -0.02 | 0.08 | 105. | 0.09 | 105. | 0.09 | 105. | 0.08 | 105. | 0.09 | 105. | 0.08 |
| 2.00 | 1.99 | 2.1 | 108. | -0.04 | 0.14 | 107. | 0.15 | 107. | 0.16 | 107. | 0.13 | 107. | 0.16 | 107. | 0.14 |
| 3.00 | 2.99 | 1.6 | 129. | -0.06 | 0.17 | 109. | 0.18 | 109. | 0.20 | 109. | 0.15 | 109. | 0.19 | 109. | 0.16 |
| 4.00 | 3.99 | 2.3 | 119. | -0.08 | 0.20 | 111. | 0.21 | 112. | 0.24 | 111. | 0.18 | 112. | 0.23 | 111. | 0.19 |
| 5.00 | 4.99 | 1.9 | 131. | -0.10 | 0.23 | 113. | 0.25 | 114. | 0.29 | 113. | 0.20 | 114. | 0.28 | 113. | 0.22 |
| 6.00 | 5.99 | 1.6 | 128. | -0.12 | 0.25 | 115. | 0.28 | 116. | 0.33 | 114. | 0.23 | 115. | 0.31 | 115. | 0.25 |
| 7.00 | 6.99 | 1.7 | 128. | -0.14 | 0.28 | 117. | 0.31 | 117. | 0.37 | 116. | 0.25 | 117. | 0.35 | 116. | 0.27 |
| 8.00 | 7.99 | 1.9 | 139. | -0.16 | 0.30 | 118. | 0.34 | 118. | 0.41 | 117. | 0.27 | 118. | 0.39 | 117. | 0.29 |
| 9.00 | 8.99 | 1.5 | 131. | -0.18 | 0.32 | 118. | 0.37 | 119. | 0.45 | 117. | 0.29 | 119. | 0.42 | 118. | 0.32 |
| 10.00 | 9.99 | 1.9 | 137. | -0.20 | 0.35 | 119. | 0.40 | 120. | 0.49 | 119. | 0.32 | 120. | 0.46 | 119. | 0.34 |
| 11.00 | 10.99 | 2.2 | 142. | -0.22 | 0.38 | 120. | 0.44 | 121. | 0.53 | 120. | 0.34 | 121. | 0.50 | 120. | 0.37 |
| 12.00 | 11.99 | 1.7 | 133. | -0.24 | 0.40 | 121. | 0.47 | 122. | 0.57 | 120. | 0.37 | 122. | 0.54 | 121. | 0.40 |
| 13.00 | 12.99 | 1.9 | 150. | -0.27 | 0.42 | 122. | 0.50 | 123. | 0.61 | 121. | 0.39 | 123. | 0.57 | 122. | 0.42 |
| 14.00 | 13.99 | 1.9 | 140. | -0.29 | 0.44 | 124. | 0.53 | 124. | 0.65 | 123. | 0.41 | 124. | 0.61 | 123. | 0.45 |
| 15.00 | 14.99 | 1.8 | 161. | -0.32 | 0.46 | 125. | 0.56 | 126. | 0.69 | 124. | 0.43 | 126. | 0.64 | 125. | 0.47 |
| 16.00 | 15.99 | 2.0 | 147. | -0.35 | 0.48 | 127. | 0.59 | 127. | 0.73 | 126. | 0.46 | 127. | 0.68 | 126. | 0.50 |
| 17.00 | 16.99 | 1.9 | 149. | -0.38 | 0.49 | 128. | 0.62 | 128. | 0.77 | 127. | 0.48 | 128. | 0.72 | 127. | 0.53 |
| 18.00 | 17.99 | 2.2 | 152. | -0.42 | 0.51 | 129. | 0.66 | 130. | 0.81 | 128. | 0.51 | 130. | 0.76 | 129. | 0.56 |
| 19.00 | 18.98 | 2.9 | 153. | -0.46 | 0.53 | 131. | 0.70 | 131. | 0.86 | 130. | 0.54 | 131. | 0.81 | 130. | 0.59 |
| 20.00 | 19.98 | 2.8 | 161. | -0.50 | 0.55 | 133. | 0.75 | 133. | 0.91 | 132. | 0.58 | 133. | 0.86 | 132. | 0.63 |
| 21.00 | 20.98 | 2.9 | 167. | -0.55 | 0.56 | 135. | 0.79 | 135. | 0.96 | 134. | 0.61 | 135. | 0.91 | 134. | 0.67 |
| 22.00 | 21.98 | 2.9 | 168. | -0.61 | 0.58 | 136. | 0.84 | 136. | 1.02 | 136. | 0.66 | 136. | 0.96 | 136. | 0.72 |
| 23.00 | 22.98 | 3.4 | 160. | -0.66 | 0.60 | 138. | 0.89 | 138. | 1.08 | 138. | 0.70 | 138. | 1.01 | 138. | 0.76 |
| 24.00 | 23.98 | 3.6 | 156. | -0.71 | 0.61 | 139. | 0.94 | 139. | 1.14 | 139. | 0.74 | 139. | 1.07 | 139. | 0.81 |
| 25.00 | 24.97 | 3.6 | 170. | -0.77 | 0.63 | 141. | 1.00 | 141. | 1.20 | 141. | 0.79 | 141. | 1.13 | 141. | 0.86 |
| 26.00 | 25.97 | 3.9 | 172. | -0.84 | 0.64 | 143. | 1.05 | 143. | 1.27 | 143. | 0.84 | 143. | 1.20 | 143. | 0.91 |
| 27.00 | 26.97 | 3.7 | 163. | -0.90 | 0.65 | 144. | 1.11 | 144. | 1.33 | 145. | 0.89 | 144. | 1.26 | 144. | 0.96 |
| 28.00 | 27.97 | 4.1 | 169. | -0.97 | 0.66 | 146. | 1.17 | 146. | 1.40 | 146. | 0.94 | 146. | 1.32 | 146. | 1.02 |
| 29.00 | 28.97 | 3.9 | 170. | -1.04 | 0.67 | 147. | 1.23 | 147. | 1.47 | 148. | 1.00 | 147. | 1.39 | 148. | 1.07 |
| 30.00 | 29.96 | 4.4 | 173. | -1.11 | 0.68 | 149. | 1.30 | 148. | 1.54 | 149. | 1.05 | 148. | 1.46 | 149. | 1.13 |
| 31.00 | 30.96 | 3.9 | 180. | -1.17 | 0.68 | 150. | 1.36 | 149. | 1.61 | 151. | 1.11 | 149. | 1.53 | 150. | 1.19 |
| 32.00 | 31.96 | 4.1 | 174. | -1.24 | 0.69 | 151. | 1.42 | 150. | 1.68 | 152. | 1.16 | 151. | 1.60 | 151. | 1.25 |
| 33.00 | 32.96 | 4.0 | 170. | -1.31 | 0.70 | 152. | 1.49 | 151. | 1.75 | 153. | 1.22 | 152. | 1.66 | 153. | 1.31 |
| 34.00 | 33.95 | 4.3 | 180. | -1.38 | 0.70 | 153. | 1.55 | 152. | 1.83 | 154. | 1.28 | 153. | 1.74 | 154. | 1.37 |
| 35.00 | 34.95 | 4.1 | 172. | -1.46 | 0.71 | 154. | 1.62 | 153. | 1.91 | 155. | 1.34 | 154. | 1.81 | 155. | 1.43 |
| 36.00 | 35.95 | 3.9 | 173. | -1.53 | 0.72 | 155. | 1.69 | 154. | 1.98 | 156. | 1.40 | 154. | 1.89 | 155. | 1.50 |
| 37.00 | 36.95 | 4.1 | 175. | -1.61 | 0.72 | 156. | 1.76 | 155. | 2.06 | 157. | 1.46 | 155. | 1.96 | 156. | 1.56 |
| 38.00 | 37.94 | 4.4 | 178. | -1.69 | 0.73 | 157. | 1.84 | 156. | 2.14 | 158. | 1.53 | 156. | 2.04 | 157. | 1.63 |
| 39.00 | 38.94 | 4.2 | 176. | -1.76 | 0.73 | 157. | 1.91 | 157. | 2.22 | 158. | 1.59 | 157. | 2.12 | 158. | 1.70 |
| 40.00 | 39.94 | 4.0 | 176. | -1.83 | 0.74 | 158. | 1.98 | 157. | 2.30 | 159. | 1.65 | 158. | 2.19 | 159. | 1.76 |
| 41.00 | 40.93 | 3.9 | 172. | -1.90 | 0.75 | 159. | 2.04 | 158. | 2.37 | 159. | 1.71 | 158. | 2.26 | 159. | 1.82 |
| 42.00 | 41.93 | 4.2 | 172. | -1.97 | 0.75 | 159. | 2.11 | 158. | 2.44 | 160. | 1.77 | 159. | 2.33 | 160. | 1.88 |
| 43.00 | 42.93 | 3.9 | 173. | -2.03 | 0.76 | 160. | 2.17 | 159. | 2.51 | 160. | 1.82 | 159. | 2.40 | 160. | 1.94 |
| 44.00 | 43.93 | 3.7 | 174. | -2.09 | 0.76 | 160. | 2.23 | 159. | 2.58 | 161. | 1.87 | 159. | 2.47 | 160. | 1.99 |
| 45.00 | 44.93 | 3.9 | 168. | -2.16 | 0.77 | 160. | 2.29 | 160. | 2.66 | 161. | 1.93 | 160. | 2.54 | 161. | 2.05 |
| 46.00 | 45.92 | 4.0 | 178. | -2.23 | 0.78 | 161. | 2.36 | 160. | 2.73 | 162. | 1.99 | 160. | 2.61 | 161. | 2.11 |
| 47.00 | 46.92 | 4.0 | 170. | -2.30 | 0.79 | 161. | 2.43 | 160. | 2.81 | 162. | 2.05 | 161. | 2.68 | 162. | 2.18 |
| 48.00 | 47.92 | 4.5 | 167. | -2.37 | 0.81 | 161. | 2.51 | 161. | 2.89 | 162. | 2.12 | 161. | 2.76 | 162. | 2.25 |
| 49.00 | 48.91 | 4.5 | 170. | -2.45 | 0.81 | 162. | 2.58 | 161. | 2.98 | 162. | 2.18 | 161. | 2.85 | 162. | 2.32 |
| 50.00 | 49.91 | 4.4 | 177. | -2.53 | 0.82 | 162. | 2.66 | 161. | 3.06 | 163. | 2.25 | 162. | 2.93 | 162. | 2.39 |

Verticality Data Listing

All co-ordinates with respect to True North

| DEPTHS | | BOREHOLE tilt | AZI | AXIAL CO-ORDS. | | POLAR | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | |
|--------|-------|------------------|------|----------------|------|-------|--------|--|--------|------|--------|------|--------|------|------|
| Log | true | | | North | East | brng | radius | brng | radius | brng | radius | brng | radius | | |
| 51.00 | 50.91 | 4.2 | 173. | -2.60 | 0.83 | 162. | 2.73 | 162. | 3.14 | 163. | 2.32 | 162. | 3.01 | 163. | 2.46 |
| 52.00 | 51.91 | 4.4 | 176. | -2.67 | 0.84 | 162. | 2.80 | 162. | 3.23 | 163. | 2.38 | 162. | 3.09 | 163. | 2.52 |
| 53.00 | 52.90 | 4.4 | 174. | -2.75 | 0.85 | 163. | 2.88 | 162. | 3.31 | 164. | 2.45 | 162. | 3.17 | 163. | 2.59 |
| 54.00 | 53.90 | 4.6 | 177. | -2.83 | 0.87 | 163. | 2.96 | 162. | 3.40 | 164. | 2.52 | 163. | 3.25 | 163. | 2.67 |
| 55.00 | 54.90 | 4.8 | 174. | -2.91 | 0.87 | 163. | 3.04 | 163. | 3.49 | 164. | 2.59 | 163. | 3.34 | 164. | 2.74 |
| 56.00 | 55.89 | 4.8 | 170. | -2.99 | 0.89 | 163. | 3.12 | 163. | 3.58 | 164. | 2.67 | 163. | 3.43 | 164. | 2.82 |
| 57.00 | 56.89 | 4.8 | 175. | -3.08 | 0.90 | 164. | 3.21 | 163. | 3.67 | 165. | 2.74 | 163. | 3.51 | 164. | 2.90 |
| 58.00 | 57.89 | 4.9 | 170. | -3.16 | 0.90 | 164. | 3.29 | 163. | 3.76 | 165. | 2.82 | 164. | 3.60 | 165. | 2.98 |
| 59.00 | 58.88 | 5.0 | 174. | -3.25 | 0.91 | 164. | 3.38 | 164. | 3.86 | 165. | 2.90 | 164. | 3.70 | 165. | 3.06 |
| 60.00 | 59.88 | 5.1 | 173. | -3.34 | 0.92 | 165. | 3.46 | 164. | 3.95 | 165. | 2.97 | 164. | 3.79 | 165. | 3.14 |
| 61.00 | 60.87 | 4.7 | 172. | -3.42 | 0.93 | 165. | 3.55 | 164. | 4.05 | 165. | 3.05 | 164. | 3.88 | 165. | 3.22 |
| 62.00 | 61.87 | 5.0 | 171. | -3.51 | 0.94 | 165. | 3.63 | 164. | 4.14 | 166. | 3.13 | 165. | 3.97 | 165. | 3.30 |
| 63.00 | 62.87 | 4.8 | 175. | -3.60 | 0.95 | 165. | 3.72 | 165. | 4.23 | 166. | 3.20 | 165. | 4.06 | 166. | 3.38 |
| 64.00 | 63.86 | 5.4 | 173. | -3.69 | 0.96 | 165. | 3.81 | 165. | 4.33 | 166. | 3.29 | 165. | 4.16 | 166. | 3.46 |
| 65.00 | 64.86 | 5.5 | 172. | -3.78 | 0.97 | 166. | 3.90 | 165. | 4.43 | 166. | 3.37 | 165. | 4.26 | 166. | 3.55 |
| 66.00 | 65.85 | 5.0 | 175. | -3.87 | 0.98 | 166. | 3.99 | 165. | 4.53 | 167. | 3.45 | 165. | 4.35 | 166. | 3.63 |
| 67.00 | 66.85 | 5.3 | 174. | -3.96 | 0.99 | 166. | 4.08 | 165. | 4.63 | 167. | 3.53 | 166. | 4.44 | 166. | 3.71 |
| 68.00 | 67.85 | 5.1 | 175. | -4.05 | 1.00 | 166. | 4.17 | 166. | 4.72 | 167. | 3.61 | 166. | 4.54 | 167. | 3.80 |
| 69.00 | 68.84 | 5.3 | 177. | -4.14 | 1.00 | 166. | 4.26 | 166. | 4.82 | 167. | 3.69 | 166. | 4.64 | 167. | 3.88 |
| 70.00 | 69.84 | 5.1 | 176. | -4.23 | 1.01 | 167. | 4.35 | 166. | 4.92 | 167. | 3.78 | 166. | 4.73 | 167. | 3.97 |
| 71.00 | 70.83 | 5.1 | 173. | -4.32 | 1.02 | 167. | 4.44 | 166. | 5.02 | 167. | 3.86 | 166. | 4.83 | 167. | 4.05 |
| 72.00 | 71.83 | 5.1 | 172. | -4.41 | 1.03 | 167. | 4.53 | 166. | 5.12 | 167. | 3.94 | 166. | 4.92 | 167. | 4.13 |
| 73.00 | 72.83 | 4.8 | 175. | -4.49 | 1.04 | 167. | 4.61 | 166. | 5.21 | 168. | 4.01 | 167. | 5.01 | 167. | 4.21 |
| 74.00 | 73.82 | 5.1 | 171. | -4.58 | 1.06 | 167. | 4.70 | 167. | 5.31 | 168. | 4.09 | 167. | 5.10 | 167. | 4.29 |
| 75.00 | 74.82 | 4.9 | 173. | -4.67 | 1.07 | 167. | 4.79 | 167. | 5.40 | 168. | 4.17 | 167. | 5.20 | 167. | 4.38 |
| 76.00 | 75.81 | 5.3 | 172. | -4.76 | 1.09 | 167. | 4.88 | 167. | 5.50 | 168. | 4.26 | 167. | 5.30 | 168. | 4.46 |
| 77.00 | 76.81 | 5.1 | 172. | -4.85 | 1.10 | 167. | 4.97 | 167. | 5.61 | 168. | 4.34 | 167. | 5.39 | 168. | 4.55 |
| 78.00 | 77.80 | 5.5 | 170. | -4.94 | 1.12 | 167. | 5.07 | 167. | 5.71 | 168. | 4.43 | 167. | 5.50 | 168. | 4.64 |
| 79.00 | 78.80 | 5.1 | 169. | -5.03 | 1.13 | 167. | 5.16 | 167. | 5.81 | 168. | 4.51 | 167. | 5.59 | 168. | 4.73 |
| 80.00 | 79.80 | 5.2 | 169. | -5.12 | 1.15 | 167. | 5.25 | 167. | 5.91 | 168. | 4.59 | 167. | 5.69 | 168. | 4.81 |
| 81.00 | 80.79 | 6.0 | 171. | -5.22 | 1.17 | 167. | 5.35 | 167. | 6.01 | 168. | 4.68 | 167. | 5.79 | 168. | 4.90 |
| 82.00 | 81.79 | 5.1 | 171. | -5.31 | 1.18 | 167. | 5.44 | 167. | 6.12 | 168. | 4.76 | 167. | 5.89 | 168. | 4.99 |
| 83.00 | 82.78 | 5.4 | 171. | -5.40 | 1.20 | 168. | 5.53 | 167. | 6.22 | 168. | 4.85 | 167. | 5.99 | 168. | 5.08 |
| 84.00 | 83.78 | 5.9 | 169. | -5.50 | 1.21 | 168. | 5.63 | 167. | 6.33 | 168. | 4.94 | 167. | 6.09 | 168. | 5.17 |
| 85.00 | 84.77 | 6.0 | 169. | -5.60 | 1.23 | 168. | 5.73 | 167. | 6.44 | 168. | 5.03 | 167. | 6.20 | 168. | 5.27 |
| 86.00 | 85.77 | 6.1 | 169. | -5.70 | 1.25 | 168. | 5.83 | 167. | 6.54 | 168. | 5.12 | 167. | 6.31 | 168. | 5.36 |
| 87.00 | 86.76 | 6.3 | 168. | -5.80 | 1.27 | 168. | 5.94 | 167. | 6.66 | 168. | 5.22 | 167. | 6.42 | 168. | 5.46 |
| 88.00 | 87.76 | 6.6 | 171. | -5.90 | 1.28 | 168. | 6.04 | 187. | 6.77 | 168. | 5.31 | 167. | 6.52 | 168. | 5.55 |
| 89.00 | 88.75 | 6.2 | 169. | -6.01 | 1.31 | 168. | 6.15 | 167. | 6.88 | 168. | 5.41 | 167. | 6.64 | 168. | 5.66 |
| 90.00 | 89.75 | 6.0 | 168. | -6.11 | 1.33 | 168. | 6.25 | 167. | 7.00 | 168. | 5.51 | 167. | 6.75 | 168. | 5.75 |
| 91.00 | 90.74 | 6.2 | 171. | -6.21 | 1.35 | 168. | 6.36 | 167. | 7.11 | 168. | 5.60 | 168. | 6.86 | 168. | 5.85 |
| 92.00 | 91.73 | 6.8 | 174. | -6.33 | 1.36 | 168. | 6.47 | 167. | 7.23 | 168. | 5.71 | 168. | 6.98 | 168. | 5.96 |
| 93.00 | 92.73 | 7.2 | 167. | -6.44 | 1.38 | 168. | 6.59 | 168. | 7.36 | 168. | 5.82 | 168. | 7.10 | 168. | 6.07 |
| 94.00 | 93.72 | 6.4 | 168. | -6.55 | 1.40 | 168. | 6.70 | 168. | 7.48 | 168. | 5.92 | 168. | 7.22 | 168. | 6.18 |
| 95.00 | 94.71 | 6.6 | 169. | -6.66 | 1.42 | 168. | 6.81 | 168. | 7.60 | 168. | 6.02 | 168. | 7.34 | 168. | 6.29 |
| 96.00 | 95.71 | 6.4 | 173. | -6.77 | 1.44 | 168. | 6.92 | 168. | 7.72 | 168. | 6.13 | 168. | 7.46 | 168. | 6.39 |
| 97.00 | 96.70 | 6.5 | 168. | -6.88 | 1.47 | 168. | 7.04 | 168. | 7.84 | 168. | 6.23 | 168. | 7.58 | 168. | 6.50 |
| 98.00 | 97.69 | 6.5 | 165. | -6.99 | 1.49 | 168. | 7.15 | 168. | 7.97 | 168. | 6.34 | 168. | 7.69 | 168. | 6.61 |
| 99.00 | 98.69 | 6.6 | 164. | -7.10 | 1.52 | 168. | 7.26 | 168. | 8.09 | 168. | 6.44 | 168. | 7.81 | 168. | 6.72 |
| 100.00 | 99.68 | 6.8 | 163. | -7.22 | 1.54 | 168. | 7.38 | 168. | 8.21 | 168. | 6.55 | 168. | 7.93 | 168. | 6.82 |

Verticality Data Listing

Date processed: 08-JAN-88

All co-ordinates with respect to True North

| DEPTHS | | BOREHOLE tillt | AZI | AXIAL CO-ORDS. | | POLAR | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | |
|--------|--------|-------------------|------|----------------|------|-------|--------|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| log | true | | | North | East | brng | radius | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius |
| 101.00 | 100.68 | 6.8 | 170. | -7.33 | 1.56 | 168. | 7.49 | 168. | 8.33 | 168. | 6.65 | 168. | 8.05 | 168. | 6.93 |
| 102.00 | 101.67 | 6.3 | 171. | -7.44 | 1.58 | 168. | 7.61 | 168. | 8.46 | 168. | 6.76 | 168. | 8.17 | 168. | 7.04 |
| 103.00 | 102.66 | 6.4 | 170. | -7.55 | 1.61 | 168. | 7.72 | 168. | 8.58 | 168. | 6.86 | 168. | 8.29 | 168. | 7.15 |
| 104.00 | 103.66 | 6.6 | 166. | -7.66 | 1.63 | 168. | 7.83 | 168. | 8.70 | 168. | 6.97 | 168. | 8.41 | 168. | 7.25 |
| 105.00 | 104.65 | 6.8 | 170. | -7.77 | 1.65 | 168. | 7.95 | 168. | 8.82 | 168. | 7.07 | 168. | 8.53 | 168. | 7.36 |
| 106.00 | 105.64 | 6.9 | 168. | -7.89 | 1.68 | 168. | 8.06 | 168. | 8.95 | 168. | 7.18 | 168. | 8.65 | 168. | 7.48 |
| 107.00 | 106.64 | 6.6 | 168. | -8.00 | 1.70 | 168. | 8.18 | 168. | 9.07 | 168. | 7.29 | 168. | 8.78 | 168. | 7.59 |
| 108.00 | 107.63 | 6.6 | 170. | -8.12 | 1.73 | 168. | 8.30 | 168. | 9.20 | 168. | 7.40 | 168. | 8.90 | 168. | 7.70 |
| 109.00 | 108.59 | 44.3 | 356. | -8.15 | 1.70 | 168. | 8.32 | 168. | 9.23 | 169. | 7.42 | 168. | 8.93 | 168. | 7.72 |
| 110.00 | 109.55 | 7.6 | 168. | -8.19 | 1.72 | 168. | 8.37 | 168. | 9.28 | 169. | 7.45 | 168. | 8.97 | 168. | 7.76 |
| 111.00 | 110.54 | 7.6 | 163. | -8.31 | 1.75 | 168. | 8.50 | 168. | 9.42 | 168. | 7.57 | 168. | 9.11 | 168. | 7.88 |
| 112.00 | 111.53 | 7.1 | 164. | -8.44 | 1.79 | 168. | 8.63 | 168. | 9.56 | 168. | 7.70 | 168. | 9.25 | 168. | 8.01 |
| 113.00 | 112.52 | 7.1 | 167. | -8.56 | 1.82 | 168. | 8.75 | 168. | 9.69 | 168. | 7.81 | 168. | 9.38 | 168. | 8.12 |
| 114.00 | 113.52 | 7.0 | 169. | -8.68 | 1.85 | 168. | 8.87 | 168. | 9.82 | 168. | 7.92 | 168. | 9.50 | 168. | 8.24 |
| 115.00 | 114.51 | 6.9 | 164. | -8.80 | 1.89 | 168. | 9.00 | 168. | 9.96 | 168. | 8.04 | 168. | 9.64 | 168. | 8.36 |
| 116.00 | 115.50 | 7.1 | 162. | -8.91 | 1.92 | 168. | 9.11 | 168. | 10.08 | 168. | 8.14 | 168. | 9.75 | 168. | 8.47 |
| 116.90 | 116.40 | 7.1 | 162. | -9.01 | 1.95 | 168. | 9.22 | 168. | 10.19 | 168. | 8.25 | 168. | 9.87 | 168. | 8.57 |

QHR87037
TRANSFER

LOG DEPTH 0090.00
TRUE DEPTH 0089.79
TILT 5.92 DG
BEARING 81.93 DG
NORTHING -000.68
EASTING +005.39

LOG DEPTH 0080.00
TRUE DEPTH 0079.84
TILT 5.70 DG
BEARING 84.12 DG
NORTHING -000.83
EASTING +004.37

LOG DEPTH 0070.00
TRUE DEPTH 0069.89
TILT 4.97 DG
BEARING 93.06 DG
NORTHING -000.93
EASTING +003.38

LOG DEPTH 0060.00
TRUE DEPTH 0059.93
TILT 4.05 DG
BEARING 110.62 DG
NORTHING -000.88
EASTING +002.51

LOG DEPTH 0050.00
TRUE DEPTH 0049.95
TILT 3.96 DG
BEARING 114.82 DG
NORTHING -000.64
EASTING +001.85

LOG DEPTH 0040.00
TRUE DEPTH 0039.97
TILT 3.36 DG
BEARING 108.33 DG
NORTHING -000.35
EASTING +001.22

LOG DEPTH 0030.00
TRUE DEPTH 0029.99
TILT 2.40 DG
BEARING 107.60 DG
NORTHING -000.16
EASTING +000.66

LOG DEPTH 0020.00
TRUE DEPTH 0020.00
TILT 1.41 DG
BEARING 104.97 DG
NORTHING -000.03
EASTING +000.26

LOG DEPTH 0010.00
TRUE DEPTH 0010.00
TILT .45 DG
BEARING 51.15 DG
NORTHING +000.02
EASTING +000.03

LOG DEPTH 0005.00
TRUE DEPTH 0005.00
TILT .37 DG
BEARING .63 DG
NORTHING +000.00
EASTING +000.00

739

DEPTH = 0010.00
TILT = 53 DG
BEARING = 101.67 DG

DEPTH = 0020.00
TILT = 2.29 DG
BEARING = 100.27 DG

DEPTH = 0030.00
TILT = 2.51 DG
BEARING = 106.92 DG

DEPTH = 0040.00
TILT = 4.21 DG
BEARING = 109.74 DG

DEPTH = 0050.00
TILT = 3.71 DG
BEARING = 119.91 DG

DEPTH = 0060.00
TILT = 4.39 DG
BEARING = 101.34 DG

DEPTH = 0070.00
TILT = 5.56 DG
BEARING = 84.79 DG

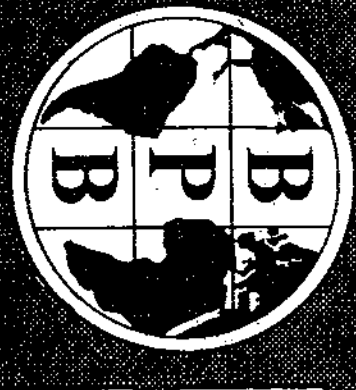
DEPTH = 0080.00
TILT = 5.85 DG
BEARING = 83.44 DG

DEPTH = 0090.00
TILT = 5.99 DG
BEARING = 80.42 DG

DATE 870811
JOB NUMBER 0037
LOG LABEL 026.1
MAG 1 MAX 229
MAG 1 MIN 129
MAG 2 MAX 229
MAG 2 MIN 130
MAG 3 MAX 205
MAG 3 MIN 155
L. CELL 1 TILT 1 20
L. CELL 1 CPS 1 233
L. CELL 1 TILT 2 -20
L. CELL 1 CPS 2 126
L. CELL 2 TILT 1 20
L. CELL 2 CPS 1 232
L. CELL 2 TILT 2 -20
L. CELL 2 CPS 2 126
MAG 1 CENTRE 179
MAG 2 CENTRE 179
MAG 3 CENTRE 180
L. CELL 1 CENTRE 180
L. CELL 2 CENTRE 179

MAG DECL 024
STOP DEPTH 0005

QHR 87037
TRANSFER



SONDE TYPE
COAL
COMBINATION
SONDE

LOG SUITE
GAMMA RAY
L.S. DENSITY
CALIPER

COAL
LITHOLOGY
LOG

BOREHOLE QHR 87-037
CLIENT QUINTETTE
AREA TRANSFER
COUNTRY CANADA
DATE LOGGED 87 08 11
DEPTH SCALE 1:200
LOG OF LOGS

PERMANENT DATUM GROUND LEVEL
ELEVATION OF P.D. 888
MEASUREMENTS FROM G.L. G.L.
DEPTH REACHED 91.80m 92.00m
CASING SHOES 4.00m 4.00m
BIT SIZES 1 8 1/4" TO 2 5/8" TO 9 1/2" TO
3 TO 4 TO
CASING SIZES 6 3/4" TO 10 1/2" TO

FLUID DATA
NATURE WATER
SG 1.01 g/cc
LEVEL 12.00m (See Remarks)
VISCOSITY N/A
Pm at meas temp N/A
BHT N/A

OPERATION DATA
FIRST READING 90.00m
LAST READING 01.50m
INTERVAL LOGGED 88.50m
UNIT-TRUCK No 46/VZ117
ENGINEER M. COX
WITNESS

739

EQUIPMENT AND RECORDING DATA

| COAL COMBINATION SONDE | | | | | | | | | | | | | | |
|------------------------|-------------------|--------|------------|-----------|---------------------|------------------|-------|----------|------|-----------|--------|-----|----------|--------------|
| LOG | EQUIPMENT | | | LOG TAPED | TAPING RECORD SPEED | DIRECT or REPLAY | SPEED | PANEL | | CAL COEFF | DEPTHS | | | SEAM LOG RUN |
| | SONDE | SOURCE | CALIBRATOR | | | | | T.C SECS | NORM | | FROM | TO | INTERVAL | |
| GAMMA RAY | 153 | | 367 | Y | 9 | D | 9 | 1 | - | 1.44 | 90 | 1.5 | 88.5 | Y |
| L.S. DENSITY | | 5852 | 0041 | Y | 9 | D | 9 | .3 | 7.43 | - | 91 | 2.5 | 88.5 | Y |
| CALIPER | SIDEWALL POSITION | | | Y | 9 | D | 9 | .3 | - | 1.0 | 91 | 1.5 | 88.5 | Y |

| COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log) | | | | INTERVAL TOTAL |
|---|-----|----------|--|----------------|
| FROM | TO | INTERVAL | | |
| 70m | 46m | 14m | | 26m |
| 58m | 40m | 6m | | |
| 12m | 6m | 8m | | |

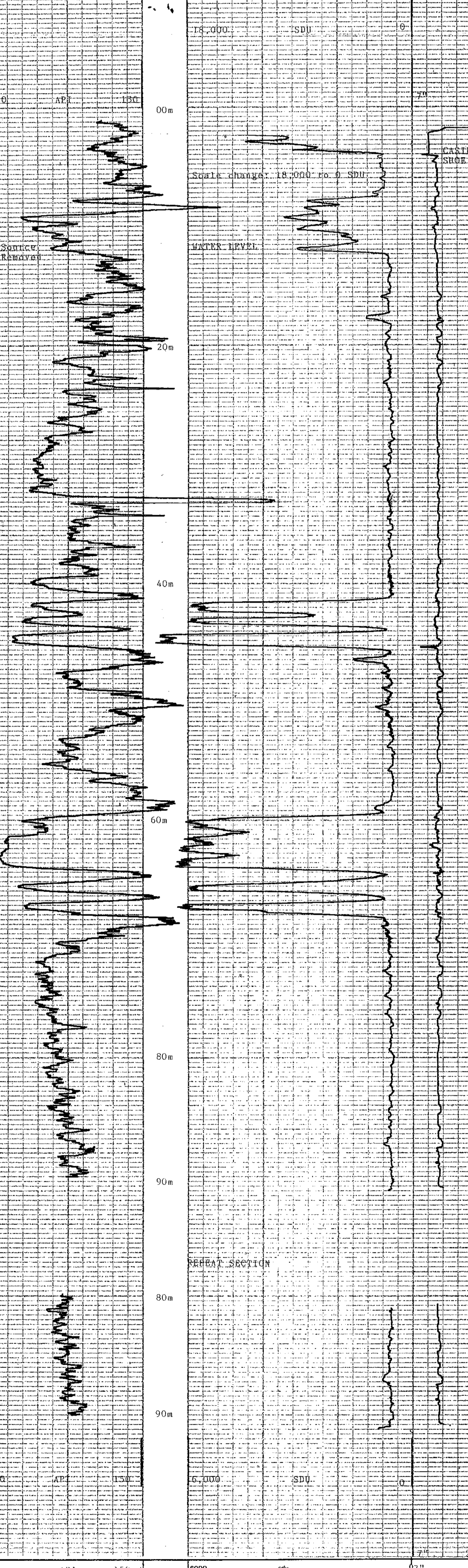
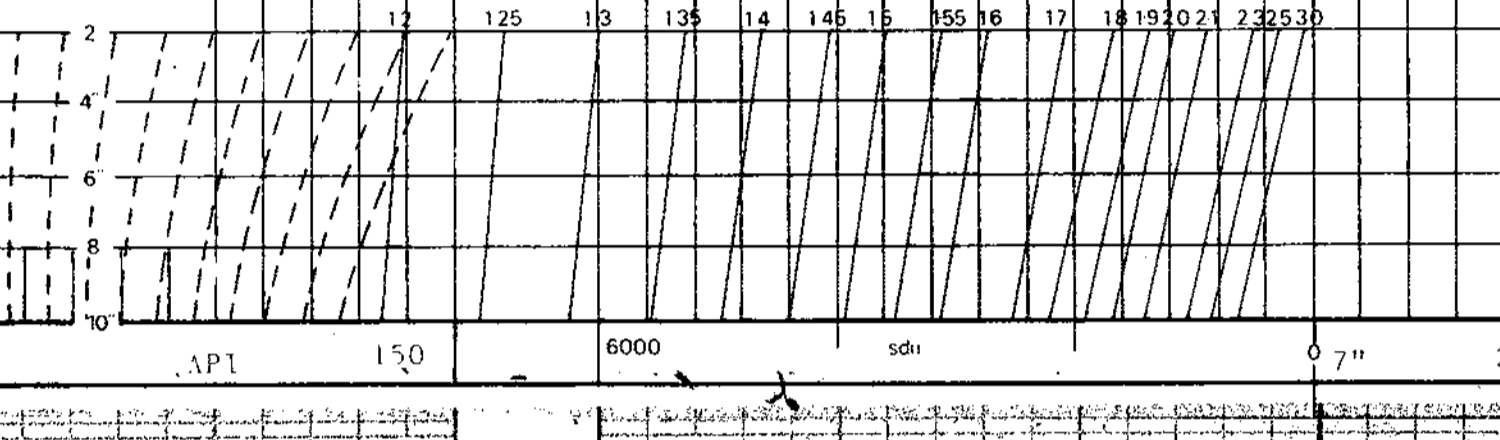
| ADDITIONAL SONDES RUN | | | | REFER TO ADDITIONAL HEADINGS | REMARKS |
|-----------------------|------|-------------------|--------------------|------------------------------|---|
| SONDE | LOG | GENERAL SCALE LOG | DETAILED SCALE LOG | | |
| 215 | N-N | 1:200 | | | 1. Water level alters during logging Increases: 15.20m running N-N. 12.00m running CCS. |
| 231 | VERT | | | | |

BPB COAL LITHOLOGY LOG
CALIBRATION DATA

| JIG No | VALUE @ 2 DIAM | JIG CAL DATE | JIG VALUE | SDU @ | g/cm ³ | ms | cps |
|--------|----------------|--------------|-----------|-------|-------------------|----|-----|
| | | | | | | | |

| GAMMA RAY | DEPTH | BULK DENSITY g/cm ³ | CALIPER INCHES |
|-----------|-------|--------------------------------|----------------|
|-----------|-------|--------------------------------|----------------|

HOLE SIZE CORRECTION DATA



| GAMMA RAY | DEPTH | BULK DENSITY g/cm ³ | CALIPER INCHES |
|-----------|-------|--------------------------------|----------------|
|-----------|-------|--------------------------------|----------------|



BOREHOLE QHR 87-037 AREA TRANSFER
CLIENT QUINTETTE COUNTRY CANADA

COAL LITHOLOGY LOG



NEUTRON-NEUTRON
GAMMA RAY

BOREHOLE QHR 87 037
CLIENT QUINTETTE

AREA TRANSFER
COUNTRY CANADA
DATE LOGGED 87 08 11

DEPTH SCALE
1:200

2 OF 4 LOGS

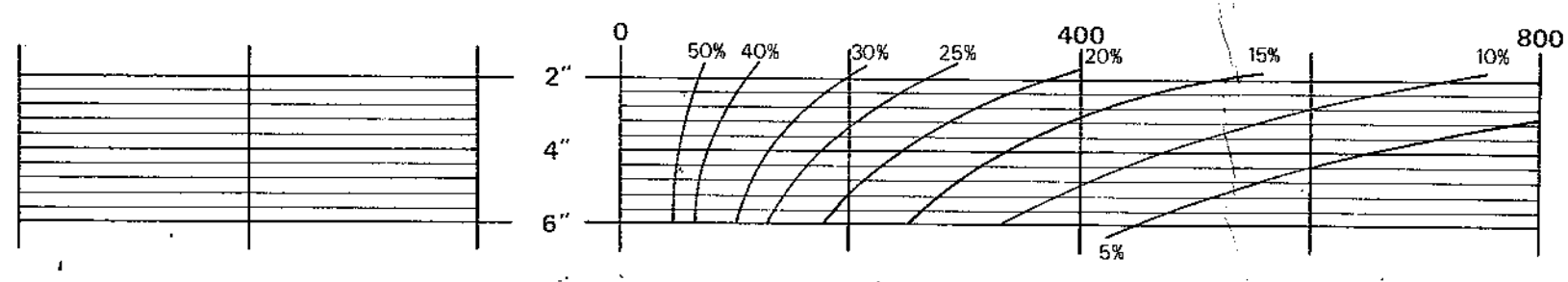
BOREHOLE DATA REFER TO LITHOLOGY LOG
OPERATION DATA REFER TO LITHOLOGY LOG
EQUIPMENT AND RECORDING DATA

| LOG | TAPING | LOG RECORD DIRECTOR | PANEL | CAL | | |
|-------|--------|---------------------|-------|--------|------|------|
| | TAPED | RECORD | SPEED | COEFF | | |
| | | REFLECT | SECS | NORM | | |
| N-N | Y | 9 | D | 9 | 1 | 1.6 |
| GAMMA | Y | 9 | R | 9 | 1 | 1.44 |
| | | SOURCE | 215 | SQUART | 4.51 | |

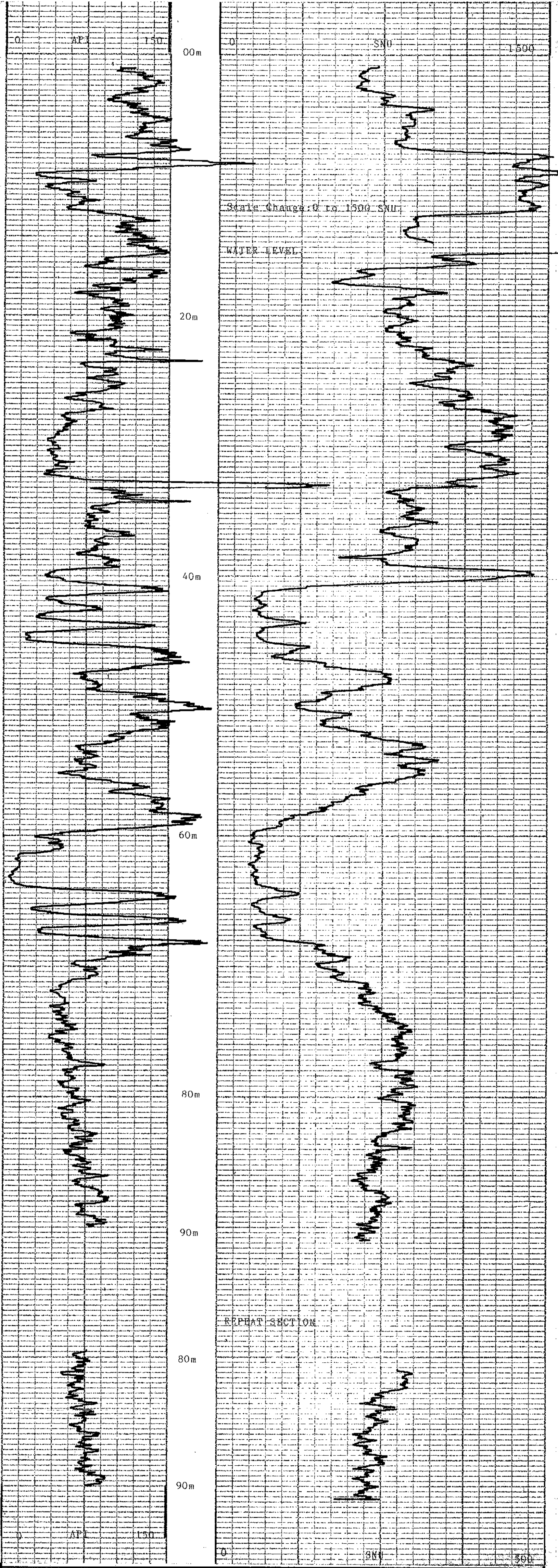
REMARKS
739

| | | |
|-----------|-------|-----------------|
| GAMMA RAY | DEPTH | NEUTRON-NEUTRON |
| 0 API 150 | 0 | SNU 500 |

SANDSTONE POROSITY



MY (1) A58451 R



| | | |
|-----------|-------|-----------------|
| GAMMA RAY | DEPTH | NEUTRON-NEUTRON |
| 0 API 150 | 0 | SNU 500 |



BOREHOLE QHR 87-037
CLIENT QUINTETTE
AREA TRANSFER
COUNTRY CANADA

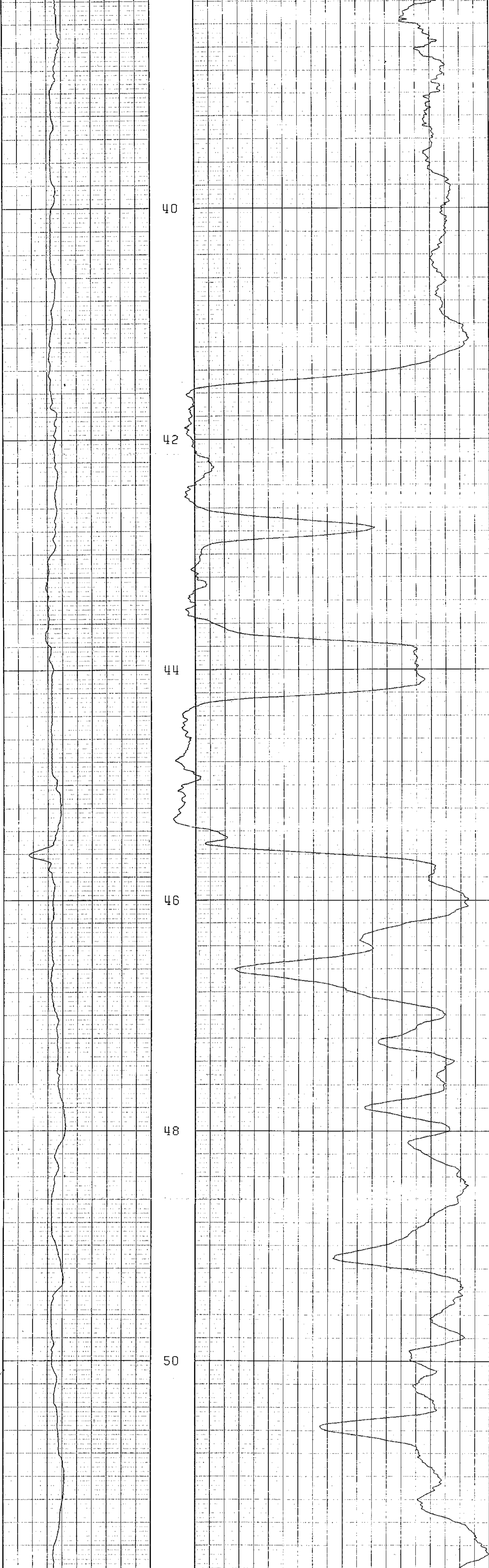
DETAIL LOGS

739

DEPTH SCALE 25000 B.R.D (CCS) 15000

CLIENT:
WELL NO: QHR 87037
AREA:
CASING:
WATER:
DEPTH: 38.00-52.00
DATE PROCESSED: 09-SEP-87

7 CALIPER 2

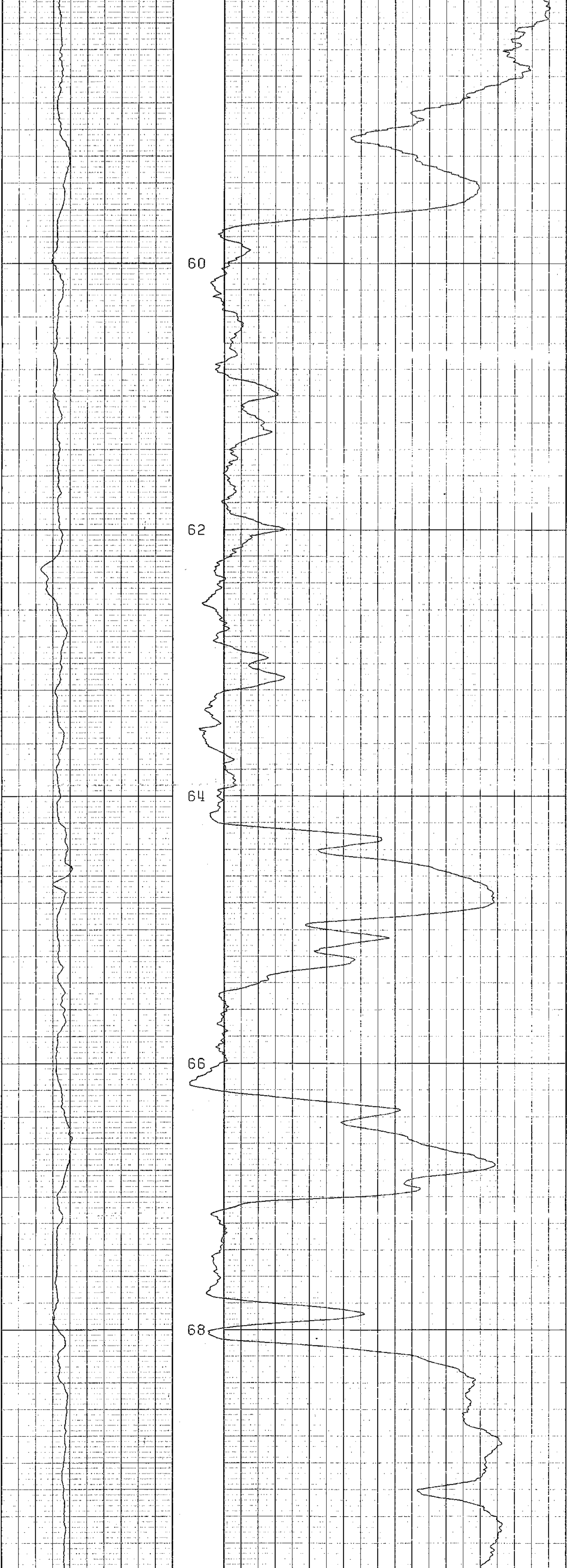


DETAIL LOGS

DEPTH SCALE 25000 B.R.D (CCS) 15000

CLIENT:
WELL NO: QHR 87037
AREA:
CASING:
WATER:
DEPTH: 58.00-70.00
DATE PROCESSED: 09-SEP-87

7 CALIPER 2

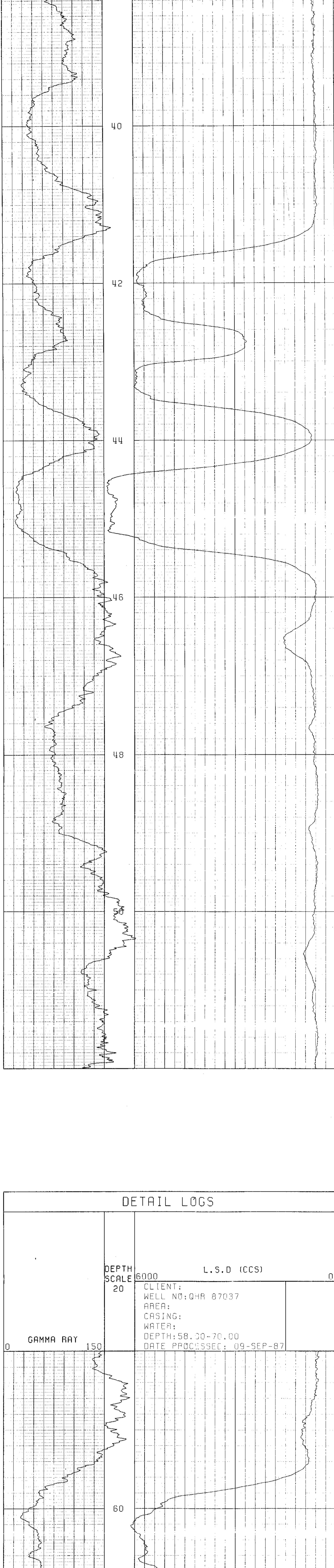


DETAIL LOGS

739

DEPTH SCALE 6000 L.S.D (CCS) 0
 20 CLIENT: QUINTETTE COAL
 WELL NO: QHR 87037
 AREA: TRANSFER PIT
 CASING: 4.0M
 WATER: 15.2M
 DEPTH: 38.00-52.00
 DATE PROCESSED: 09-SEP-87

GAMMA RAY



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CONTINUOUS VERTICALITY ANALYSIS

739

CLIENT _____

QUINTETTE COAL

BOREHOLE _____

QHR-87-037

AREA _____

TRANSFER

COUNTRY _____

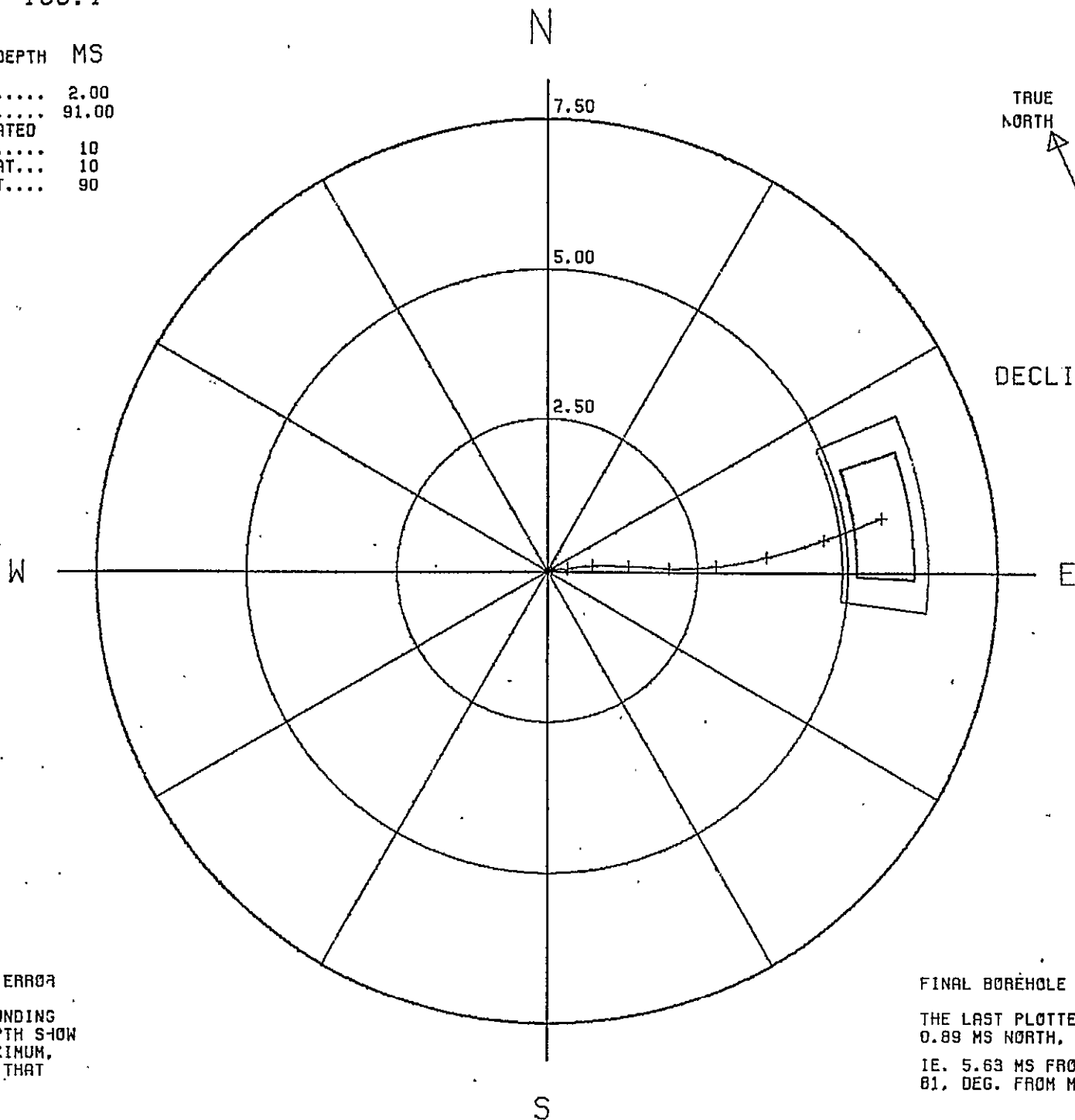
CANADA

DATE LOGGED.....11-AUG-87
DATE PROCESSED..08-JAN-88
UPPER REFERENCE POINT....
LOWER REFERENCE POINT....T.D.

CROSS-SECTION

SCALE: 100:1

ALL FIGURES IN LOG DEPTH MS
 TARGET ORIGIN DEPTH..... 2.00
 LAST PLOTTED DEPTH..... 91.00
 DEPTH MARKERS ANNOTATED
 IN MULTIPLES OF..... 10
 FIRST DEPTH MARKER AT... 10
 LAST DEPTH MARKER AT.... 90



DECLINATION 24.0 DEG.

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT
 0.89 MS NORTH, 5.56 MS EAST
 IE. 5.63 MS FROM THE ORIGIN,
 81. DEG. FROM MAGNETIC NORTH

BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING
 THE LAST PLOTTED DEPTH SHOW
 THE TYPICAL, AND MAXIMUM,
 POSITIONAL ERROR AT THAT
 DEPTH.

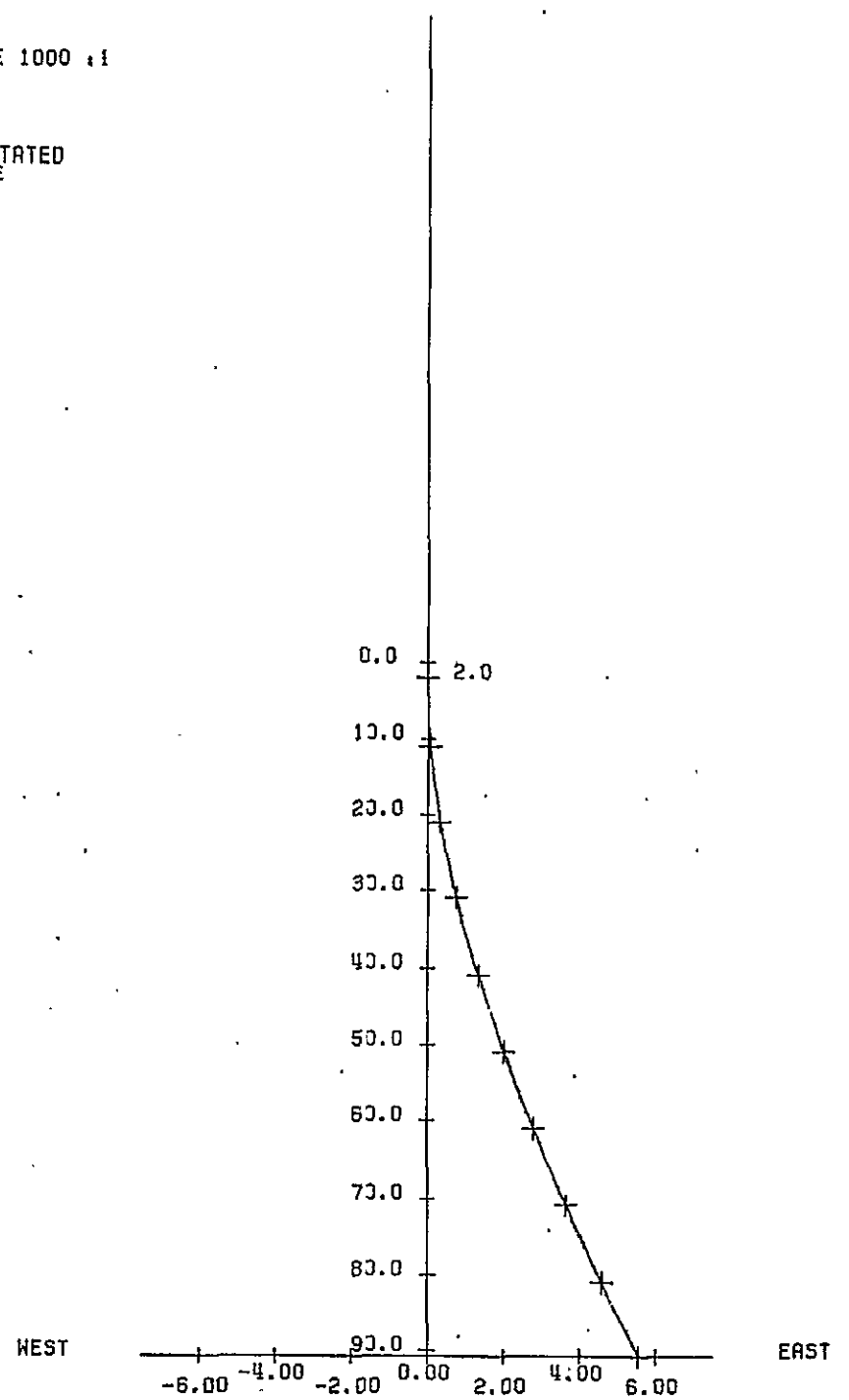
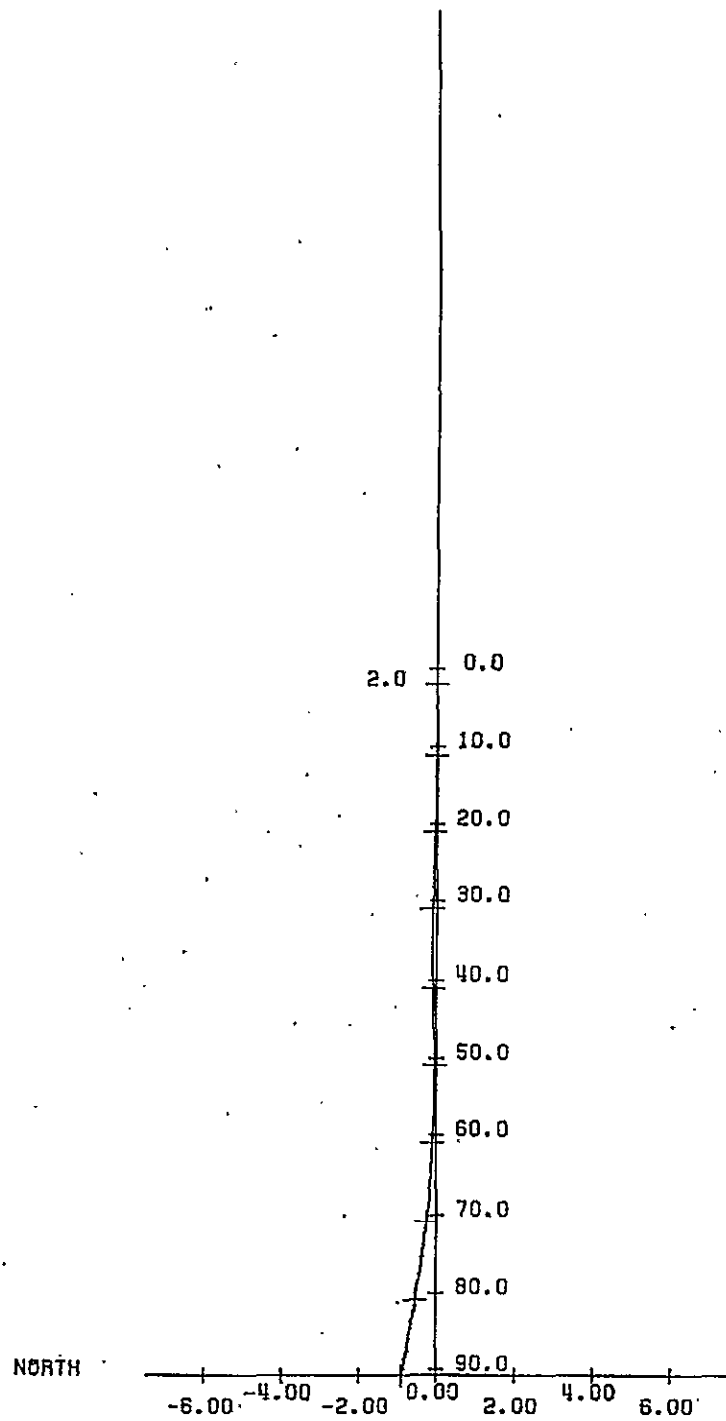
VERTICAL SECTIONS
(TRUE DEPTH VS. DISPLACEMENT)

N-S SECTION

W-E SECTION

VERTICAL SCALE 1000 : 1

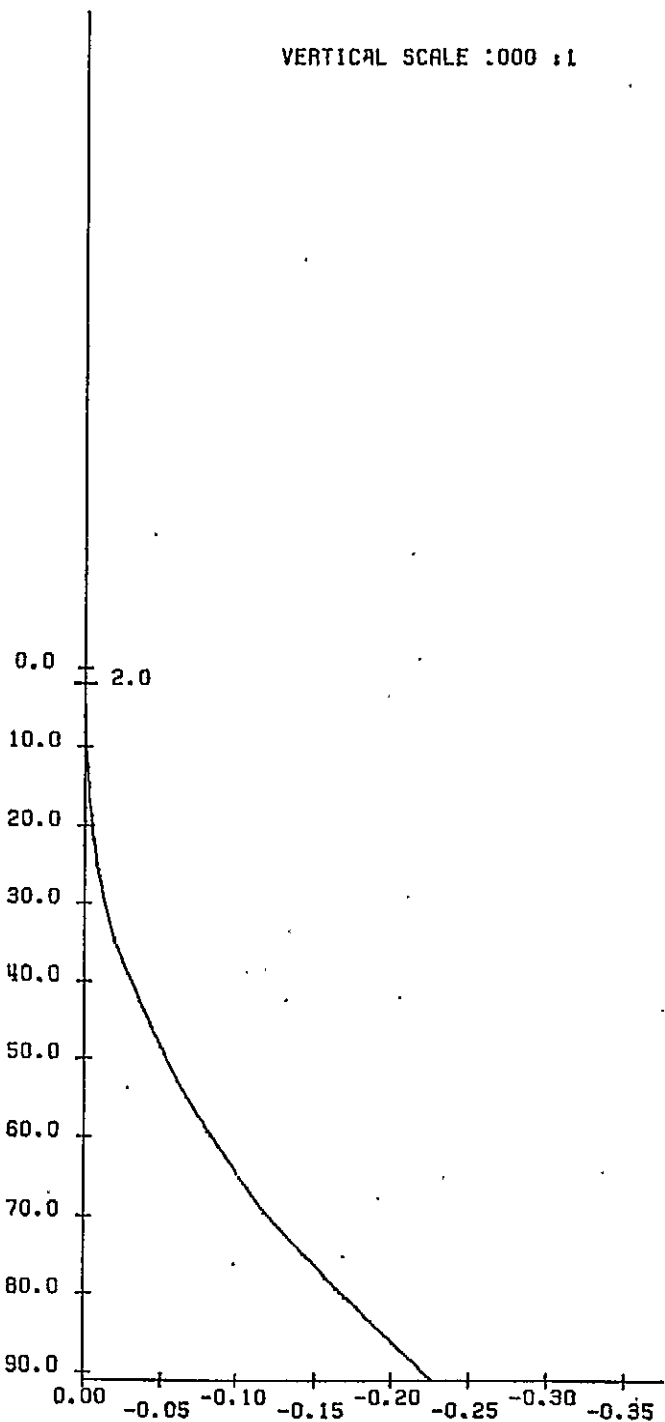
MARKERS ANNOTATED
AS ABOVE



DEPTH CORRECTION ANALYSIS

LOG
DEPTH

VERTICAL SCALE :000 :1



CORRECTION FOR TRUE DEPTH
SCALE 5 :1

| DEPTHS: | | DEPTHS: | |
|---------|-------|---------|-------|
| LOG | TRUE | LOG | TRUE |
| 3.00 | 3.00 | 73.00 | 72.87 |
| 4.00 | 4.00 | 74.00 | 73.86 |
| 5.00 | 5.00 | 75.00 | 74.86 |
| 6.00 | 6.00 | 76.00 | 75.85 |
| 7.00 | 7.00 | 77.00 | 76.85 |
| 8.00 | 8.00 | 78.00 | 77.84 |
| 9.00 | 9.00 | 79.00 | 78.84 |
| 10.00 | 10.00 | 80.00 | 79.83 |
| 11.00 | 11.00 | 81.00 | 80.83 |
| 12.00 | 12.00 | 82.00 | 81.82 |
| 13.00 | 13.00 | 83.00 | 82.82 |
| 14.00 | 14.00 | 84.00 | 83.81 |
| 15.00 | 15.00 | 85.00 | 84.81 |
| 16.00 | 16.00 | 86.00 | 85.80 |
| 17.00 | 17.00 | 87.00 | 86.80 |
| 18.00 | 18.00 | 88.00 | 87.79 |
| 19.00 | 19.00 | 89.00 | 88.78 |
| 20.00 | 20.00 | 90.00 | 89.78 |
| 21.00 | 20.99 | 91.00 | 90.77 |
| 22.00 | 21.99 | | |
| 23.00 | 22.99 | | |
| 24.00 | 23.99 | | |
| 25.00 | 24.99 | | |
| 26.00 | 25.99 | | |
| 27.00 | 26.99 | | |
| 28.00 | 27.99 | | |
| 29.00 | 28.99 | | |
| 30.00 | 29.99 | | |
| 31.00 | 30.98 | | |
| 32.00 | 31.98 | | |
| 33.00 | 32.98 | | |
| 34.00 | 33.98 | | |
| 35.00 | 34.98 | | |
| 36.00 | 35.98 | | |
| 37.00 | 36.97 | | |
| 38.00 | 37.97 | | |
| 39.00 | 38.97 | | |
| 40.00 | 39.97 | | |
| 41.00 | 40.97 | | |
| 42.00 | 41.96 | | |
| 43.00 | 42.96 | | |
| 44.00 | 43.96 | | |
| 45.00 | 44.96 | | |
| 46.00 | 45.96 | | |
| 47.00 | 46.95 | | |
| 48.00 | 47.95 | | |
| 49.00 | 48.95 | | |
| 50.00 | 49.94 | | |
| 51.00 | 50.94 | | |
| 52.00 | 51.94 | | |
| 53.00 | 52.94 | | |
| 54.00 | 53.93 | | |
| 55.00 | 54.93 | | |
| 56.00 | 55.93 | | |
| 57.00 | 56.93 | | |
| 58.00 | 57.92 | | |
| 59.00 | 58.92 | | |
| 60.00 | 59.92 | | |
| 61.00 | 60.91 | | |
| 62.00 | 61.91 | | |
| 63.00 | 62.91 | | |
| 64.00 | 63.90 | | |
| 65.00 | 64.90 | | |
| 66.00 | 65.90 | | |
| 67.00 | 66.89 | | |
| 68.00 | 67.89 | | |
| 69.00 | 68.88 | | |
| 70.00 | 69.88 | | |
| 71.00 | 70.88 | | |
| 72.00 | 71.87 | | |

BPB VERTICALITY ANALYSIS
INTERPRETATION NOTES

1. All plotted output is automatically scaled to obtain the best visual effect within the physical space available. The maximum scales being 50000:1 (metric) & 48000:1 (imperial), and the minimum 1:1.
2. The analysis is derived by integrating 10 cm./6" sampled data down the borehole. However the listing supplied will contain a maximum of 200 points in multiples of 1,2,5,10,20,25,50, or 100 metres/feet depending upon the total range of the analysis. However the analysis is calculated for the entire range of the borehole, and the final borehole position is included in the listing.
3. Computed verticality may only be fully derived in open sections of the borehole, away from the influence of any magnetic media (as the azimuth calculations are derived from three solid state magnetometers). So the analysis will generally begin at the end of the casing, and all borehole positional information will relate to this depth.
4. Up to ten cross-sections may be requested for any borehole to be displayed at any scale (the default scale is that of the cross-section for the entire hole).
5. Borehole positional error is derived assuming the following parameters:

| | TILT(degrees) | AZIMUTH(degrees) |
|---------------|---------------|------------------|
| Typical Error | +/- 0.33333 | +/- 10.0 |
| Maximum Error | +/- 0.5 | +/- 15.0 |

6. Error analysis may be calculated and plotted from the data listing as follows:
 - a) Plot the four coordinates from the error listing (based upon zero azimuth error) on a target plot, origin at the start of the analysis.
 - b) Describe arcs of +/- 10 degrees & +/- 15 degrees (centre at the origin) through the inner and outer points respectively.
 - c) Connect the respective arcs together with straight lines to give the typical & maximum borehole positional error.
 7. Given below is a full description of the parameters displayed on the ensuing listing:

| | |
|---------------------|--|
| LOG DEPTH | the depth recorded on the field logs for the borehole |
| TRUE DEPTH | the true vertical depth corresponding to the above depth, corrected from the start of the analysis |
| HOLE TILT & AZIMUTH | the SAMPLED borehole orientation |
| AXIAL COORDINATES | the coordinates North & East from the target origin |
| POLAR COORDINATES | the polar, or radial, coordinates of the borehole |
| ERROR COORDINATES | the polar coordinates corresponding to the typical and maximum tilt error |
- N.B. The reference point for ALL bearing angles on this listing is given at the top of each sheet

Verticality Data Listing

All co-ordinates with respect to True North

| DEPTHS | | BOREHOLE | | AXIAL CO-ORDS. | | POLAR | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | |
|--------|-------|----------|------|----------------|-------|-------|--------|--|--------|------|--------|------|--------|------|--------|
| log | true | tilt | AZI | North | East | brng | radius | brng | radius | brng | radius | brng | radius | brng | radius |
| 3.00 | 3.00 | 1.4 | 48. | 0.00 | -0.01 | 256. | 0.01 | 257. | 0.02 | 251. | 0.00 | 256. | 0.01 | 254. | 0.01 |
| 4.00 | 4.00 | 0.7 | 126. | -0.01 | -0.01 | 231. | 0.01 | 226. | 0.02 | 245. | 0.01 | 228. | 0.02 | 238. | 0.01 |
| 5.00 | 5.00 | 0.5 | 97. | -0.01 | -0.01 | 243. | 0.02 | 236. | 0.02 | 262. | 0.01 | 238. | 0.02 | 253. | 0.01 |
| 6.00 | 6.00 | 0.4 | 53. | -0.01 | -0.01 | 235. | 0.01 | 228. | 0.02 | 260. | 0.01 | 230. | 0.02 | 248. | 0.01 |
| 7.00 | 7.00 | 0.5 | 65. | -0.01 | -0.01 | 210. | 0.01 | 204. | 0.02 | 239. | 0.00 | 205. | 0.02 | 222. | 0.01 |
| 8.00 | 8.00 | 0.5 | 101. | -0.01 | 0.01 | 139. | 0.01 | 138. | 0.02 | 159. | 0.00 | 138. | 0.02 | 143. | 0.00 |
| 9.00 | 9.00 | 0.6 | 87. | -0.01 | 0.02 | 115. | 0.02 | 115. | 0.04 | 108. | 0.00 | 115. | 0.03 | 113. | 0.01 |
| 10.00 | 10.00 | 1.2 | 94. | -0.01 | 0.04 | 104. | 0.04 | 106. | 0.06 | 97. | 0.01 | 105. | 0.05 | 101. | 0.02 |
| 11.00 | 11.00 | 0.9 | 98. | -0.01 | 0.06 | 101. | 0.06 | 103. | 0.09 | 96. | 0.02 | 102. | 0.08 | 99. | 0.04 |
| 12.00 | 12.00 | 1.6 | 97. | -0.02 | 0.08 | 101. | 0.08 | 102. | 0.12 | 97. | 0.04 | 102. | 0.11 | 99. | 0.05 |
| 13.00 | 13.00 | 1.4 | 95. | -0.02 | 0.11 | 100. | 0.11 | 101. | 0.16 | 98. | 0.06 | 101. | 0.14 | 99. | 0.07 |
| 14.00 | 14.00 | 1.2 | 102. | -0.03 | 0.13 | 101. | 0.13 | 102. | 0.19 | 99. | 0.07 | 102. | 0.17 | 100. | 0.09 |
| 15.00 | 15.00 | 1.0 | 90. | -0.03 | 0.16 | 101. | 0.16 | 101. | 0.23 | 100. | 0.09 | 101. | 0.20 | 100. | 0.11 |
| 16.00 | 16.00 | 2.1 | 109. | -0.04 | 0.18 | 103. | 0.19 | 103. | 0.26 | 102. | 0.11 | 103. | 0.24 | 103. | 0.13 |
| 17.00 | 17.00 | 1.6 | 105. | -0.05 | 0.21 | 104. | 0.22 | 105. | 0.30 | 104. | 0.13 | 104. | 0.27 | 104. | 0.16 |
| 18.00 | 18.00 | 2.0 | 114. | -0.06 | 0.24 | 105. | 0.24 | 105. | 0.34 | 105. | 0.15 | 105. | 0.31 | 105. | 0.18 |
| 19.00 | 19.00 | 1.5 | 113. | -0.08 | 0.26 | 106. | 0.27 | 106. | 0.38 | 106. | 0.17 | 106. | 0.34 | 106. | 0.21 |
| 20.00 | 20.00 | 1.9 | 108. | -0.09 | 0.30 | 107. | 0.31 | 107. | 0.42 | 107. | 0.20 | 107. | 0.38 | 107. | 0.23 |
| 21.00 | 20.99 | 0.9 | 86. | -0.10 | 0.32 | 107. | 0.34 | 107. | 0.46 | 108. | 0.22 | 107. | 0.42 | 107. | 0.26 |
| 22.00 | 21.99 | 2.3 | 104. | -0.10 | 0.36 | 106. | 0.37 | 106. | 0.50 | 106. | 0.24 | 106. | 0.45 | 106. | 0.29 |
| 23.00 | 22.99 | 2.0 | 120. | -0.11 | 0.39 | 106. | 0.41 | 106. | 0.54 | 106. | 0.27 | 106. | 0.50 | 106. | 0.31 |
| 24.00 | 23.99 | 2.5 | 117. | -0.13 | 0.43 | 107. | 0.44 | 107. | 0.59 | 107. | 0.30 | 107. | 0.54 | 107. | 0.35 |
| 25.00 | 24.99 | 2.1 | 107. | -0.14 | 0.46 | 107. | 0.48 | 107. | 0.64 | 107. | 0.33 | 107. | 0.59 | 107. | 0.38 |
| 26.00 | 25.99 | 2.3 | 114. | -0.15 | 0.50 | 107. | 0.53 | 107. | 0.69 | 107. | 0.36 | 107. | 0.63 | 107. | 0.42 |
| 27.00 | 26.99 | 2.9 | 105. | -0.17 | 0.54 | 107. | 0.57 | 107. | 0.74 | 107. | 0.40 | 107. | 0.68 | 107. | 0.45 |
| 28.00 | 27.99 | 2.7 | 98. | -0.18 | 0.59 | 107. | 0.62 | 107. | 0.79 | 107. | 0.44 | 107. | 0.74 | 107. | 0.50 |
| 29.00 | 28.99 | 2.6 | 107. | -0.19 | 0.63 | 107. | 0.66 | 107. | 0.85 | 107. | 0.47 | 107. | 0.78 | 107. | 0.53 |
| 30.00 | 29.99 | 3.1 | 106. | -0.21 | 0.68 | 107. | 0.71 | 107. | 0.90 | 107. | 0.51 | 107. | 0.84 | 107. | 0.58 |
| 31.00 | 30.99 | 2.7 | 113. | -0.22 | 0.72 | 107. | 0.75 | 107. | 0.96 | 107. | 0.55 | 107. | 0.89 | 107. | 0.62 |
| 32.00 | 31.98 | 2.8 | 115. | -0.24 | 0.76 | 107. | 0.80 | 107. | 1.01 | 107. | 0.59 | 107. | 0.94 | 107. | 0.66 |
| 33.00 | 32.98 | 3.0 | 116. | -0.26 | 0.81 | 108. | 0.85 | 108. | 1.07 | 108. | 0.63 | 108. | 1.00 | 108. | 0.70 |
| 34.00 | 33.98 | 3.5 | 115. | -0.28 | 0.86 | 108. | 0.90 | 108. | 1.13 | 108. | 0.67 | 108. | 1.06 | 108. | 0.75 |
| 35.00 | 34.98 | 3.2 | 117. | -0.30 | 0.91 | 108. | 0.96 | 108. | 1.20 | 109. | 0.72 | 108. | 1.12 | 109. | 0.80 |
| 36.00 | 35.98 | 3.7 | 112. | -0.33 | 0.97 | 109. | 1.02 | 109. | 1.27 | 109. | 0.77 | 109. | 1.19 | 109. | 0.86 |
| 37.00 | 36.98 | 3.9 | 116. | -0.36 | 1.02 | 109. | 1.08 | 109. | 1.34 | 109. | 0.83 | 109. | 1.26 | 109. | 0.91 |
| 38.00 | 37.97 | 3.5 | 111. | -0.38 | 1.08 | 110. | 1.15 | 109. | 1.41 | 110. | 0.88 | 109. | 1.33 | 110. | 0.97 |
| 39.00 | 38.97 | 3.8 | 115. | -0.41 | 1.14 | 110. | 1.21 | 110. | 1.49 | 110. | 0.94 | 110. | 1.39 | 110. | 1.03 |
| 40.00 | 39.97 | 4.5 | 113. | -0.44 | 1.21 | 110. | 1.28 | 110. | 1.57 | 110. | 1.00 | 110. | 1.47 | 110. | 1.09 |
| 41.00 | 40.97 | 4.3 | 117. | -0.47 | 1.27 | 110. | 1.35 | 110. | 1.64 | 111. | 1.06 | 110. | 1.55 | 111. | 1.16 |
| 42.00 | 41.96 | 3.7 | 121. | -0.50 | 1.33 | 111. | 1.42 | 110. | 1.72 | 111. | 1.12 | 110. | 1.62 | 111. | 1.22 |
| 43.00 | 42.96 | 3.9 | 122. | -0.53 | 1.38 | 111. | 1.48 | 111. | 1.79 | 111. | 1.17 | 111. | 1.69 | 111. | 1.28 |
| 44.00 | 43.96 | 3.9 | 121. | -0.56 | 1.45 | 111. | 1.55 | 111. | 1.87 | 111. | 1.23 | 111. | 1.76 | 111. | 1.34 |
| 45.00 | 44.96 | 3.5 | 117. | -0.59 | 1.51 | 111. | 1.62 | 111. | 1.94 | 112. | 1.29 | 111. | 1.83 | 112. | 1.40 |
| 46.00 | 45.96 | 3.7 | 117. | -0.62 | 1.56 | 112. | 1.68 | 111. | 2.02 | 112. | 1.35 | 111. | 1.90 | 112. | 1.46 |
| 47.00 | 46.95 | 4.0 | 117. | -0.65 | 1.63 | 112. | 1.75 | 112. | 2.10 | 112. | 1.41 | 112. | 1.98 | 112. | 1.52 |
| 48.00 | 47.95 | 3.7 | 121. | -0.68 | 1.68 | 112. | 1.82 | 112. | 2.17 | 112. | 1.47 | 112. | 2.05 | 112. | 1.58 |
| 49.00 | 48.95 | 4.3 | 115. | -0.71 | 1.75 | 112. | 1.89 | 112. | 2.25 | 113. | 1.53 | 112. | 2.13 | 112. | 1.65 |
| 50.00 | 49.95 | 3.9 | 119. | -0.74 | 1.81 | 112. | 1.95 | 112. | 2.32 | 113. | 1.59 | 112. | 2.20 | 113. | 1.71 |
| 51.00 | 50.94 | 4.0 | 117. | -0.78 | 1.87 | 113. | 2.02 | 112. | 2.40 | 113. | 1.64 | 112. | 2.27 | 113. | 1.77 |
| 52.00 | 51.94 | 4.6 | 113. | -0.80 | 1.93 | 113. | 2.09 | 112. | 2.48 | 113. | 1.71 | 112. | 2.35 | 113. | 1.83 |

Verticality Data Listing
All co-ordinates with respect to True North

Date processed: 08-JAN-88

| DEPTHS | | BOREHOLE tilt | AZI | AXIAL CO-ORDS. | | POLAR | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | |
|--------|-------|------------------|------|----------------|------|-------|--------|--|-------------|-------------|-------------|-------------|-------------|-------------|------|
| log | true | | | North | East | brng | radius | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius | |
| 53.00 | 52.94 | 4.4 | 114. | -0.83 | 2.00 | 113. | 2.17 | 112. | 2.56 | 113. | 1.77 | 112. | 2.43 | 113. | 1.90 |
| 54.00 | 53.94 | 4.3 | 113. | -0.87 | 2.07 | 113. | 2.24 | 112. | 2.65 | 113. | 1.84 | 113. | 2.51 | 113. | 1.98 |
| 55.00 | 54.93 | 4.3 | 112. | -0.90 | 2.14 | 113. | 2.32 | 112. | 2.74 | 113. | 1.91 | 113. | 2.60 | 113. | 2.05 |
| 56.00 | 55.93 | 4.5 | 107. | -0.93 | 2.22 | 113. | 2.40 | 112. | 2.82 | 113. | 1.98 | 113. | 2.68 | 113. | 2.12 |
| 57.00 | 56.93 | 4.5 | 112. | -0.95 | 2.29 | 113. | 2.48 | 112. | 2.91 | 113. | 2.05 | 112. | 2.77 | 113. | 2.19 |
| 58.00 | 57.92 | 4.7 | 111. | -0.98 | 2.37 | 113. | 2.56 | 112. | 3.00 | 113. | 2.12 | 112. | 2.85 | 113. | 2.27 |
| 59.00 | 58.92 | 4.8 | 111. | -1.01 | 2.44 | 112. | 2.64 | 112. | 3.09 | 113. | 2.20 | 112. | 2.94 | 113. | 2.35 |
| 60.00 | 59.92 | 5.0 | 106. | -1.03 | 2.52 | 112. | 2.73 | 112. | 3.18 | 112. | 2.27 | 112. | 3.03 | 112. | 2.42 |
| 61.00 | 60.91 | 4.8 | 111. | -1.06 | 2.60 | 112. | 2.81 | 112. | 3.27 | 112. | 2.34 | 112. | 3.12 | 112. | 2.50 |
| 62.00 | 61.91 | 4.6 | 110. | -1.08 | 2.68 | 112. | 2.89 | 112. | 3.36 | 112. | 2.42 | 112. | 3.21 | 112. | 2.58 |
| 63.00 | 62.91 | 4.5 | 113. | -1.11 | 2.76 | 112. | 2.97 | 112. | 3.46 | 112. | 2.49 | 112. | 3.30 | 112. | 2.65 |
| 64.00 | 63.90 | 4.7 | 111. | -1.14 | 2.84 | 112. | 3.06 | 112. | 3.55 | 112. | 2.57 | 112. | 3.38 | 112. | 2.73 |
| 65.00 | 64.90 | 5.1 | 105. | -1.16 | 2.92 | 112. | 3.14 | 111. | 3.64 | 112. | 2.64 | 112. | 3.47 | 112. | 2.81 |
| 66.00 | 65.90 | 4.8 | 107. | -1.17 | 3.00 | 111. | 3.22 | 111. | 3.73 | 112. | 2.71 | 111. | 3.56 | 111. | 2.88 |
| 67.00 | 66.89 | 5.0 | 99. | -1.19 | 3.08 | 111. | 3.31 | 111. | 3.82 | 111. | 2.79 | 111. | 3.65 | 111. | 2.96 |
| 68.00 | 67.89 | 4.9 | 105. | -1.21 | 3.17 | 111. | 3.39 | 111. | 3.92 | 111. | 2.86 | 111. | 3.74 | 111. | 3.04 |
| 69.00 | 68.88 | 5.3 | 100. | -1.23 | 3.25 | 111. | 3.48 | 111. | 4.01 | 111. | 2.94 | 111. | 3.83 | 111. | 3.12 |
| 70.00 | 69.88 | 5.4 | 97. | -1.24 | 3.35 | 110. | 3.57 | 110. | 4.11 | 110. | 3.03 | 110. | 3.93 | 110. | 3.21 |
| 71.00 | 70.88 | 5.1 | 102. | -1.26 | 3.44 | 110. | 3.66 | 110. | 4.21 | 110. | 3.11 | 110. | 4.03 | 110. | 3.30 |
| 72.00 | 71.87 | 5.3 | 101. | -1.28 | 3.53 | 110. | 3.76 | 110. | 4.32 | 110. | 3.20 | 110. | 4.13 | 110. | 3.38 |
| 73.00 | 72.87 | 5.3 | 101. | -1.30 | 3.62 | 110. | 3.85 | 110. | 4.42 | 110. | 3.28 | 110. | 4.23 | 110. | 3.47 |
| 74.00 | 73.86 | 5.8 | 100. | -1.31 | 3.72 | 109. | 3.94 | 109. | 4.52 | 109. | 3.37 | 109. | 4.33 | 109. | 3.56 |
| 75.00 | 74.86 | 6.0 | 98. | -1.32 | 3.81 | 109. | 4.04 | 109. | 4.62 | 109. | 3.45 | 109. | 4.43 | 109. | 3.65 |
| 76.00 | 75.85 | 6.0 | 97. | -1.33 | 3.91 | 109. | 4.14 | 109. | 4.73 | 109. | 3.54 | 109. | 4.53 | 109. | 3.74 |
| 77.00 | 76.85 | 6.0 | 97. | -1.35 | 4.01 | 109. | 4.23 | 109. | 4.84 | 108. | 3.63 | 109. | 4.64 | 109. | 3.83 |
| 78.00 | 77.84 | 5.7 | 95. | -1.36 | 4.11 | 108. | 4.33 | 108. | 4.94 | 108. | 3.72 | 108. | 4.74 | 108. | 3.92 |
| 79.00 | 78.84 | 5.7 | 93. | -1.37 | 4.21 | 108. | 4.43 | 108. | 5.05 | 108. | 3.81 | 108. | 4.84 | 108. | 4.01 |
| 80.00 | 79.83 | 5.9 | 95. | -1.38 | 4.31 | 108. | 4.52 | 108. | 5.15 | 108. | 3.90 | 108. | 4.94 | 108. | 4.11 |
| 81.00 | 80.83 | 5.9 | 94. | -1.39 | 4.41 | 107. | 4.62 | 108. | 5.26 | 107. | 3.99 | 107. | 5.05 | 107. | 4.20 |
| 82.00 | 81.82 | 5.9 | 95. | -1.39 | 4.51 | 107. | 4.72 | 107. | 5.37 | 107. | 4.08 | 107. | 5.15 | 107. | 4.29 |
| 83.00 | 82.82 | 5.9 | 96. | -1.40 | 4.61 | 107. | 4.82 | 107. | 5.47 | 107. | 4.17 | 107. | 5.26 | 107. | 4.39 |
| 84.00 | 83.81 | 5.9 | 92. | -1.41 | 4.71 | 107. | 4.92 | 107. | 5.58 | 106. | 4.26 | 107. | 5.36 | 107. | 4.48 |
| 85.00 | 84.81 | 6.2 | 96. | -1.42 | 4.82 | 106. | 5.02 | 107. | 5.69 | 106. | 4.35 | 106. | 5.47 | 106. | 4.58 |
| 86.00 | 85.80 | 5.7 | 96. | -1.43 | 4.92 | 106. | 5.12 | 106. | 5.80 | 106. | 4.44 | 106. | 5.57 | 106. | 4.67 |
| 87.00 | 86.80 | 6.0 | 94. | -1.43 | 5.02 | 106. | 5.22 | 106. | 5.91 | 106. | 4.54 | 106. | 5.68 | 106. | 4.76 |
| 88.00 | 87.79 | 5.9 | 95. | -1.44 | 5.12 | 106. | 5.32 | 106. | 6.02 | 105. | 4.63 | 106. | 5.79 | 106. | 4.86 |
| 89.00 | 88.78 | 5.9 | 93. | -1.44 | 5.23 | 105. | 5.43 | 106. | 6.13 | 105. | 4.72 | 105. | 5.90 | 105. | 4.96 |
| 90.00 | 89.78 | 6.0 | 93. | -1.45 | 5.34 | 105. | 5.53 | 105. | 6.24 | 105. | 4.82 | 105. | 6.00 | 105. | 5.05 |
| 91.00 | 90.77 | 6.0 | 91. | -1.45 | 5.44 | 105. | 5.63 | 105. | 6.35 | 105. | 4.91 | 105. | 6.11 | 105. | 5.15 |

QHR 87038
TRANSFER

LOG DEPTH 0120.00
TRUE DEPTH 0119.19
TILT 10.93 DG
BEARING 235.02 DG
NORTHING -005.74
EASTING -010.67

LOG DEPTH 0110.00
TRUE DEPTH 0109.37
TILT 9.82 DG
BEARING 236.22 DG
NORTHING -004.66
EASTING -009.12

LOG DEPTH 0100.00
TRUE DEPTH 0099.52
TILT 8.80 DG
BEARING 236.59 DG
NORTHING -003.71
EASTING -007.70

LOG DEPTH 0090.00
TRUE DEPTH 0089.64
TILT 7.96 DG
BEARING 239.88 DG
NORTHING -002.86
EASTING -006.42

LOG DEPTH 0080.00
TRUE DEPTH 0079.74
TILT 7.20 DG
BEARING 240.49 DG
NORTHING -002.17
EASTING -005.22

LOG DEPTH 0070.00
TRUE DEPTH 0069.82
TILT 6.17 DG
BEARING 242.53 DG
NORTHING -001.55
EASTING -004.13

LOG DEPTH 0060.00
TRUE DEPTH 0059.88
TILT 5.70 DG
BEARING 239.47 DG
NORTHING -001.05
EASTING -003.17

LOG DEPTH 0050.00
TRUE DEPTH 0049.93
TILT 5.23 DG
BEARING 243.81 DG
NORTHING -000.55
EASTING -002.32

LOG DEPTH 0040.00
TRUE DEPTH 0039.97
TILT 3.86 DG
BEARING 254.00 DG
NORTHING -000.15
EASTING -001.50

LOG DEPTH 0030.00
TRUE DEPTH 0029.99
TILT 2.48 DG
BEARING 259.74 DG
NORTHING +000.03
EASTING -000.85

LOG DEPTH 0020.00
TRUE DEPTH 0020.00
TILT 1.71 DG
BEARING 277.41 DG
NORTHING +000.11
EASTING -000.42

LOG DEPTH 0010.00
TRUE DEPTH 0010.00
TILT 1.71 DG
BEARING 298.82 DG
NORTHING +000.07
EASTING -000.13

LOG DEPTH 0005.00
TRUE DEPTH 0005.00
TILT 1.92 DG
BEARING 306.72 DG
NORTHING +000.00
EASTING +000.00

739

DEPTH = 0010.00
TILT = 1.50 DG
BEARING = 290.93 DG

DEPTH = 0020.00
TILT = 1.92 DG
BEARING = 263.90 DG

DEPTH = 0030.00
TILT = 3.04 DG
BEARING = 255.59 DG

DEPTH = 0040.00
TILT = 4.69 DG
BEARING = 252.40 DG

DEPTH = 0050.00
TILT = 5.77 DG
BEARING = 235.21 DG

DEPTH = 0060.00
TILT = 5.64 DG
BEARING = 243.73 DG

DEPTH = 0070.00
TILT = 6.70 DG
BEARING = 241.33 DG

DEPTH = 0080.00
TILT = 7.71 DG
BEARING = 239.66 DG

DEPTH = 0090.00
TILT = 8.21 DG
BEARING = 240.09 DG

DEPTH = 0100.00
TILT = 9.39 DG
BEARING = 233.09 DG

DEPTH = 0110.00
TILT = 10.25 DG
BEARING = 239.36 DG

DEPTH = 0120.00
TILT = 11.62 DG
BEARING = 230.69 DG

DATE 870813
JOB NUMBER 0038
LOG LABEL 026.1
MAG 1 MAX 229
MAG 1 MIN 129
MAG 2 MAX 229
MAG 2 MIN 130
MAG 3 MAX 205
MAG 3 MIN 155
L. CELL 1 TILT 1 20
L. CELL 1 CPS 1 233
L. CELL 1 TILT 2 -20
L. CELL 1 CPS 2 126
L. CELL 2 TILT 1 20
L. CELL 2 CPS 1 232
L. CELL 2 TILT 2 -20
L. CELL 2 CPS 2 126
MAG 1 CENTRE 180
MAG 2 CENTRE 179
MAG 3 CENTRE 180
L. CELL 1 CENTRE 180
L. CELL 2 CENTRE 179

MAG DECL 024
STOP DEPTH 0005

QHR87038
TRANSFER



COAL LITHOLOGY LOG

SONDE TYPE
COAL COMBINATION
SONDE

LOG SUITE
GAMMA RAY
L.S. DENSITY
CALIPER

BOREHOLE QHR 87-038
CLIENT QUINTETTE

AREA TRANSFER
COUNTRY CANADA
DATE LOGGED 87 06 13

DEPTH SCALE
1:200

1 OF 4 LOGS

PERMANENT DIAL
ELEVATION OF P.O.
MAGNETIC DEVIATION
DEPTH REACHED
CASING SHOE
BIT SIZES
CASING SIZES

BOREHOLE DATA
GROUNDED LEVEL
BPH
DRILLER
2.9, 10.9m
1.29, 4.0m
4.4m
1 1.1" TO 1.40" 2 1.1" TO 1.25"
3 1.1" TO 1.40" 4 1.1" TO 1.25"
5 1.1" TO 1.40" 6 1.1" TO 1.25"

FLUID DATA
NATURE WATER
SG 1.013
LEVEL 4.0m
VISCOSITY N/A
Rm at 100ms temp N/A
BHT N/A

OPERATION DATA
FIRST READING 1.26, 6.0m
LAST READING 0.0m
INTERVAL LOGGED 1.26m
UNIT-TRUCK No. 4677217
ENGINEER M. COY
WITNESS

739

EQUIPMENT AND RECORDING DATA

| LOG | EQUIPMENT | | | TAPING | | | PANEL | | CAL COEFF | DEPTHS | | | SEAM LOG RUN | |
|--------------|-------------------|--------|------------|-----------|--------------|------------------|-------|---------|-----------|--------|------|----|--------------|----------|
| | SONDE | SOURCE | CALIBRATOR | LOG TAPED | RECORD SPEED | DIRECT or REPLAY | SPEED | TC SECS | | NORM | FROM | TO | | INTERVAL |
| GAMMA RAY | 133 | | 367 | Y | 9 | D | 9 | 1 | - | 1.46 | 126 | 0 | 126 | Y |
| L.S. DENSITY | | | | Y | 9 | D | 9 | 3 | 7.35 | - | 127 | 1 | 126 | Y |
| CALIPER | SIDEWALL POSITION | | | Y | 9 | D | 9 | 3 | - | 1.0 | 127 | 1 | 126 | Y |

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

| FROM | 1.26m | 10.2m | 6.7m | 4.1m | 1.3m | INTERVAL TOTAL |
|----------|-------|-------|------|------|------|----------------|
| TO | 11.4m | 9.7m | 5.7m | 3.0m | 5m | |
| INTERVAL | 1.2m | 3m | 6m | 11m | 6m | 40m |

| SONDE | LOG | GENERAL SCALE LOG | DETAIL SCALE LOG | REFER TO ADDITIONAL HEADINGS | REMARKS |
|-------|------|-------------------|------------------|------------------------------|---------|
| 215 | N-N | 1:200 | | | |
| 231 | VERI | | | | |

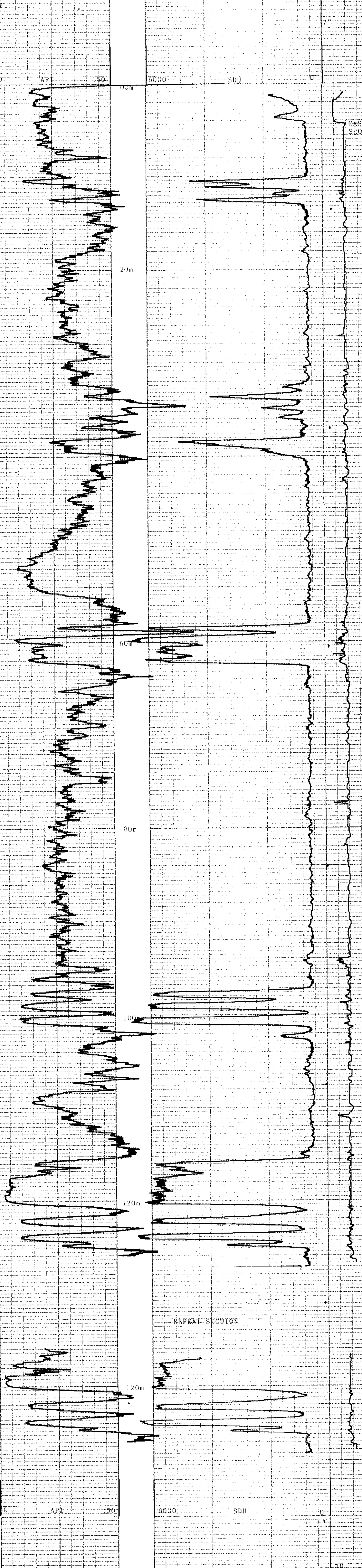
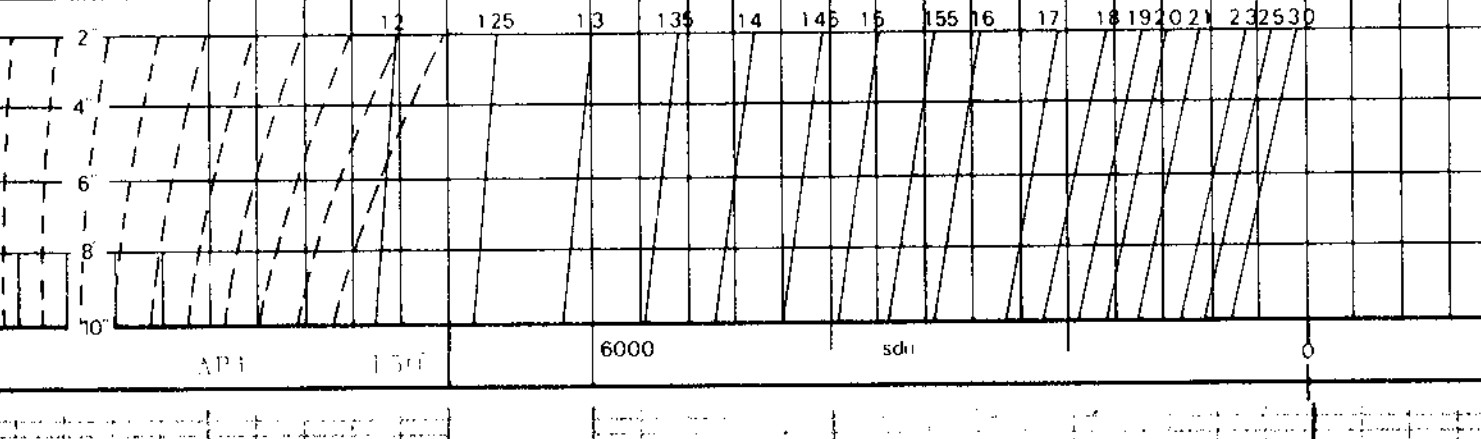
BPB COAL LITHOLOGY LOG

CALIBRATION DATA

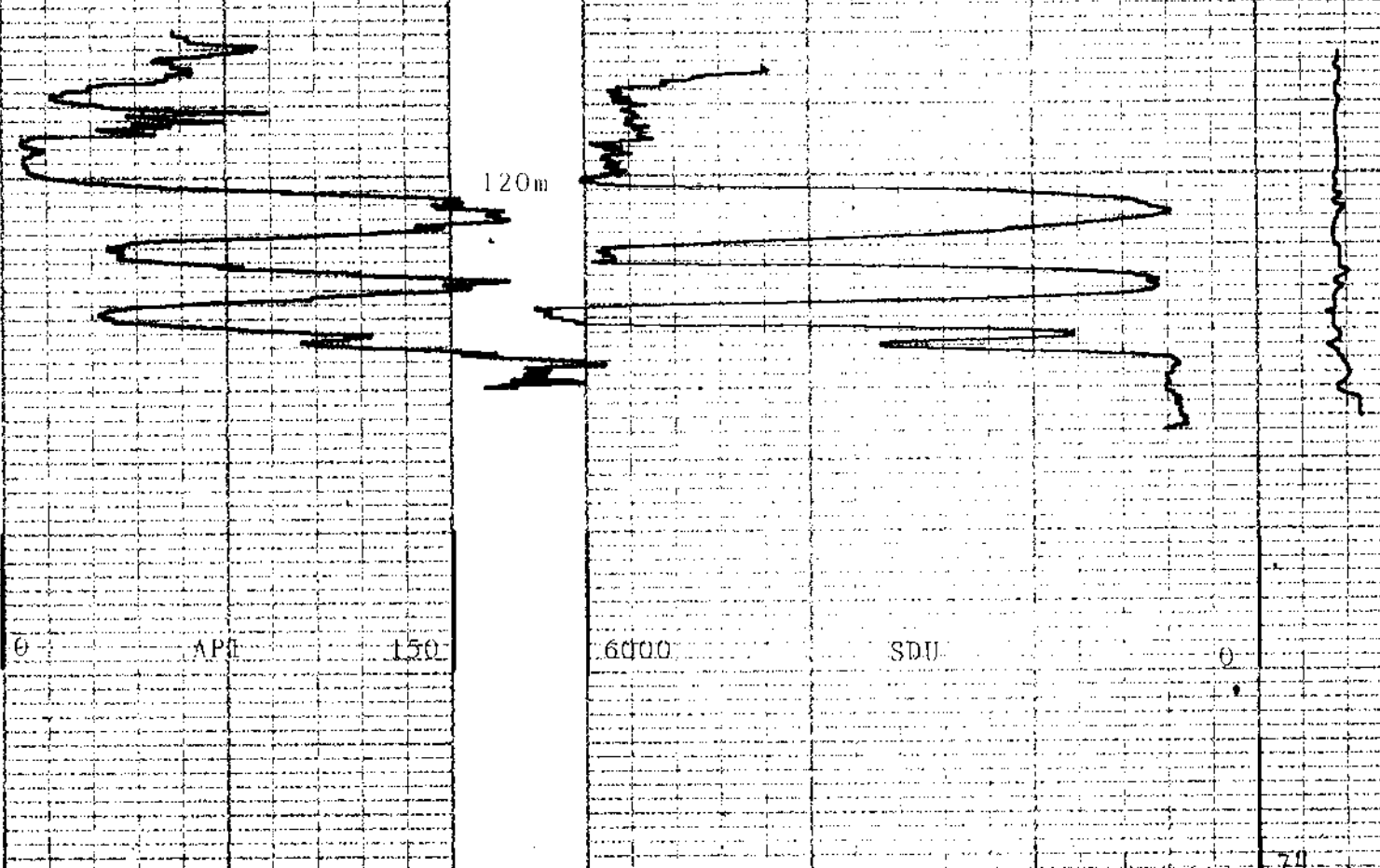
| JIG No | VALUE @ 2 DIAM | JIG CAL DATE | JIG VALUE | SDU @ | g/cm ³ | INS | CPS |
|--------|----------------|--------------|-----------|-------|-------------------|-----|-----|
| | | | | | | | |

| GAMMA RAY | DEPTH | BULK DENSITY g/cm ³ | CALIPER INCHES |
|-----------|-------|--------------------------------|----------------|
| | | | |

HOLE SIZE CORRECTION DATA



REPEAT SECTION



| GAMMA RAY | DEPTH | BULK DENSITY g/cm ³ | CALIPER INCHES |
|-----------|-------|--------------------------------|----------------|
| | | | |



BOREHOLE QHR 87-038 AREA TRANSFER
CLIENT QUINTETTE COUNTRY CANADA

COAL LITHOLOGY LOG



NEUTRON-NEUTRON
GAMMA RAY

BOREHOLE QHR 87-038

CLIENT QUINTETTE

AREA TRANSFER

COUNTRY CANADA

DATE LOGGED 87 08 13

DEPTH SCALE
1:200

2 OF 4 LOGS

BOREHOLE DATA REFER TO LITHOLOGY LOG

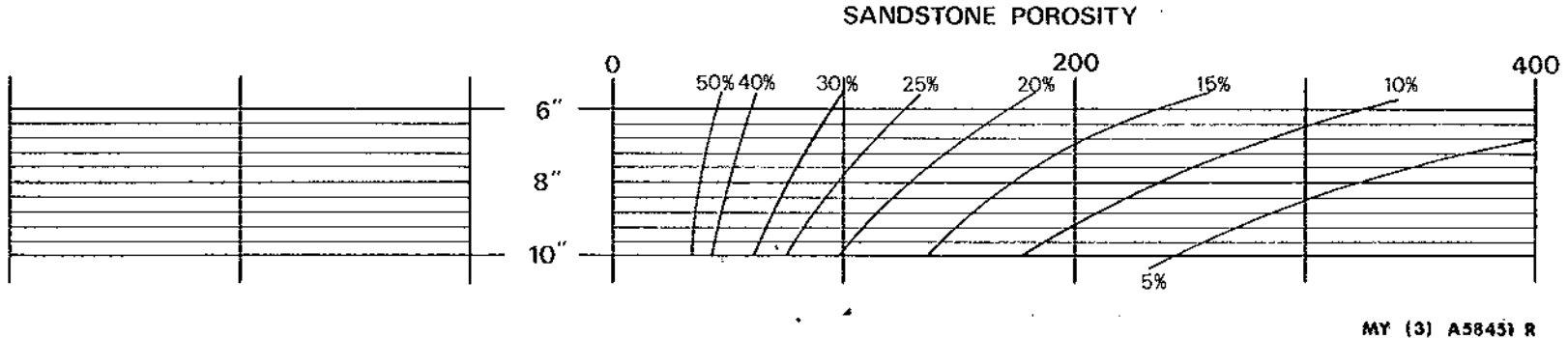
OPERATION DATA REFER TO LITHOLOGY LOG

EQUIPMENT AND RECORDING DATA

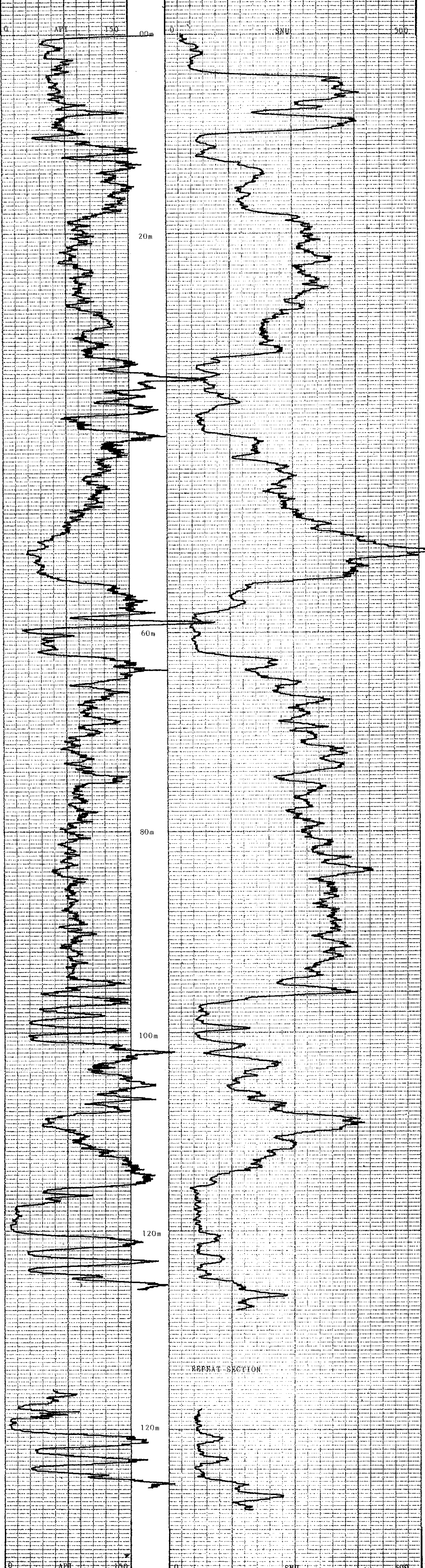
| LOG | TAPING | RECORDING | PANEL | CALIB |
|-------|--------|-----------|-------|-------|
| N-N | Y | 9 | D | 9 |
| GAMMA | Y | 9 | R | 9 |
| | | | | 1.44 |
| | | | | 1.512 |

REMARKS
739

| | | |
|-----------|---------|-----------------|
| GAMMA RAY | DEPTH | NEUTRON-NEUTRON |
| 0 | API 150 | 0 |
| | | SNU 500 |



MY (3) A58451 R



| | | |
|-----------|---------|-----------------|
| GAMMA RAY | DEPTH | NEUTRON-NEUTRON |
| 0 | API 150 | 0 |
| | | SNU 500 |



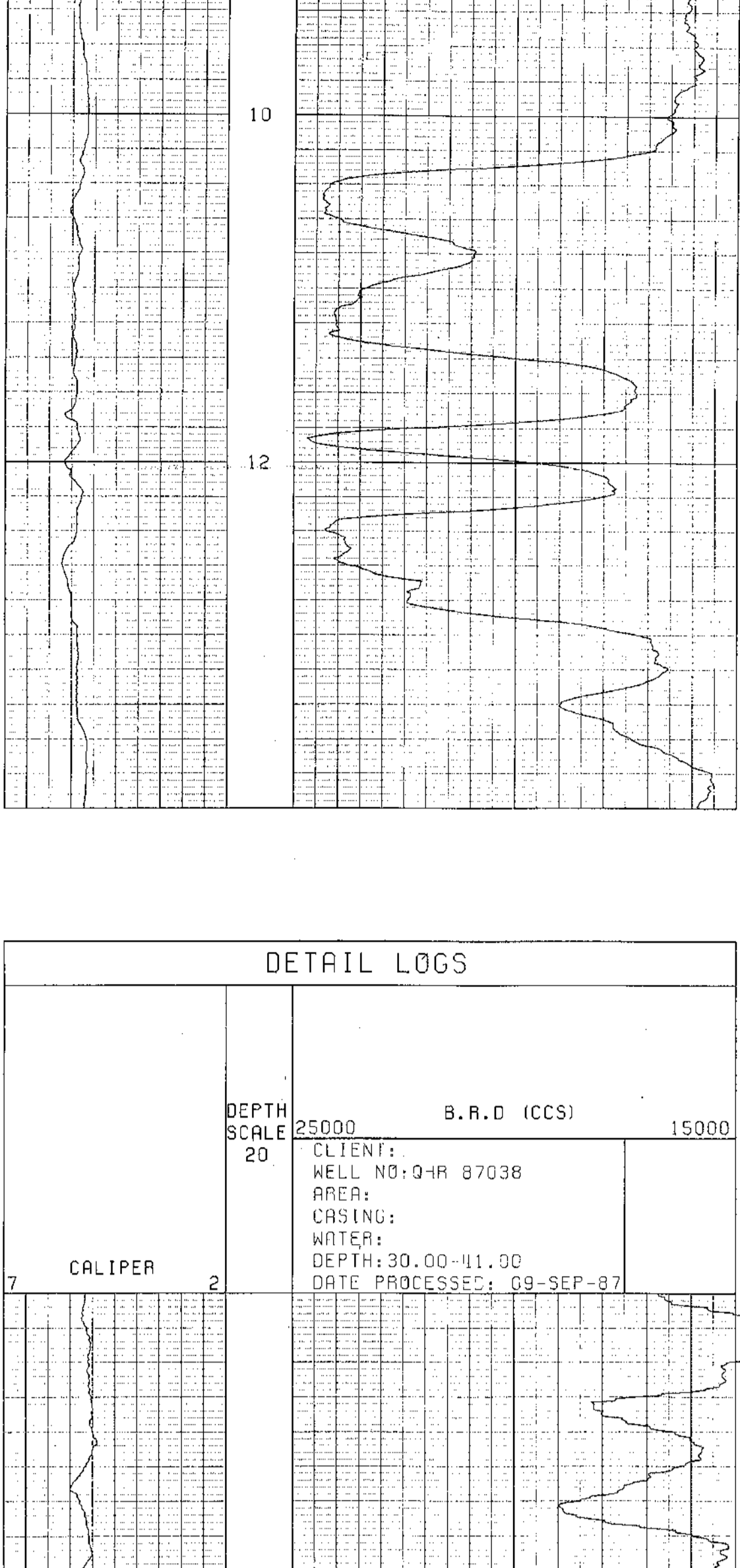
BOREHOLE QHR 87-038
CLIENT QUINTETTE

AREA TRANSFER
COUNTRY CANADA

DETAIL LOGS

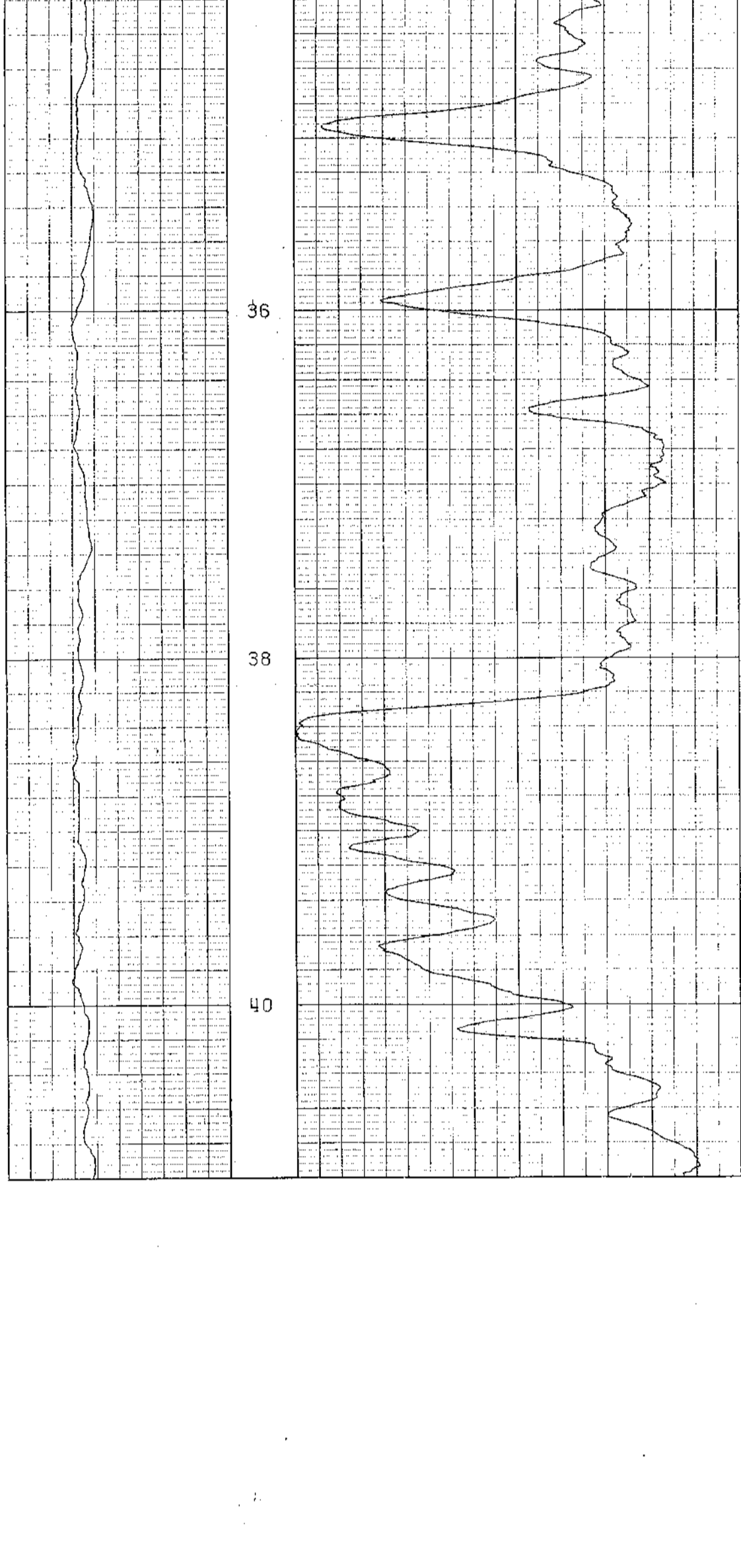
739

DEPTH SCALE 25000 B.R.D (CCS) 15000
 20 CLIENT: QUINTETTE CORP
 WELL NO: QHR 87038
 AREA: TRANSFER PIT
 CASING: 4.4V
 WATER: 3.0M
 DEPTH: 8.00-14.00
 DATE PROCESSED: 09-SEP-87



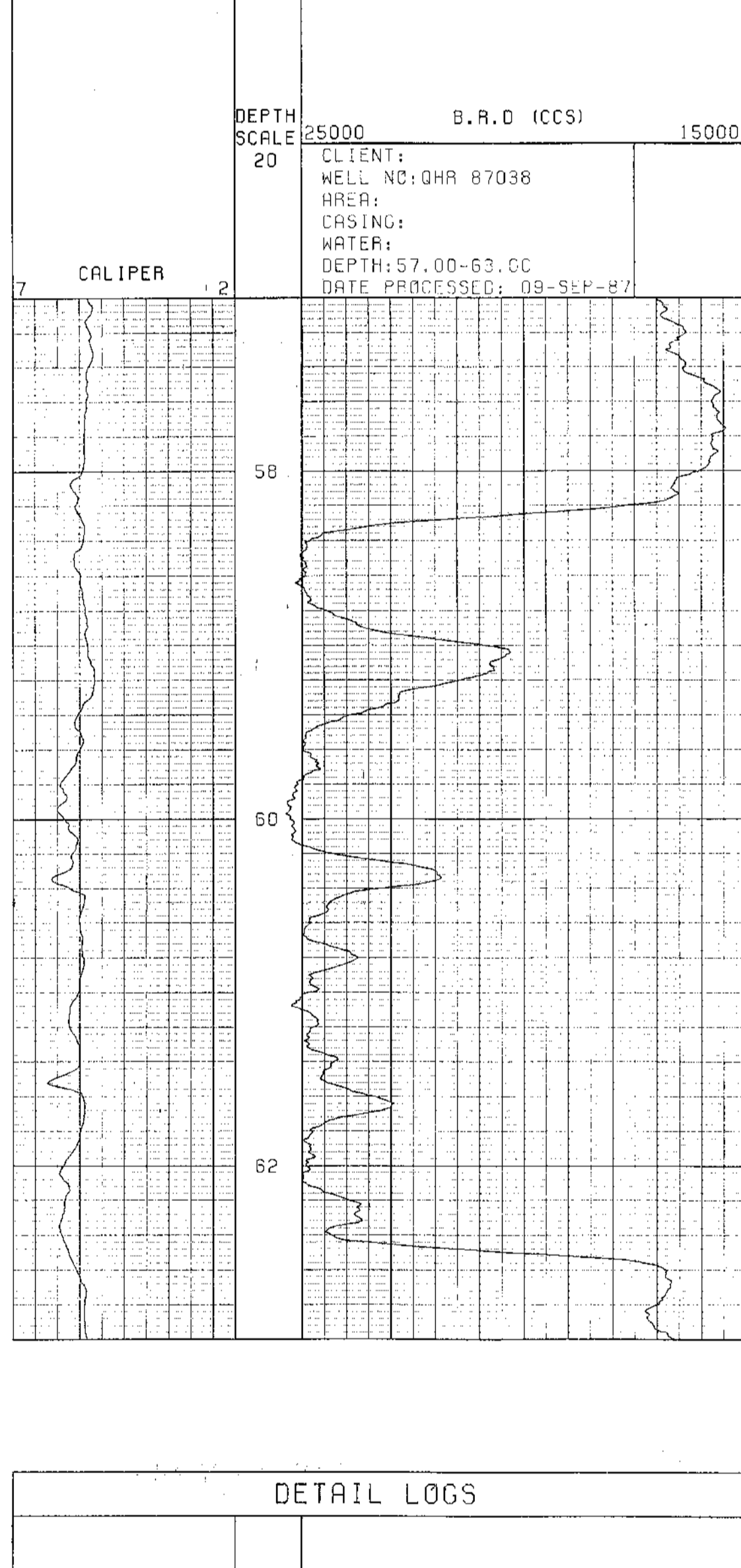
DETAIL LOGS

DEPTH SCALE 25000 B.R.D (CCS) 15000
 20 CLIENT: QHR 87038
 WELL NO: QHR 87038
 AREA:
 CASING:
 WATER:
 DEPTH: 30.00-41.00
 DATE PROCESSED: 09-SEP-87



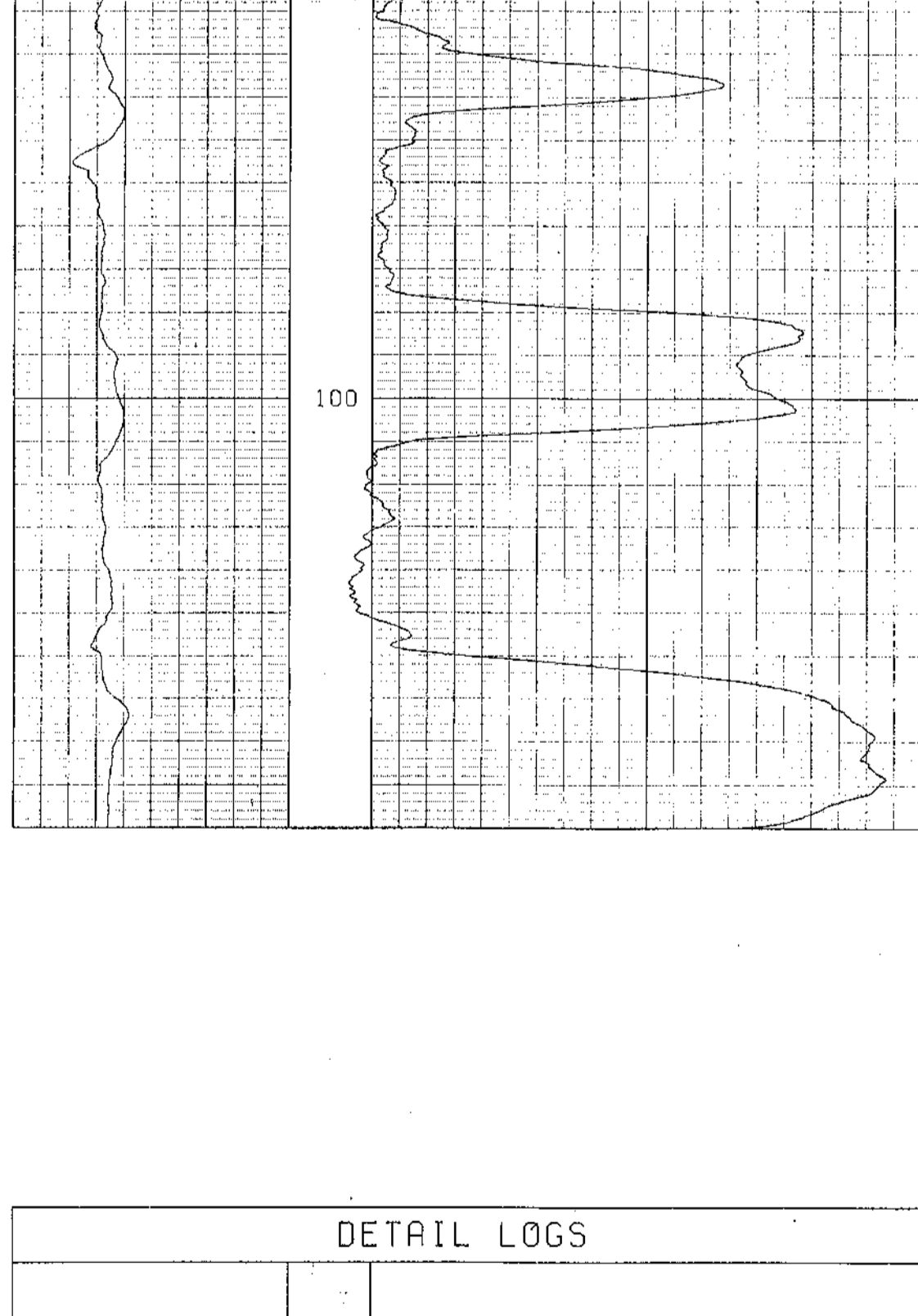
DETAIL LOGS

DEPTH SCALE 25000 B.R.D (CCS) 15000
 20 CLIENT: QHR 87038
 WELL NO: QHR 87038
 AREA:
 CASING:
 WATER:
 DEPTH: 57.00-63.00
 DATE PROCESSED: 09-SEP-87



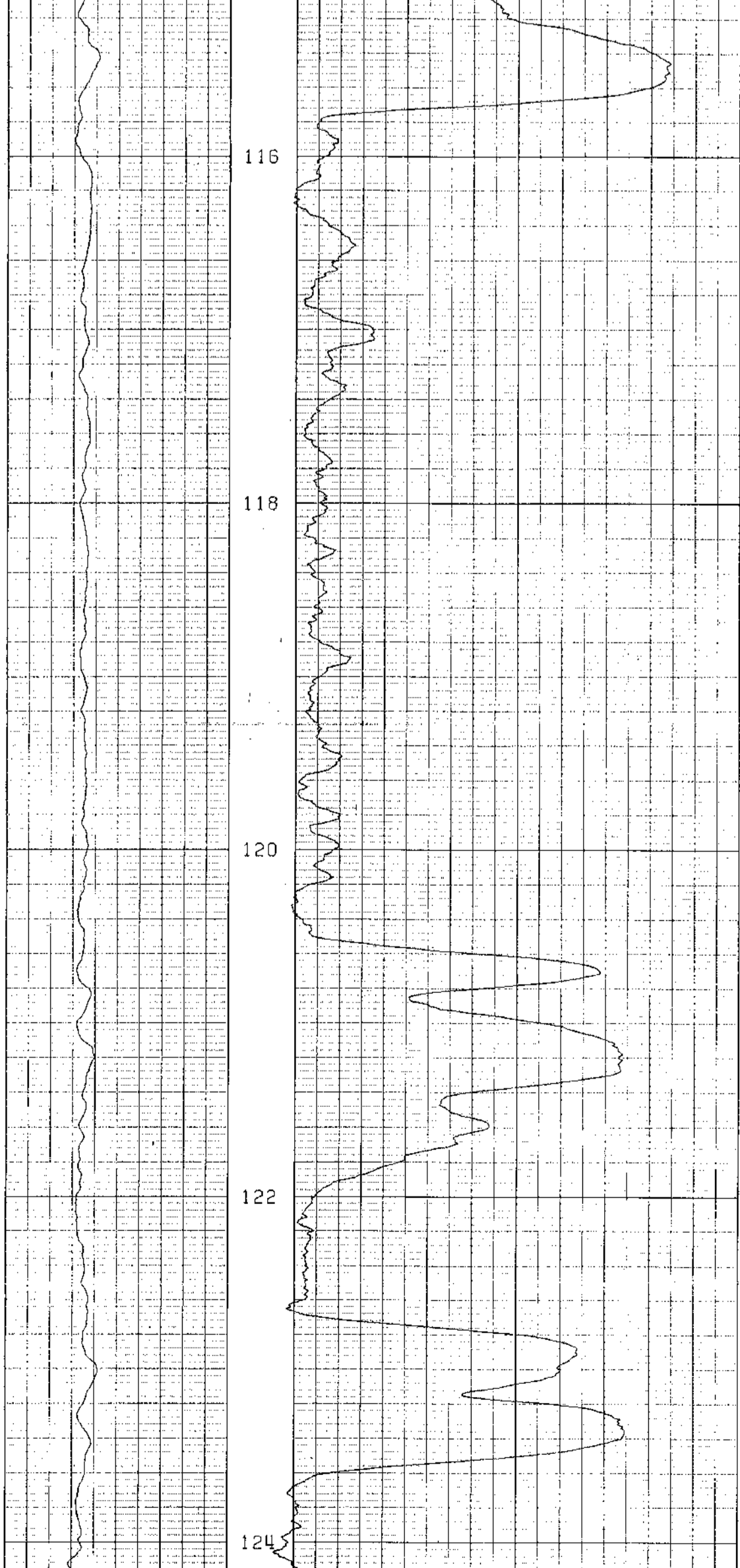
DETAIL LOGS

DEPTH SCALE 25000 B.R.D (CCS) 15000
 20 CLIENT: QHR 87038
 WELL NO: QHR 87038
 AREA:
 CASING:
 WATER:
 DEPTH: 97.00-102.00
 DATE PROCESSED: 09-SEP-87



DETAIL LOGS

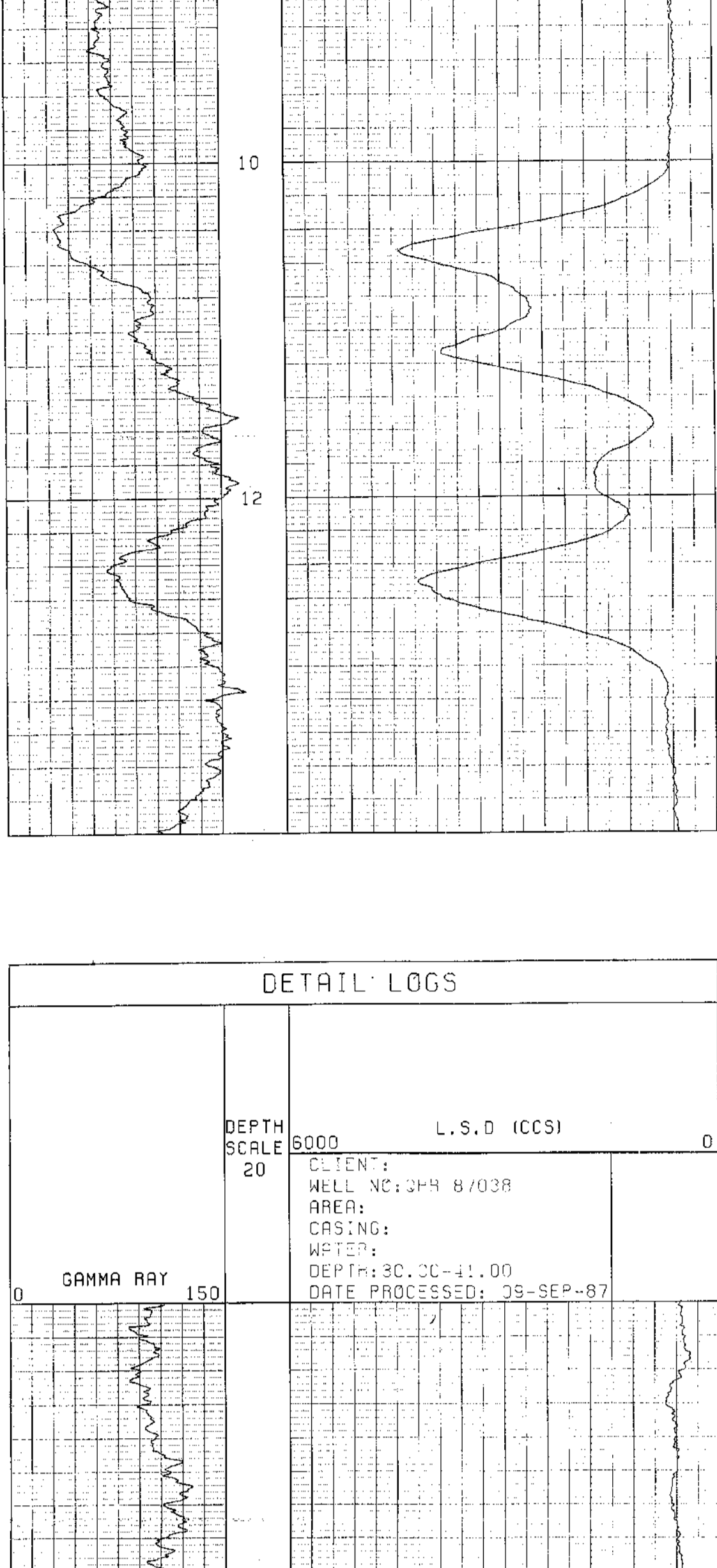
DEPTH SCALE 25000 B.R.D (CCS) 15000
 20 CLIENT: QHR 87038
 WELL NO: QHR 87038
 AREA:
 CASING:
 WATER:
 DEPTH: 114.00-126.00
 DATE PROCESSED: 09-SEP-87



DETAIL LOGS

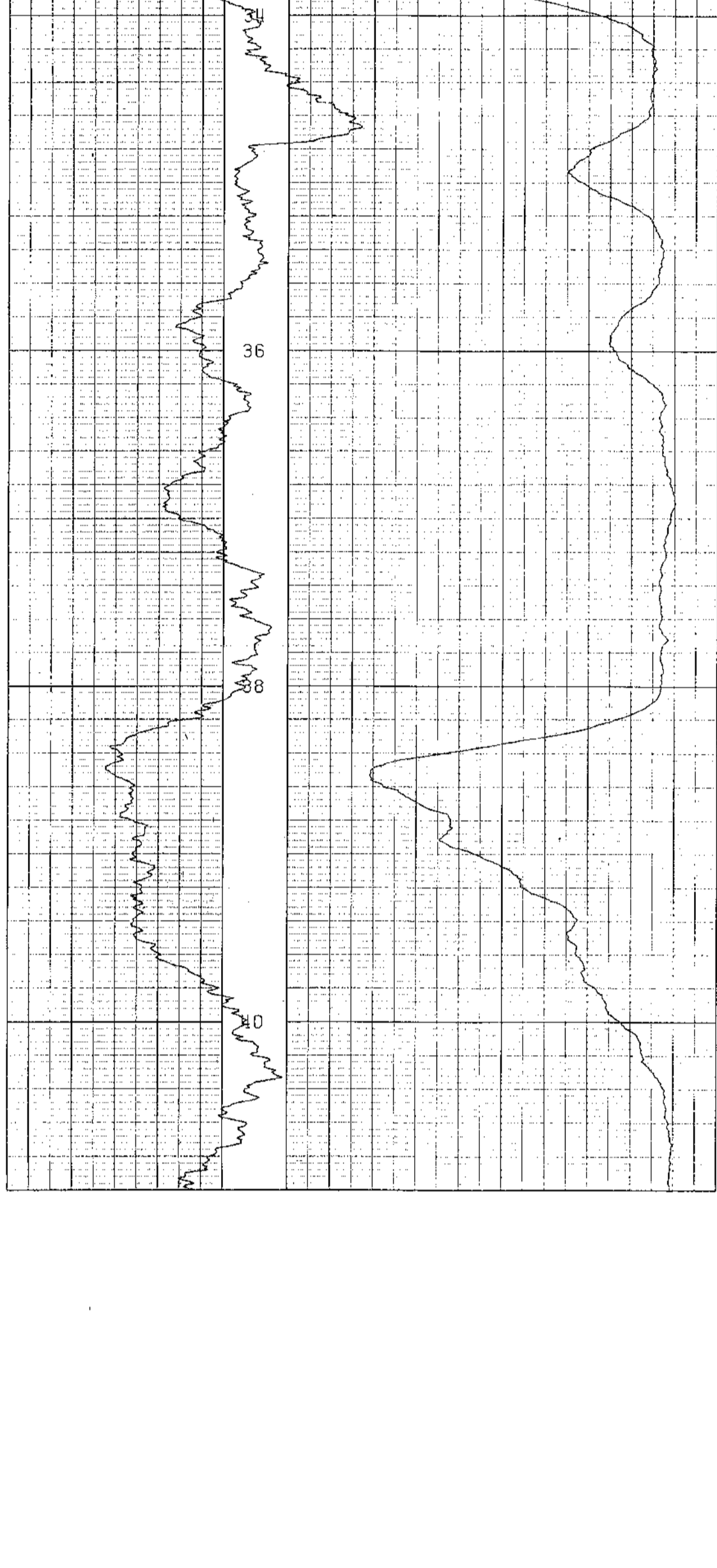
739

| | | | |
|-------------|---------------------------|-------------|---|
| DEPTH SCALE | 6000 | L.S.D (CCS) | 0 |
| 20 | CLIENT: QUINTEITE COAL | | |
| | WELL NO: OHR 87038 | | |
| | AREA: TRANSFER PIT | | |
| | CASING: 4.4M | | |
| | WATER: 0.0M | | |
| | DEPTH: 8.00-14.00 | | |
| | DATE PROCESSED: 09-SEP-87 | | |



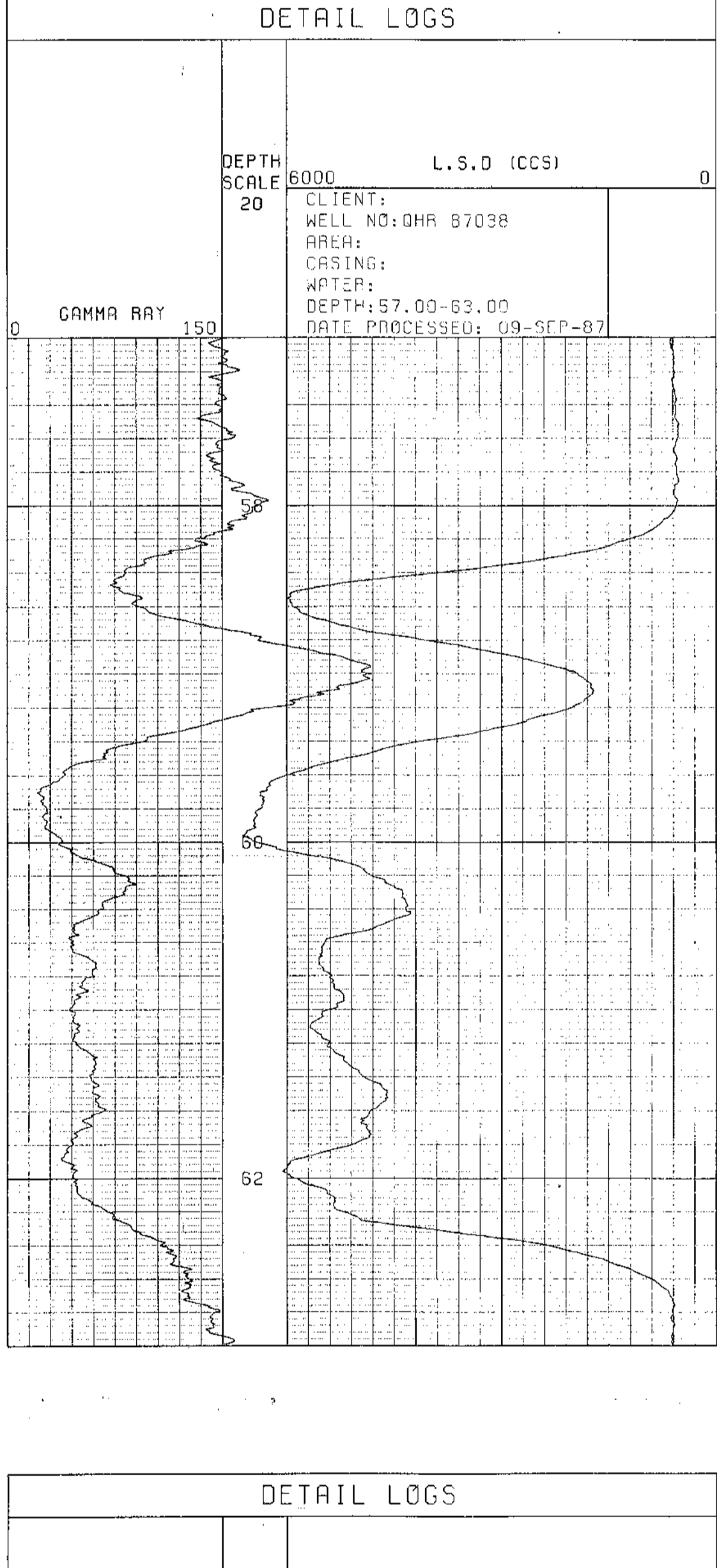
DETAIL LOGS

| | | | |
|-------------|---------------------------|-------------|---|
| DEPTH SCALE | 6000 | L.S.D (CCS) | 0 |
| 20 | CLIENT: QUINTEITE COAL | | |
| | WELL NO: OHR 87038 | | |
| | AREA: TRANSFER PIT | | |
| | CASING: 4.4M | | |
| | WATER: 0.0M | | |
| | DEPTH: 30.00-41.00 | | |
| | DATE PROCESSED: 09-SEP-87 | | |



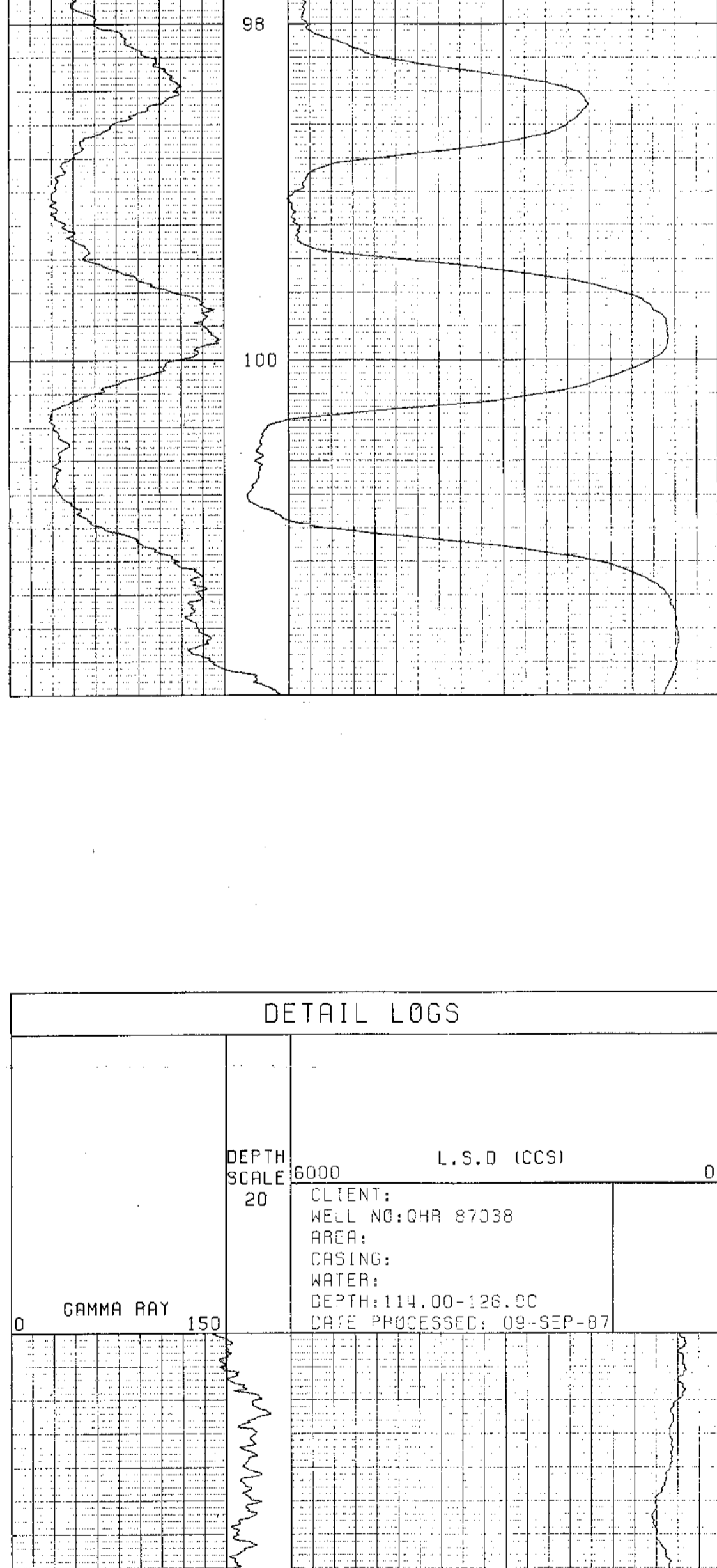
DETAIL LOGS

| | | | |
|-------------|---------------------------|-------------|---|
| DEPTH SCALE | 6000 | L.S.D (CCS) | 0 |
| 20 | CLIENT: QUINTEITE COAL | | |
| | WELL NO: OHR 87038 | | |
| | AREA: TRANSFER PIT | | |
| | CASING: 4.4M | | |
| | WATER: 0.0M | | |
| | DEPTH: 57.00-63.00 | | |
| | DATE PROCESSED: 09-SEP-87 | | |



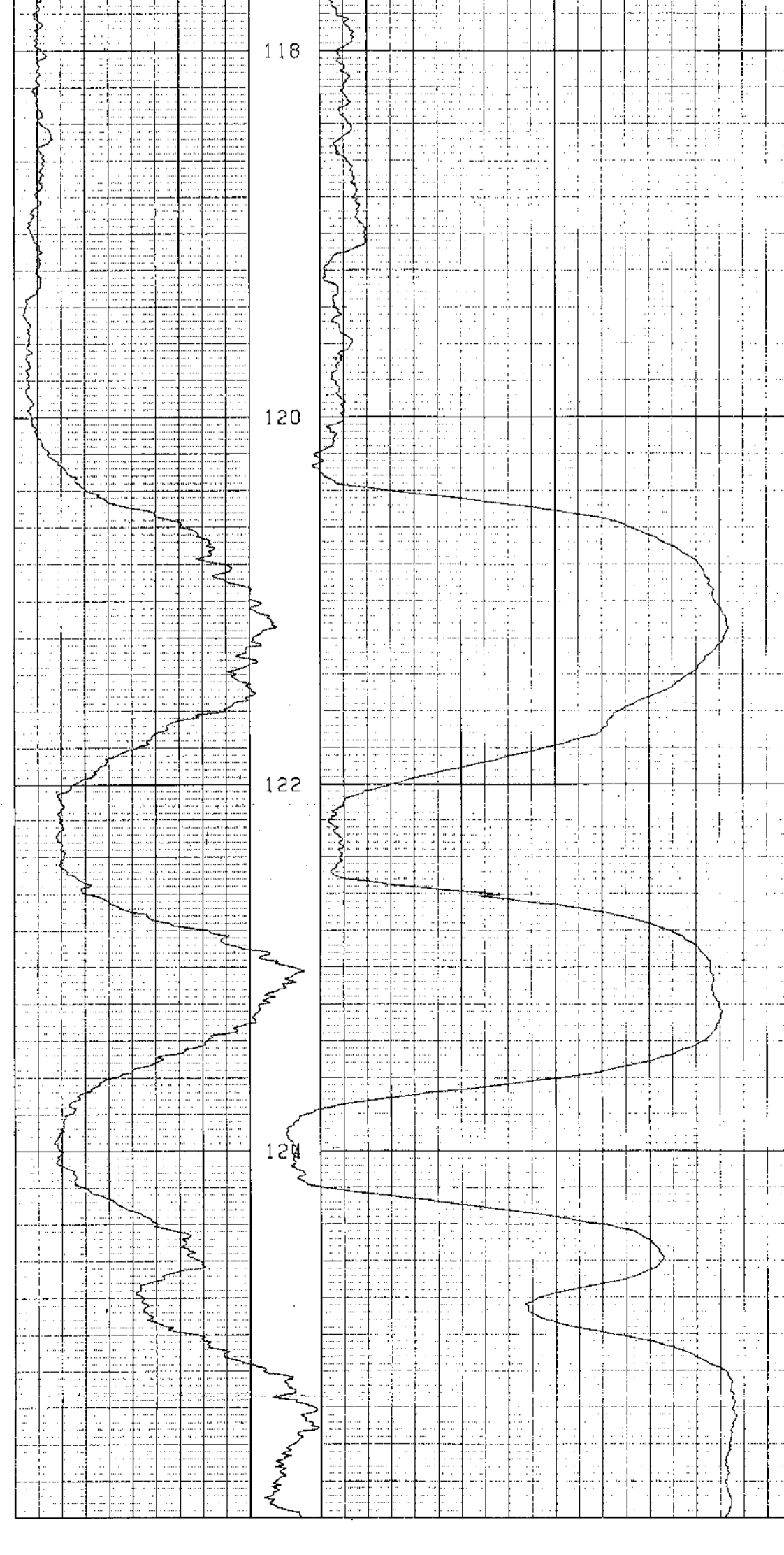
DETAIL LOGS

| | | | |
|-------------|---------------------------|-------------|---|
| DEPTH SCALE | 6000 | L.S.D (CCS) | 0 |
| 20 | CLIENT: QUINTEITE COAL | | |
| | WELL NO: OHR 87038 | | |
| | AREA: TRANSFER PIT | | |
| | CASING: 4.4M | | |
| | WATER: 0.0M | | |
| | DEPTH: 97.00-102.00 | | |
| | DATE PROCESSED: 09-SEP-87 | | |



DETAIL LOGS

| | | | |
|-------------|---------------------------|-------------|---|
| DEPTH SCALE | 6000 | L.S.D (CCS) | 0 |
| 20 | CLIENT: QUINTEITE COAL | | |
| | WELL NO: OHR 87038 | | |
| | AREA: TRANSFER PIT | | |
| | CASING: 4.4M | | |
| | WATER: 0.0M | | |
| | DEPTH: 114.00-126.00 | | |
| | DATE PROCESSED: 09-SEP-87 | | |





CONTINUOUS VERTICALITY ANALYSIS

739

CLIENT_____

QUINTETTE COAL

BOREHOLE_____

QHR-87-038

AREA_____

TRANSFER

COUNTRY_____

CANADA

DATE LOGGED.....11-AUG-87

DATE PROCESSED..08-JAN-88

UPPER REFERENCE POINT.....

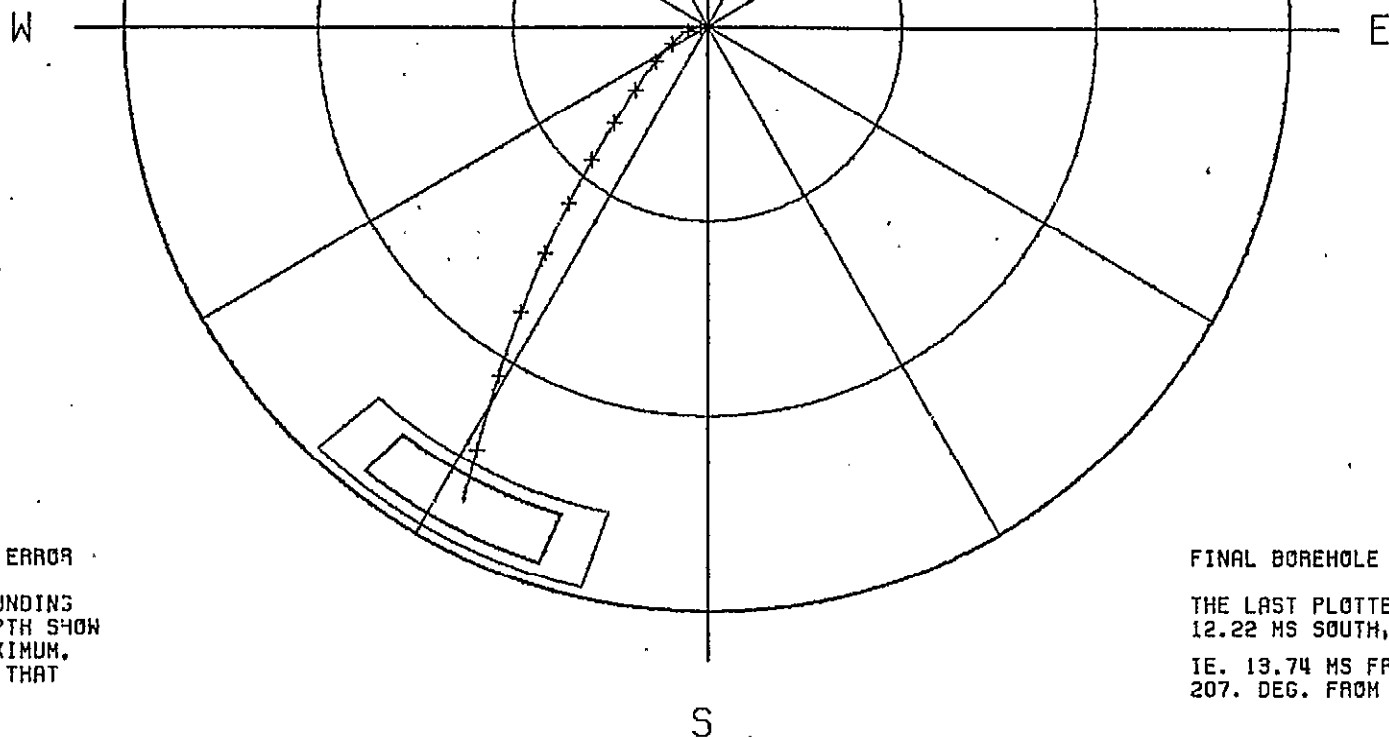
LOWER REFERENCE POINT.....T.D.

CROSS-SECTION

SCALE: 200:1

ALL FIGURES IN LOG DEPTH MS

| | |
|--------------------------|--------|
| TARGET ORIGIN DEPTH..... | 2.00 |
| LAST PLOTTED DEPTH..... | 127.90 |
| DEPTH MARKERS ANNOTATED | |
| IN MULTIPLES OF..... | 10 |
| FIRST DEPTH MARKER AT... | 10 |
| LAST DEPTH MARKER AT.... | 120 |



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT 12.22 MS SOUTH, 6.28 MS WEST
IE. 13.74 MS FROM THE ORIGIN,
207. DEG. FROM MAGNETIC NORTH

VERTICAL SECTIONS

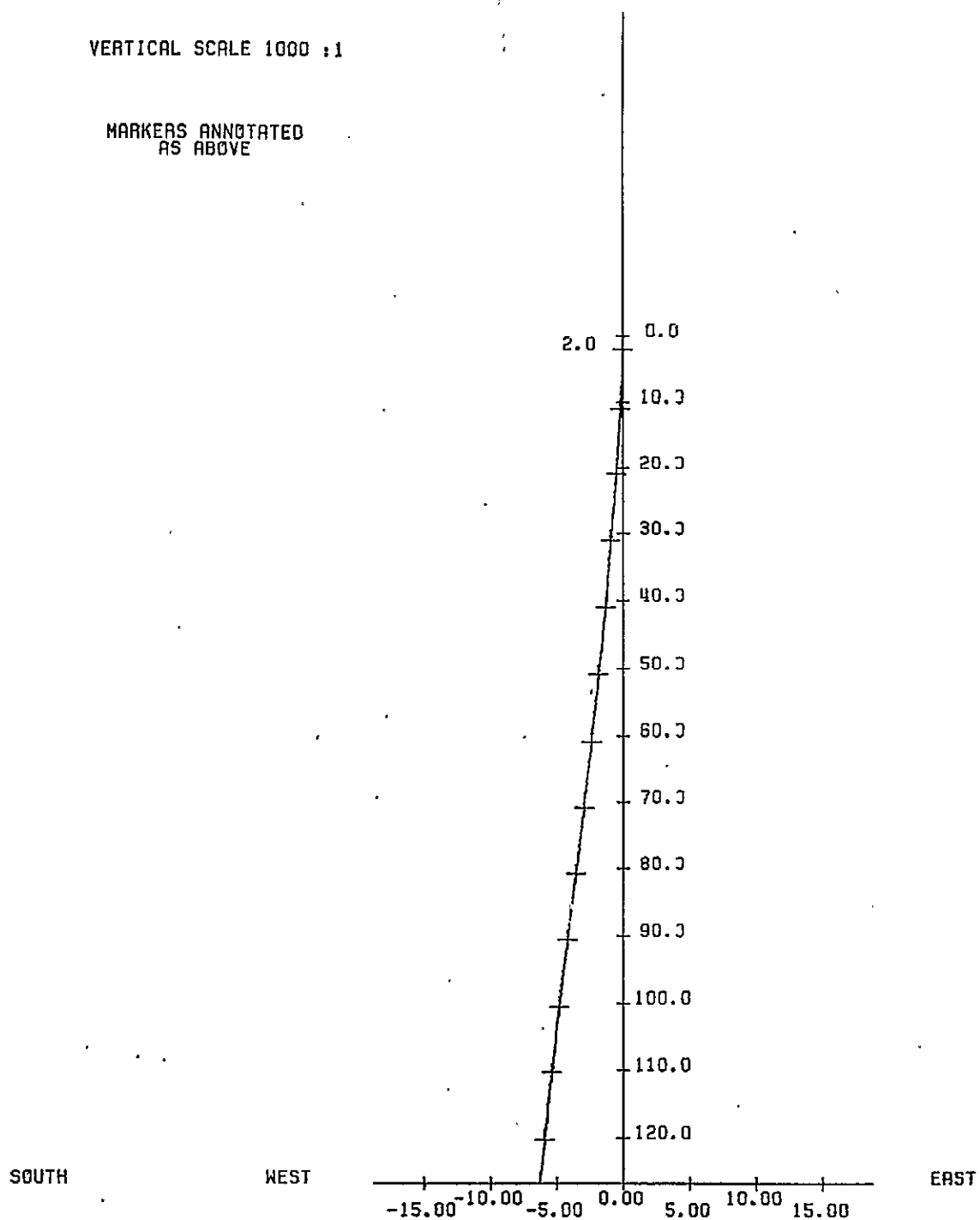
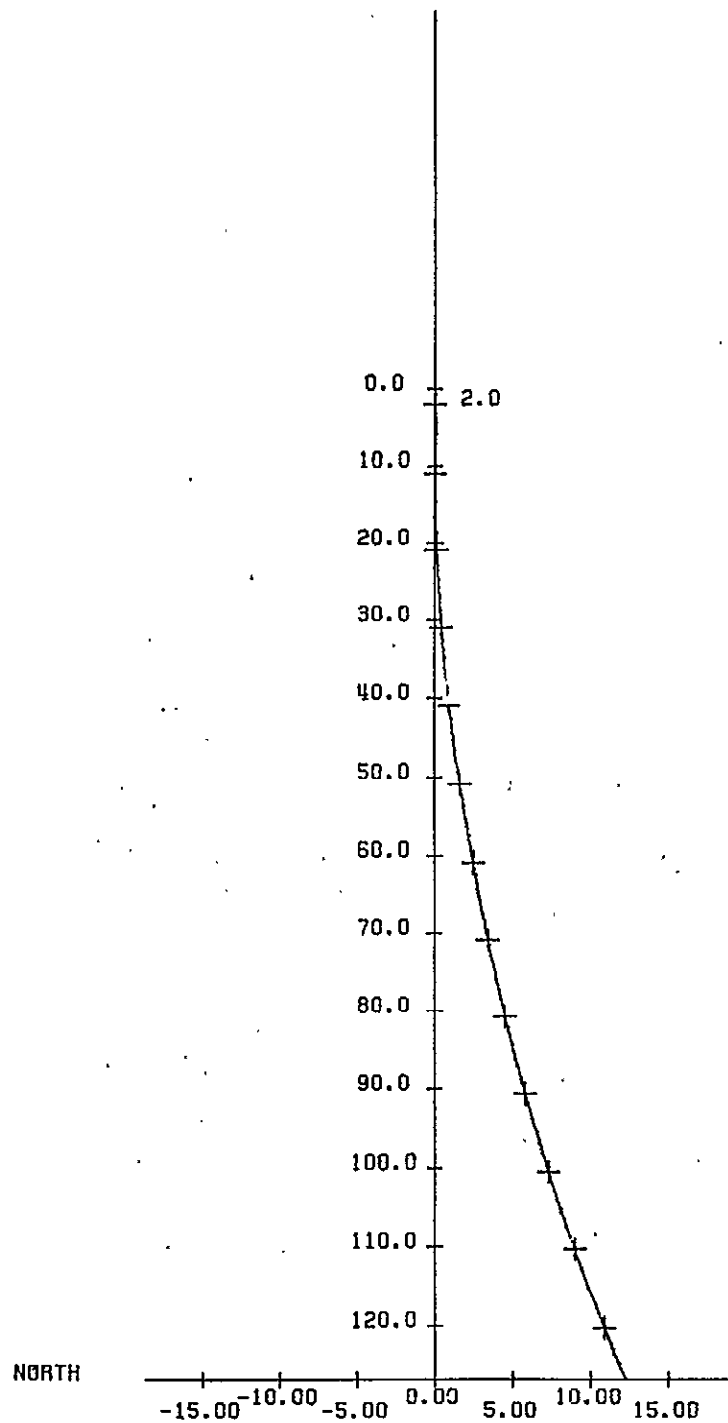
(TRUE DEPTH VS. DISPLACEMENT)

N-S SECTION

W-E SECTION

VERTICAL SCALE 1000 : 1

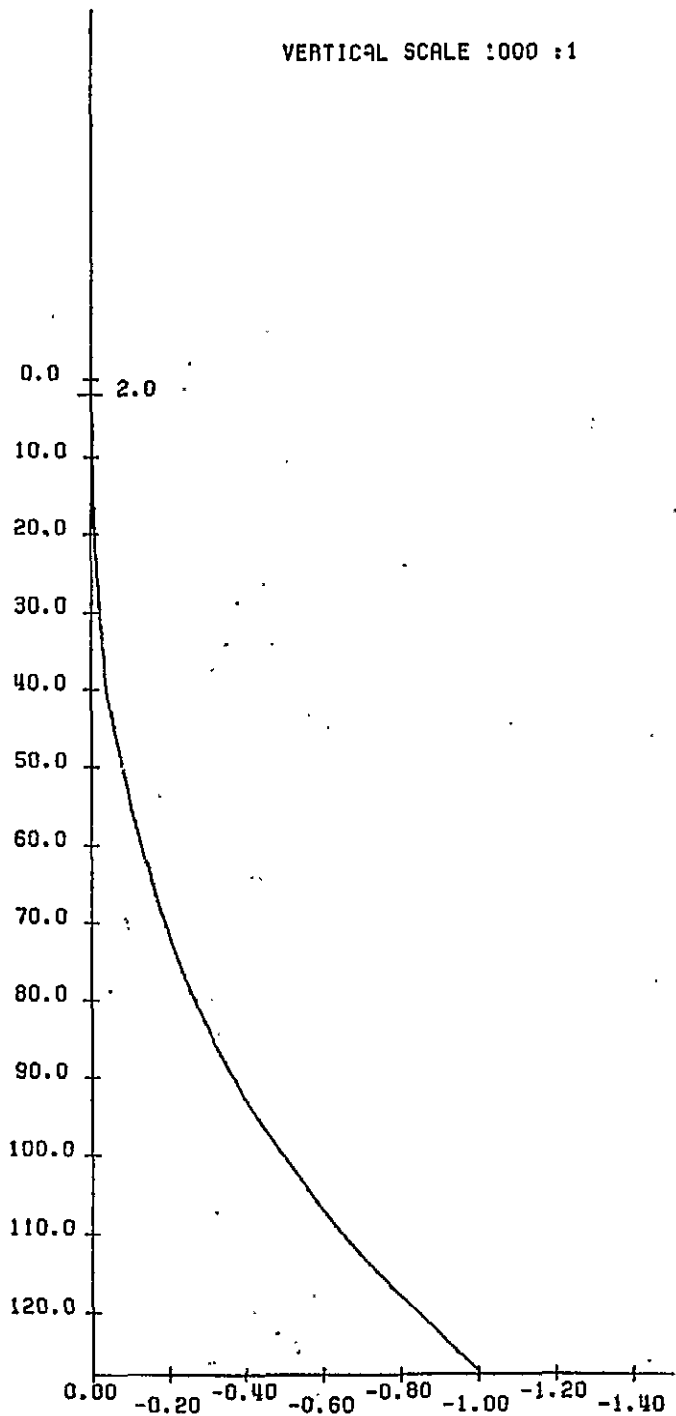
MARKERS ANNOTATED
AS ABOVE



DEPTH CORRECTION ANALYSIS

LOG
DEPTH

VERTICAL SCALE 1000 : 1



| DEPTHS: | | DEPTHS: | |
|---------|-------|---------|--------|
| LOG | TRUE | LOG | TRUE |
| 3.00 | 3.00 | 73.00 | 72.79 |
| 4.00 | 4.00 | 74.00 | 73.78 |
| 5.00 | 5.00 | 75.00 | 74.77 |
| 6.00 | 6.00 | 76.00 | 75.77 |
| 7.00 | 7.00 | 77.00 | 76.76 |
| 8.00 | 8.00 | 78.00 | 77.75 |
| 9.00 | 9.00 | 79.00 | 78.74 |
| 10.00 | 10.00 | 80.00 | 79.73 |
| 11.00 | 11.00 | 81.00 | 80.72 |
| 12.00 | 12.00 | 82.00 | 81.71 |
| 13.00 | 13.00 | 83.00 | 82.70 |
| 14.00 | 13.99 | 84.00 | 83.70 |
| 15.00 | 14.99 | 85.00 | 84.69 |
| 16.00 | 15.99 | 86.00 | 85.68 |
| 17.00 | 16.99 | 87.00 | 86.67 |
| 18.00 | 17.99 | 88.00 | 87.65 |
| 19.00 | 18.99 | 89.00 | 88.64 |
| 20.00 | 19.99 | 90.00 | 89.63 |
| 21.00 | 20.99 | 91.00 | 90.62 |
| 22.00 | 21.99 | 92.00 | 91.61 |
| 23.00 | 22.99 | 93.00 | 92.60 |
| 24.00 | 23.99 | 94.00 | 93.58 |
| 25.00 | 24.99 | 95.00 | 94.57 |
| 26.00 | 25.98 | 96.00 | 95.56 |
| 27.00 | 26.98 | 97.00 | 96.54 |
| 28.00 | 27.98 | 98.00 | 97.53 |
| 29.00 | 28.98 | 99.00 | 98.52 |
| 30.00 | 29.98 | 100.00 | 99.50 |
| 31.00 | 30.98 | 01.00 | 100.49 |
| 32.00 | 31.97 | 02.00 | 101.47 |
| 33.00 | 32.97 | 03.00 | 102.46 |
| 34.00 | 33.97 | 04.00 | 103.45 |
| 35.00 | 34.97 | 05.00 | 104.43 |
| 36.00 | 35.97 | 06.00 | 105.41 |
| 37.00 | 36.97 | 07.00 | 106.40 |
| 38.00 | 37.96 | 08.00 | 107.38 |
| 39.00 | 38.96 | 09.00 | 108.37 |
| 40.00 | 39.96 | 10.00 | 109.35 |
| 41.00 | 40.96 | 11.00 | 110.33 |
| 42.00 | 41.95 | 12.00 | 111.32 |
| 43.00 | 42.95 | 13.00 | 112.30 |
| 44.00 | 43.95 | 14.00 | 113.28 |
| 45.00 | 44.94 | 15.00 | 114.26 |
| 46.00 | 45.94 | 16.00 | 115.24 |
| 47.00 | 46.93 | 17.00 | 116.22 |
| 48.00 | 47.93 | 18.00 | 117.20 |
| 49.00 | 48.92 | 19.00 | 118.18 |
| 50.00 | 49.92 | 20.00 | 119.16 |
| 51.00 | 50.92 | 21.00 | 120.14 |
| 52.00 | 51.91 | 22.00 | 121.12 |
| 53.00 | 52.91 | 23.00 | 122.10 |
| 54.00 | 53.90 | 24.00 | 123.07 |
| 55.00 | 54.90 | 25.00 | 124.05 |
| 56.00 | 55.89 | 26.00 | 125.03 |
| 57.00 | 56.89 | 27.00 | 126.01 |
| 58.00 | 57.88 | 28.00 | 126.99 |
| 59.00 | 58.87 | | |
| 60.00 | 59.86 | | |
| 61.00 | 60.86 | | |
| 62.00 | 61.85 | | |
| 63.00 | 62.85 | | |
| 64.00 | 63.85 | | |
| 65.00 | 64.84 | | |
| 66.00 | 65.84 | | |
| 67.00 | 66.83 | | |
| 68.00 | 67.82 | | |
| 69.00 | 68.82 | | |
| 70.00 | 69.81 | | |
| 71.00 | 70.80 | | |
| 72.00 | 71.80 | | |

BPB VERTICALITY ANALYSIS
INTERPRETATION NOTES

1. All plotted output is automatically scaled to obtain the best visual effect within the physical space available. The maximum scales being 50000:1 (metric) & 48000:1 (imperial), and the minimum 1:1.
2. The analysis is derived by integrating 10 cm./6" sampled data down the borehole. However the listing supplied will contain a maximum of 200 points in multiples of 1,2,5,10,20,25,50, or 100 metres/feet depending upon the total range of the analysis. However the analysis is calculated for the entire range of the borehole, and the final borehole position is included in the listing.
3. Computed verticality may only be fully derived in open sections of the borehole, away from the influence of any magnetic media (as the azimuth calculations are derived from three solid state magnetometers). So the analysis will generally begin at the end of the casing, and all borehole positional information will relate to this depth.
4. Up to ten cross-sections may be requested for any borehole to be displayed at any scale (the default scale is that of the cross-section for the entire hole).
5. Borehole positional error is derived assuming the following parameters:

| | TILT(degrees) | AZIMUTH(degrees) |
|---------------|---------------|------------------|
| Typical Error | +/- 0.33333 | +/- 10.0 |
| Maximum Error | +/- 0.5 | +/- 15.0 |

6. Error analysis may be calculated and plotted from the data listing as follows:
 - a) Plot the four coordinates from the error listing (based upon zero azimuth error) on a target plot; origin at the start of the analysis.
 - b) Describe arcs of +/- 10 degrees & +/- 15 degrees (centre at the origin) through the inner and outer points respectively.
 - c) Connect the respective arcs together with straight lines to give the typical & maximum borehole positional error.
7. Given below is a full description of the parameters displayed on the ensuing listing:

| | |
|---------------------|--|
| LOG DEPTH | the depth recorded on the field logs for the borehole |
| TRUE DEPTH | the true vertical depth corresponding to the above depth, corrected from the start of the analysis |
| HOLE TILT & AZIMUTH | the SAMPLED borehole orientation |
| AXIAL COORDINATES | the coordinates North & East from the target origin |
| POLAR COORDINATES | the polar, or radial, coordinates of the borehole |
| ERROR COORDINATES | the polar coordinates corresponding to the typical and maximum tilt error |

N.B. The reference point for ALL bearing angles on this listing is given at the top of each sheet

Verticality Data Listing

Date processed: 08-JAN-88

All co-ordinates with respect to True North

| DEPTHS | | BOREHOLE | | AXIAL CO-ORDS. | | POLAR | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | |
|--------|-------|----------|------|----------------|-------|-------|--------|--|-------------|-------------|-------------|-------------|-------------|-------------|------|
| log | true | tilt | AZI | North | East | brng | radius | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius | |
| 3.00 | 3.00 | 1.1 | 221. | -0.02 | -0.02 | 220. | 0.02 | 218. | 0.03 | 223. | 0.02 | 219. | 0.03 | 222. | 0.02 |
| 4.00 | 4.00 | 1.6 | 192. | -0.04 | -0.02 | 208. | 0.05 | 207. | 0.06 | 211. | 0.03 | 207. | 0.06 | 210. | 0.04 |
| 5.00 | 5.00 | 1.3 | 310. | -0.04 | -0.03 | 219. | 0.05 | 217. | 0.07 | 222. | 0.04 | 218. | 0.06 | 220. | 0.04 |
| 6.00 | 6.00 | 1.5 | 320. | -0.02 | -0.06 | 249. | 0.06 | 247. | 0.08 | 252. | 0.04 | 247. | 0.07 | 251. | 0.05 |
| 7.00 | 7.00 | 1.6 | 286. | 0.00 | -0.08 | 267. | 0.08 | 266. | 0.10 | 270. | 0.05 | 266. | 0.09 | 269. | 0.06 |
| 8.00 | 8.00 | 1.6 | 303. | 0.01 | -0.10 | 276. | 0.10 | 275. | 0.13 | 277. | 0.07 | 275. | 0.12 | 277. | 0.08 |
| 9.00 | 9.00 | 1.6 | 285. | 0.02 | -0.12 | 280. | 0.13 | 280. | 0.16 | 282. | 0.09 | 280. | 0.15 | 281. | 0.10 |
| 10.00 | 10.00 | 1.8 | 290. | 0.03 | -0.15 | 283. | 0.15 | 282. | 0.20 | 284. | 0.11 | 282. | 0.18 | 283. | 0.12 |
| 11.00 | 11.00 | 2.1 | 288. | 0.04 | -0.18 | 284. | 0.18 | 283. | 0.24 | 285. | 0.13 | 283. | 0.22 | 284. | 0.15 |
| 12.00 | 12.00 | 1.9 | 288. | 0.05 | -0.21 | 285. | 0.21 | 284. | 0.28 | 286. | 0.15 | 284. | 0.26 | 285. | 0.17 |
| 13.00 | 13.00 | 2.2 | 289. | 0.06 | -0.24 | 285. | 0.25 | 284. | 0.32 | 286. | 0.17 | 284. | 0.29 | 285. | 0.20 |
| 14.00 | 13.99 | 1.7 | 273. | 0.07 | -0.27 | 285. | 0.28 | 285. | 0.36 | 286. | 0.20 | 285. | 0.33 | 286. | 0.22 |
| 15.00 | 14.99 | 1.6 | 278. | 0.08 | -0.30 | 285. | 0.31 | 284. | 0.40 | 285. | 0.22 | 284. | 0.37 | 285. | 0.25 |
| 16.00 | 15.99 | 1.8 | 270. | 0.08 | -0.33 | 284. | 0.34 | 283. | 0.44 | 284. | 0.24 | 284. | 0.41 | 284. | 0.28 |
| 17.00 | 16.99 | 2.4 | 271. | 0.08 | -0.36 | 283. | 0.37 | 283. | 0.48 | 283. | 0.27 | 283. | 0.45 | 283. | 0.30 |
| 18.00 | 17.99 | 2.2 | 276. | 0.08 | -0.40 | 282. | 0.41 | 282. | 0.53 | 282. | 0.30 | 282. | 0.49 | 282. | 0.33 |
| 19.00 | 18.99 | 1.9 | 252. | 0.09 | -0.44 | 281. | 0.45 | 281. | 0.57 | 281. | 0.32 | 281. | 0.53 | 281. | 0.37 |
| 20.00 | 19.99 | 2.2 | 264. | 0.09 | -0.48 | 280. | 0.49 | 280. | 0.62 | 280. | 0.35 | 280. | 0.57 | 280. | 0.40 |
| 21.00 | 20.99 | 2.8 | 267. | 0.08 | -0.52 | 279. | 0.53 | 279. | 0.67 | 279. | 0.39 | 279. | 0.62 | 279. | 0.43 |
| 22.00 | 21.99 | 2.4 | 270. | 0.08 | -0.57 | 278. | 0.57 | 278. | 0.72 | 278. | 0.42 | 278. | 0.67 | 278. | 0.47 |
| 23.00 | 22.99 | 2.2 | 256. | 0.08 | -0.61 | 277. | 0.61 | 277. | 0.77 | 277. | 0.46 | 277. | 0.72 | 277. | 0.51 |
| 24.00 | 23.99 | 2.7 | 256. | 0.07 | -0.64 | 276. | 0.65 | 276. | 0.81 | 276. | 0.48 | 276. | 0.76 | 276. | 0.54 |
| 25.00 | 24.99 | 2.8 | 256. | 0.06 | -0.69 | 275. | 0.69 | 275. | 0.87 | 275. | 0.52 | 275. | 0.81 | 275. | 0.58 |
| 26.00 | 25.98 | 2.8 | 252. | 0.05 | -0.74 | 274. | 0.74 | 274. | 0.92 | 273. | 0.56 | 274. | 0.86 | 273. | 0.62 |
| 27.00 | 26.98 | 3.1 | 251. | 0.03 | -0.79 | 272. | 0.79 | 272. | 0.98 | 272. | 0.60 | 272. | 0.92 | 272. | 0.67 |
| 28.00 | 27.98 | 3.1 | 250. | 0.01 | -0.85 | 271. | 0.85 | 271. | 1.05 | 270. | 0.65 | 271. | 0.98 | 271. | 0.72 |
| 29.00 | 28.98 | 3.2 | 253. | 0.00 | -0.90 | 270. | 0.90 | 270. | 1.11 | 269. | 0.70 | 270. | 1.04 | 270. | 0.77 |
| 30.00 | 29.98 | 3.3 | 246. | -0.02 | -0.96 | 269. | 0.96 | 269. | 1.17 | 268. | 0.74 | 269. | 1.10 | 269. | 0.81 |
| 31.00 | 30.98 | 3.5 | 246. | -0.04 | -1.01 | 268. | 1.01 | 268. | 1.24 | 267. | 0.79 | 268. | 1.16 | 268. | 0.86 |
| 32.00 | 31.97 | 3.5 | 252. | -0.05 | -1.07 | 267. | 1.07 | 268. | 1.30 | 266. | 0.84 | 267. | 1.23 | 267. | 0.92 |
| 33.00 | 32.97 | 3.3 | 252. | -0.07 | -1.13 | 266. | 1.13 | 267. | 1.37 | 266. | 0.89 | 267. | 1.29 | 266. | 0.97 |
| 34.00 | 33.97 | 3.1 | 242. | -0.09 | -1.17 | 266. | 1.18 | 266. | 1.42 | 265. | 0.93 | 266. | 1.34 | 265. | 1.01 |
| 35.00 | 34.97 | 3.0 | 255. | -0.11 | -1.23 | 265. | 1.23 | 265. | 1.49 | 264. | 0.98 | 265. | 1.40 | 264. | 1.06 |
| 36.00 | 35.97 | 3.6 | 243. | -0.14 | -1.28 | 264. | 1.29 | 264. | 1.55 | 263. | 1.03 | 264. | 1.47 | 263. | 1.12 |
| 37.00 | 36.97 | 3.4 | 246. | -0.16 | -1.34 | 263. | 1.35 | 264. | 1.63 | 262. | 1.08 | 263. | 1.53 | 263. | 1.17 |
| 38.00 | 37.96 | 3.3 | 241. | -0.19 | -1.40 | 262. | 1.41 | 263. | 1.69 | 261. | 1.13 | 263. | 1.60 | 262. | 1.23 |
| 39.00 | 38.96 | 3.8 | 250. | -0.22 | -1.45 | 262. | 1.47 | 262. | 1.75 | 261. | 1.18 | 262. | 1.66 | 261. | 1.27 |
| 40.00 | 39.96 | 4.1 | 238. | -0.25 | -1.51 | 261. | 1.53 | 261. | 1.83 | 260. | 1.24 | 261. | 1.73 | 260. | 1.34 |
| 41.00 | 40.96 | 4.3 | 242. | -0.29 | -1.58 | 260. | 1.60 | 260. | 1.91 | 259. | 1.30 | 260. | 1.81 | 259. | 1.40 |
| 42.00 | 41.95 | 5.6 | 241. | -0.33 | -1.65 | 259. | 1.69 | 259. | 2.00 | 258. | 1.37 | 259. | 1.89 | 258. | 1.48 |
| 43.00 | 42.95 | 4.8 | 241. | -0.37 | -1.73 | 258. | 1.77 | 259. | 2.09 | 257. | 1.45 | 258. | 1.98 | 257. | 1.56 |
| 44.00 | 43.95 | 5.2 | 241. | -0.41 | -1.81 | 257. | 1.86 | 258. | 2.18 | 256. | 1.53 | 258. | 2.07 | 257. | 1.64 |
| 45.00 | 44.94 | 4.8 | 242. | -0.45 | -1.89 | 257. | 1.94 | 257. | 2.28 | 255. | 1.60 | 257. | 2.16 | 256. | 1.72 |
| 46.00 | 45.94 | 5.5 | 241. | -0.50 | -1.96 | 256. | 2.02 | 257. | 2.37 | 255. | 1.68 | 256. | 2.25 | 255. | 1.80 |
| 47.00 | 46.93 | 5.3 | 243. | -0.54 | -2.04 | 255. | 2.11 | 256. | 2.46 | 254. | 1.76 | 256. | 2.35 | 254. | 1.88 |
| 48.00 | 47.93 | 5.4 | 240. | -0.59 | -2.13 | 254. | 2.21 | 255. | 2.57 | 253. | 1.85 | 255. | 2.45 | 254. | 1.97 |
| 49.00 | 48.92 | 4.9 | 241. | -0.64 | -2.21 | 254. | 2.30 | 255. | 2.66 | 253. | 1.93 | 254. | 2.54 | 253. | 2.05 |
| 50.00 | 49.92 | 5.1 | 233. | -0.69 | -2.28 | 253. | 2.38 | 254. | 2.76 | 252. | 2.01 | 254. | 2.63 | 253. | 2.13 |
| 51.00 | 50.92 | 5.8 | 241. | -0.74 | -2.37 | 253. | 2.48 | 253. | 2.86 | 252. | 2.10 | 253. | 2.73 | 252. | 2.22 |
| 52.00 | 51.91 | 5.6 | 240. | -0.79 | -2.45 | 252. | 2.57 | 253. | 2.96 | 251. | 2.18 | 253. | 2.83 | 251. | 2.31 |

Verticality Data Listing

All co-ordinates with respect to True North

| DEPTHS log | true | BOREHOLE tilt | AZI | AXIAL CO-ORDS. | | POLAR brng | radius | POLAR ERROR | | CO-ORDINATES (maximum & typical) | | | | | |
|---------------|--------|------------------|------|----------------|-------|---------------|--------|-------------|--------|----------------------------------|--------|------|--------|------|--------|
| | | | | North | East | | | brng | radius | brng | radius | brng | radius | brng | radius |
| 53.00 | 52.91 | 5.4 | 233. | -0.84 | -2.53 | 252. | 2.66 | 252. | 3.06 | 250. | 2.26 | 252. | 2.93 | 251. | 2.40 |
| 54.00 | 53.90 | 5.4 | 232. | -0.89 | -2.61 | 251. | 2.75 | 252. | 3.16 | 250. | 2.35 | 252. | 3.03 | 250. | 2.48 |
| 55.00 | 54.90 | 5.4 | 238. | -0.94 | -2.69 | 251. | 2.85 | 251. | 3.26 | 250. | 2.43 | 251. | 3.12 | 250. | 2.57 |
| 56.00 | 55.89 | 5.8 | 236. | -1.00 | -2.77 | 250. | 2.94 | 251. | 3.37 | 249. | 2.52 | 251. | 3.23 | 249. | 2.66 |
| 57.00 | 56.89 | 6.0 | 236. | -1.06 | -2.86 | 250. | 3.05 | 251. | 3.48 | 249. | 2.62 | 250. | 3.33 | 249. | 2.76 |
| 58.00 | 57.88 | 5.8 | 237. | -1.11 | -2.94 | 249. | 3.15 | 250. | 3.59 | 248. | 2.71 | 250. | 3.44 | 249. | 2.86 |
| 59.00 | 58.88 | 5.6 | 240. | -1.17 | -3.03 | 249. | 3.25 | 250. | 3.70 | 248. | 2.80 | 249. | 3.55 | 248. | 2.95 |
| 60.00 | 59.87 | 6.0 | 233. | -1.23 | -3.11 | 248. | 3.35 | 249. | 3.80 | 247. | 2.89 | 249. | 3.65 | 248. | 3.04 |
| 61.00 | 60.86 | 6.2 | 235. | -1.29 | -3.20 | 249. | 3.45 | 249. | 3.91 | 247. | 2.99 | 249. | 3.76 | 247. | 3.14 |
| 62.00 | 61.86 | 6.2 | 237. | -1.35 | -3.29 | 248. | 3.55 | 248. | 4.03 | 247. | 3.08 | 248. | 3.87 | 247. | 3.24 |
| 63.00 | 62.85 | 6.2 | 235. | -1.41 | -3.38 | 247. | 3.66 | 248. | 4.14 | 246. | 3.18 | 248. | 3.98 | 247. | 3.34 |
| 64.00 | 63.85 | 6.0 | 233. | -1.47 | -3.46 | 247. | 3.76 | 248. | 4.25 | 246. | 3.27 | 248. | 4.09 | 246. | 3.44 |
| 65.00 | 64.84 | 5.9 | 236. | -1.53 | -3.55 | 247. | 3.86 | 247. | 4.36 | 246. | 3.37 | 247. | 4.20 | 246. | 3.53 |
| 66.00 | 65.84 | 6.2 | 228. | -1.59 | -3.64 | 246. | 3.97 | 247. | 4.47 | 245. | 3.46 | 247. | 4.30 | 246. | 3.63 |
| 67.00 | 66.83 | 6.4 | 237. | -1.65 | -3.72 | 246. | 4.07 | 247. | 4.59 | 245. | 3.56 | 247. | 4.42 | 245. | 3.73 |
| 68.00 | 67.82 | 7.0 | 234. | -1.72 | -3.82 | 246. | 4.19 | 246. | 4.71 | 245. | 3.67 | 246. | 4.53 | 245. | 3.84 |
| 69.00 | 68.82 | 6.9 | 238. | -1.79 | -3.91 | 245. | 4.30 | 246. | 4.83 | 245. | 3.77 | 246. | 4.66 | 245. | 3.95 |
| 70.00 | 69.81 | 7.0 | 237. | -1.86 | -4.01 | 245. | 4.42 | 246. | 4.95 | 244. | 3.88 | 246. | 4.77 | 245. | 4.06 |
| 71.00 | 70.80 | 6.8 | 237. | -1.93 | -4.10 | 245. | 4.53 | 246. | 5.08 | 244. | 3.99 | 245. | 4.90 | 244. | 4.17 |
| 72.00 | 71.80 | 6.3 | 233. | -1.99 | -4.19 | 245. | 4.64 | 245. | 5.20 | 244. | 4.09 | 245. | 5.01 | 244. | 4.27 |
| 73.00 | 72.79 | 7.1 | 229. | -2.06 | -4.28 | 244. | 4.76 | 245. | 5.32 | 243. | 4.19 | 245. | 5.13 | 244. | 4.38 |
| 74.00 | 73.78 | 7.0 | 233. | -2.14 | -4.38 | 244. | 4.88 | 244. | 5.45 | 243. | 4.31 | 244. | 5.26 | 243. | 4.50 |
| 75.00 | 74.77 | 7.1 | 235. | -2.21 | -4.48 | 244. | 5.00 | 244. | 5.58 | 243. | 4.42 | 244. | 5.38 | 243. | 4.61 |
| 76.00 | 75.77 | 7.2 | 234. | -2.28 | -4.58 | 244. | 5.12 | 244. | 5.71 | 243. | 4.54 | 244. | 5.51 | 243. | 4.73 |
| 77.00 | 76.76 | 7.3 | 232. | -2.36 | -4.68 | 243. | 5.25 | 244. | 5.84 | 242. | 4.65 | 244. | 5.64 | 243. | 4.85 |
| 78.00 | 77.75 | 7.4 | 235. | -2.44 | -4.79 | 243. | 5.37 | 244. | 5.98 | 242. | 4.77 | 243. | 5.78 | 242. | 4.97 |
| 79.00 | 78.74 | 7.4 | 231. | -2.52 | -4.89 | 243. | 5.50 | 243. | 6.11 | 242. | 4.89 | 243. | 5.91 | 242. | 5.09 |
| 80.00 | 79.73 | 7.4 | 234. | -2.60 | -5.00 | 243. | 5.63 | 243. | 6.25 | 242. | 5.01 | 243. | 6.04 | 242. | 5.22 |
| 81.00 | 80.72 | 7.6 | 228. | -2.69 | -5.10 | 242. | 5.76 | 243. | 6.39 | 241. | 5.13 | 243. | 6.18 | 242. | 5.34 |
| 82.00 | 81.71 | 7.9 | 227. | -2.78 | -5.20 | 242. | 5.90 | 243. | 6.53 | 241. | 5.26 | 242. | 6.32 | 241. | 5.47 |
| 83.00 | 82.70 | 7.8 | 227. | -2.86 | -5.31 | 242. | 6.03 | 242. | 6.68 | 241. | 5.39 | 242. | 6.46 | 241. | 5.60 |
| 84.00 | 83.70 | 7.6 | 230. | -2.95 | -5.41 | 241. | 6.17 | 242. | 6.82 | 241. | 5.52 | 242. | 6.60 | 241. | 5.73 |
| 85.00 | 84.69 | 7.4 | 227. | -3.04 | -5.52 | 241. | 6.30 | 242. | 6.96 | 240. | 5.64 | 242. | 6.74 | 241. | 5.86 |
| 86.00 | 85.68 | 8.6 | 228. | -3.13 | -5.62 | 241. | 6.44 | 242. | 7.10 | 240. | 5.77 | 241. | 6.88 | 240. | 5.99 |
| 87.00 | 86.67 | 8.4 | 230. | -3.23 | -5.73 | 241. | 6.58 | 241. | 7.25 | 240. | 5.90 | 241. | 7.03 | 240. | 6.13 |
| 88.00 | 87.65 | 8.6 | 227. | -3.32 | -5.84 | 240. | 6.72 | 241. | 7.41 | 240. | 6.04 | 241. | 7.18 | 240. | 6.27 |
| 89.00 | 88.64 | 8.4 | 235. | -3.42 | -5.96 | 240. | 6.87 | 241. | 7.56 | 239. | 6.18 | 241. | 7.33 | 240. | 6.41 |
| 90.00 | 89.63 | 8.4 | 228. | -3.52 | -6.07 | 240. | 7.01 | 241. | 7.71 | 239. | 6.31 | 240. | 7.48 | 239. | 6.55 |
| 91.00 | 90.62 | 9.1 | 227. | -3.62 | -6.18 | 240. | 7.16 | 240. | 7.87 | 239. | 6.46 | 240. | 7.64 | 239. | 6.69 |
| 92.00 | 91.61 | 8.6 | 227. | -3.72 | -6.30 | 239. | 7.31 | 240. | 8.03 | 239. | 6.60 | 240. | 7.79 | 239. | 6.84 |
| 93.00 | 92.60 | 9.3 | 228. | -3.82 | -6.42 | 239. | 7.47 | 240. | 8.19 | 238. | 6.75 | 240. | 7.95 | 239. | 6.99 |
| 94.00 | 93.58 | 9.2 | 228. | -3.93 | -6.53 | 239. | 7.62 | 240. | 8.36 | 238. | 6.89 | 239. | 8.11 | 238. | 7.14 |
| 95.00 | 94.57 | 9.4 | 235. | -4.04 | -6.65 | 239. | 7.78 | 239. | 8.52 | 238. | 7.04 | 239. | 8.27 | 238. | 7.29 |
| 96.00 | 95.56 | 9.2 | 224. | -4.15 | -6.77 | 238. | 7.94 | 239. | 8.69 | 238. | 7.19 | 239. | 8.44 | 238. | 7.44 |
| 97.00 | 96.54 | 9.3 | 222. | -4.27 | -6.88 | 238. | 8.10 | 239. | 8.85 | 237. | 7.34 | 239. | 8.60 | 238. | 7.59 |
| 98.00 | 97.53 | 9.8 | 227. | -4.38 | -7.00 | 238. | 8.26 | 239. | 9.02 | 237. | 7.49 | 238. | 8.77 | 238. | 7.75 |
| 99.00 | 98.52 | 9.5 | 225. | -4.49 | -7.12 | 238. | 8.42 | 238. | 9.19 | 237. | 7.65 | 238. | 8.94 | 237. | 7.91 |
| 100.00 | 99.50 | 9.7 | 228. | -4.61 | -7.24 | 237. | 8.58 | 238. | 9.36 | 237. | 7.80 | 238. | 9.10 | 237. | 8.06 |
| 101.00 | 100.49 | 9.7 | 224. | -4.73 | -7.36 | 237. | 8.74 | 238. | 9.53 | 237. | 7.96 | 238. | 9.27 | 237. | 8.22 |
| 102.00 | 101.47 | 10.1 | 227. | -4.84 | -7.48 | 237. | 8.91 | 238. | 9.71 | 236. | 8.11 | 237. | 9.44 | 237. | 8.38 |

Verticality Data Listing

All co-ordinates with respect to True North

| DEPTHS | | BOREHOLE tilt | AZI | AXIAL CO-ORDS. | | POLAR | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | |
|--------|--------|------------------|------|----------------|--------|-------|--------|--|--------|------|--------|------|--------|------|--------|
| log | true | | | North | East | brng | radius | brng | radius | brng | radius | brng | radius | brng | radius |
| 103.00 | 102.46 | 9.6 | 226. | -4.96 | -7.60 | 237. | 9.07 | 237. | 9.88 | 236. | 8.27 | 237. | 9.61 | 236. | 8.54 |
| 104.00 | 103.45 | 10.0 | 224. | -5.09 | -7.71 | 237. | 9.24 | 237. | 10.05 | 236. | 8.43 | 237. | 9.78 | 236. | 8.70 |
| 105.00 | 104.43 | 9.9 | 229. | -5.21 | -7.83 | 236. | 9.41 | 237. | 10.23 | 236. | 8.59 | 237. | 9.96 | 236. | 8.86 |
| 106.00 | 105.41 | 10.2 | 227. | -5.34 | -7.95 | 236. | 9.58 | 237. | 10.41 | 235. | 8.75 | 237. | 10.13 | 236. | 9.03 |
| 107.00 | 106.40 | 10.2 | 223. | -5.47 | -8.08 | 236. | 9.76 | 236. | 10.59 | 235. | 8.92 | 236. | 10.31 | 235. | 9.20 |
| 108.00 | 107.38 | 10.5 | 222. | -5.61 | -8.20 | 236. | 9.93 | 236. | 10.77 | 235. | 9.09 | 236. | 10.49 | 235. | 9.37 |
| 109.00 | 108.37 | 10.0 | 221. | -5.74 | -8.32 | 235. | 10.10 | 236. | 10.95 | 235. | 9.25 | 236. | 10.67 | 235. | 9.53 |
| 110.00 | 109.35 | 10.2 | 223. | -5.87 | -8.44 | 235. | 10.28 | 236. | 11.14 | 234. | 9.42 | 236. | 10.85 | 235. | 9.70 |
| 111.00 | 110.33 | 10.6 | 219. | -6.01 | -8.56 | 235. | 10.45 | 236. | 11.32 | 234. | 9.59 | 235. | 11.03 | 234. | 9.88 |
| 112.00 | 111.32 | 10.9 | 222. | -6.15 | -8.68 | 235. | 10.64 | 235. | 11.52 | 234. | 9.77 | 235. | 11.22 | 234. | 10.06 |
| 113.00 | 112.30 | 10.9 | 221. | -6.29 | -8.81 | 234. | 10.83 | 235. | 11.71 | 234. | 9.95 | 235. | 11.42 | 234. | 10.24 |
| 114.00 | 113.28 | 11.6 | 222. | -6.44 | -8.94 | 234. | 11.02 | 235. | 11.91 | 234. | 10.13 | 235. | 11.61 | 234. | 10.43 |
| 115.00 | 114.26 | 11.3 | 220. | -6.59 | -9.07 | 234. | 11.21 | 235. | 12.11 | 233. | 10.31 | 234. | 11.81 | 234. | 10.61 |
| 116.00 | 115.24 | 11.2 | 221. | -6.75 | -9.20 | 234. | 11.41 | 234. | 12.31 | 233. | 10.50 | 234. | 12.01 | 233. | 10.80 |
| 117.00 | 116.22 | 11.3 | 220. | -6.90 | -9.33 | 234. | 11.60 | 234. | 12.52 | 233. | 10.69 | 234. | 12.21 | 233. | 10.99 |
| 118.00 | 117.20 | 11.3 | 222. | -7.05 | -9.45 | 233. | 11.79 | 234. | 12.72 | 233. | 10.87 | 234. | 12.41 | 233. | 11.18 |
| 119.00 | 118.18 | 11.5 | 218. | -7.20 | -9.58 | 233. | 11.98 | 234. | 12.91 | 232. | 11.05 | 233. | 12.60 | 233. | 11.36 |
| 120.00 | 119.16 | 11.6 | 215. | -7.36 | -9.70 | 233. | 12.17 | 233. | 13.11 | 232. | 11.24 | 233. | 12.80 | 232. | 11.55 |
| 121.00 | 120.14 | 12.2 | 219. | -7.52 | -9.83 | 233. | 12.37 | 233. | 13.32 | 232. | 11.43 | 233. | 13.00 | 232. | 11.74 |
| 122.00 | 121.12 | 11.8 | 220. | -7.67 | -9.96 | 232. | 12.57 | 233. | 13.52 | 232. | 11.62 | 233. | 13.21 | 232. | 11.94 |
| 123.00 | 122.10 | 11.4 | 215. | -7.83 | -10.08 | 232. | 12.76 | 233. | 13.73 | 232. | 11.80 | 233. | 13.41 | 232. | 12.12 |
| 124.00 | 123.07 | 11.8 | 222. | -7.99 | -10.21 | 232. | 12.96 | 233. | 13.93 | 231. | 11.99 | 232. | 13.61 | 232. | 12.31 |
| 125.00 | 124.05 | 11.4 | 220. | -8.14 | -10.34 | 232. | 13.16 | 232. | 14.14 | 231. | 12.18 | 232. | 13.81 | 231. | 12.51 |
| 126.00 | 125.03 | 11.9 | 219. | -8.30 | -10.47 | 232. | 13.36 | 232. | 14.34 | 231. | 12.37 | 232. | 14.02 | 231. | 12.70 |
| 127.00 | 126.01 | 12.2 | 220. | -8.46 | -10.60 | 231. | 13.56 | 232. | 14.55 | 231. | 12.57 | 232. | 14.22 | 231. | 12.90 |
| 127.90 | 126.89 | 12.1 | 220. | -8.61 | -10.71 | 231. | 13.74 | 232. | 14.74 | 231. | 12.74 | 232. | 14.41 | 231. | 13.08 |

QHR87039
TRANSFER

LOG DEPTH 0090.00
TRUE DEPTH 0089.65
TILT 8.87 DG
BEARING 65.85 DG
NORTHING +001.53
EASTING +006.21

LOG DEPTH 0080.00
TRUE DEPTH 0079.77
TILT 7.70 DG
BEARING 69.20 DG
NORTHING +000.90
EASTING +004.80

LOG DEPTH 0070.00
TRUE DEPTH 0069.86
TILT 6.20 DG
BEARING 72.82 DG
NORTHING +000.42
EASTING +003.55

LOG DEPTH 0060.00
TRUE DEPTH 0059.92
TILT 5.09 DG
BEARING 76.95 DG
NORTHING +000.10
EASTING +002.52

LOG DEPTH 0050.00
TRUE DEPTH 0049.96
TILT 4.34 DG
BEARING 85.99 DG
NORTHING -000.09
EASTING +001.65

LOG DEPTH 0040.00
TRUE DEPTH 0039.99
TILT 2.85 DG
BEARING 94.08 DG
NORTHING -000.14
EASTING +000.90

LOG DEPTH 0030.00
TRUE DEPTH 0030.00
TILT 1.52 DG
BEARING 103.66 DG
NORTHING -000.11
EASTING +000.40

LOG DEPTH 0020.00
TRUE DEPTH 0020.00
TILT .75 DG
BEARING 122.43 DG
NORTHING -000.04
EASTING +000.14

LOG DEPTH 0010.00
TRUE DEPTH 0010.00
TILT .45 DG
BEARING 56.19 DG
NORTHING +000.02
EASTING +000.03

LOG DEPTH 0005.00
TRUE DEPTH 0005.00
TILT .53 DG
BEARING 339.93 DG
NORTHING +000.00
EASTING +000.00

739

DEPTH = 0010.00
TILT = 137.37 DG
BEARING = 132.45 DG

DEPTH = 0020.00
TILT = 1.13 DG
BEARING = 112.41 DG

DEPTH = 0030.00
TILT = 1.92 DG
BEARING = 94.91 DG

DEPTH = 0040.00
TILT = 3.79 DG
BEARING = 93.25 DG

DEPTH = 0050.00
TILT = 4.90 DG
BEARING = 78.74 DG

DEPTH = 0060.00
TILT = 5.28 DG
BEARING = 75.16 DG

DEPTH = 0070.00
TILT = 7.11 DG
BEARING = 70.48 DG

DEPTH = 0080.00
TILT = 8.28 DG
BEARING = 67.92 DG

DEPTH = 0090.00
TILT = 9.46 DG
BEARING = 63.78 DG

DATE = 870815
JOB NUMBER = 0039
LOG LABEL = 026.1
MAG 1 MAX = 229
MAG 1 MIN = 129
MAG 2 MAX = 229
MAG 2 MIN = 130
MAG 3 MAX = 205
MAG 3 MIN = 155
L. CELL 1 TILT 1 = 20
L. CELL 1 CPS 1 = 233
L. CELL 1 TILT 2 = -20
L. CELL 1 CPS 2 = 126
L. CELL 2 TILT 1 = 20
L. CELL 2 CPS 1 = 232
L. CELL 2 TILT 2 = -20
L. CELL 2 CPS 2 = 126

MAG 1 CENTRE = 179
MAG 2 CENTRE = 179
MAG 3 CENTRE = 180
L. CELL 1 CENTRE = 180
L. CELL 2 CENTRE = 179

MAG DECL = 024
STOP DEPTH = 0005

QHR87039
TRANSFER



COAL LITHOLOGY LOG

SONDE TYPE
COAL COMBINATION SONDE

LOG SUITE
GAMMA RAY
L.S. DENSITY
CALIPER

BOREHOLE DATA
PERMANENT DATUM: GEOUND LEVEL
ELEVATION OF R.O.: 998
DRILLER: C.L.
DEPTH REACHED: 99.60m
CASING SPACE: 1.60m
BIT SIZES: 1 8.1" TO 1.60m, 2 5.1" TO 1.00m, 3 TO 4 TO 1.00m, 4 TO 5.1" TO 1.00m
CASING SIZES: 1 6.1" TO 6.0" 2 TO 6.0" TO 6.0"

AREA: TRANSFER
COUNTRY: CANADA
DATE LOGGED: 87 08 15
DEPTH SCALE: 1:200
1 OF 4 LOGS

FLUID DATA
NATURE: WATER
SG: 1.0187cc
LEVEL: 17.40m
VISCOSITY: N/A
Rim at Press Temp: N/A
BHT: N/A

OPERATION DATA
FIRST READING: 97.00m
LAST READING: 97.00m
INTERVAL LOGGED: 97m
UNIT-TRUCK No: 46/VZ17
ENGINEER: M. COX
WITNESSES:

739

EQUIPMENT AND RECORDING DATA

| COAL COMBINATION SONDE | | | | | | | | | | | | | | |
|------------------------|-----------|--------|------------|-----------|--------------|------------------|-------|---------|-----------|--------|--------------|----------|----|---|
| LOG | EQUIPMENT | | | TAPING | | | PANEL | | CAL COEFF | DEPTHS | SEAM LOG RUN | | | |
| | SONDE | SOURCE | CALIBRATOR | LOG TAPED | RECORD SPEED | DIRECT or REPLAY | SPEED | TC SECS | NORM | FROM | TO | INTERVAL | | |
| GAMMA RAY | 153 | | 367 | Y | 9 | D | 9 | 1 | - | 1.44 | 97 | 0 | 97 | Y |
| L.S. DENSITY | | 5852 | 6041 | Y | 9 | D | 9 | 3 | 7.38 | - | 98 | 1 | 97 | Y |
| CALIPER | | | | Y | 9 | D | 9 | 3 | - | 1.0 | 98 | 1 | 97 | Y |

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

| FROM | TO | INTERVAL | INTERVAL TOTAL |
|------|-----|----------|----------------|
| 90m | 71m | 21m | |
| 78m | 52m | 26m | |
| 12m | 19m | 7m | 40m |

| ADDITIONAL SONDES RUN | | | | REFER TO ADDITIONAL HEADINGS | REMARKS |
|-----------------------|------|-------------------|------------------|------------------------------|---------|
| SONDE | LOG | GENERAL SCALE LOG | DETAIL SCALE LOG | | |
| 215 | N-N | 1:200 | | | |
| 231 | VERT | | | | |

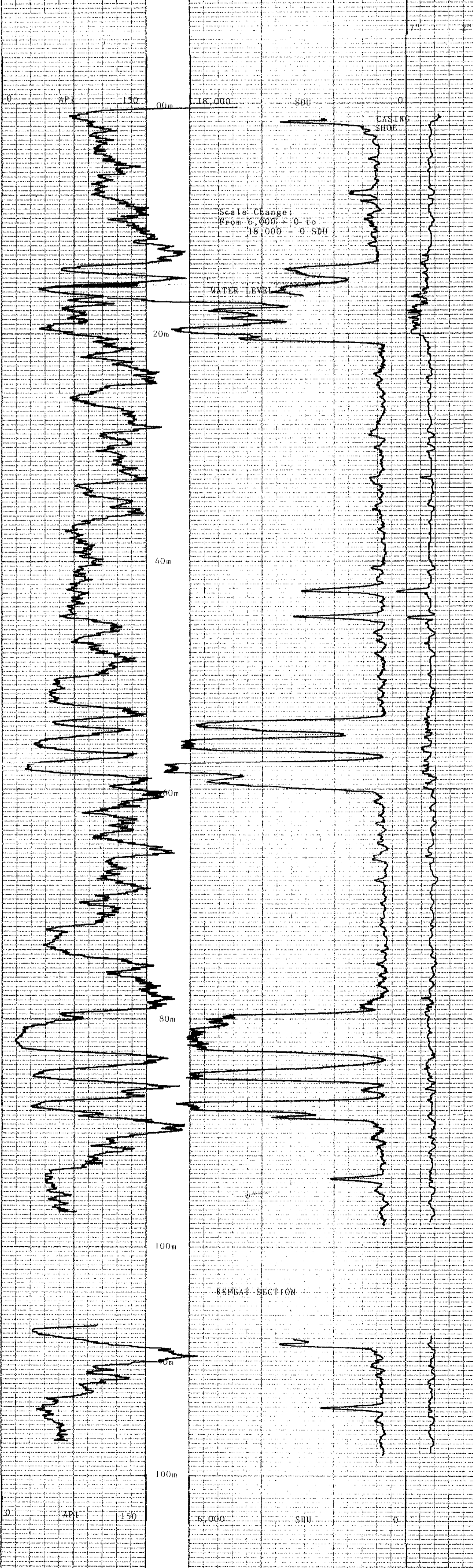
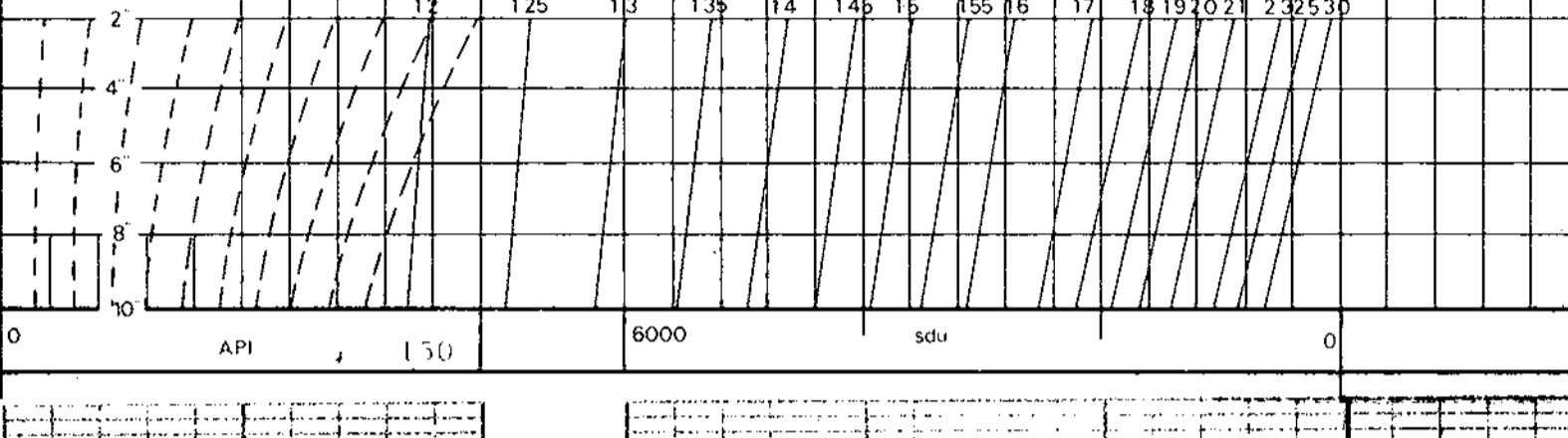
BPB COAL LITHOLOGY LOG

CALIBRATION DATA

| JIG No | VALUE @ 5" DIAM | JIG CAL DATE | JIG VALUE | SOU @ | g/cm ³ | ins | cps |
|--------|-----------------|--------------|-----------|-------|-------------------|-----|-----|
| | | | | | | | |

| GAMMA RAY | DEPTH | BULK DENSITY g/cm ³ | CALIPER INCHES |
|-----------|-------|--------------------------------|----------------|
|-----------|-------|--------------------------------|----------------|

HOLE SIZE CORRECTION DATA



| GAMMA RAY | DEPTH | BULK DENSITY g/cm ³ | CALIPER INCHES |
|-----------|-------|--------------------------------|----------------|
|-----------|-------|--------------------------------|----------------|

BOREHOLE: OHR 87-039
CLIENT: QUINTETTE
AREA: TRANSFER
COUNTRY: CANADA

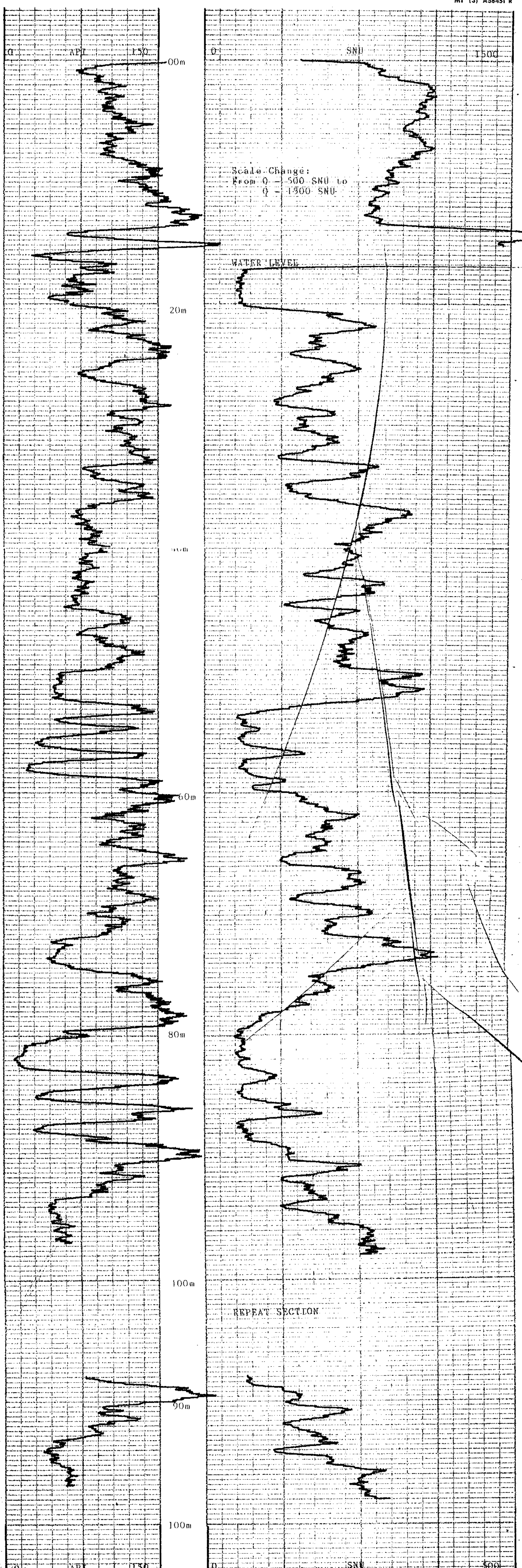
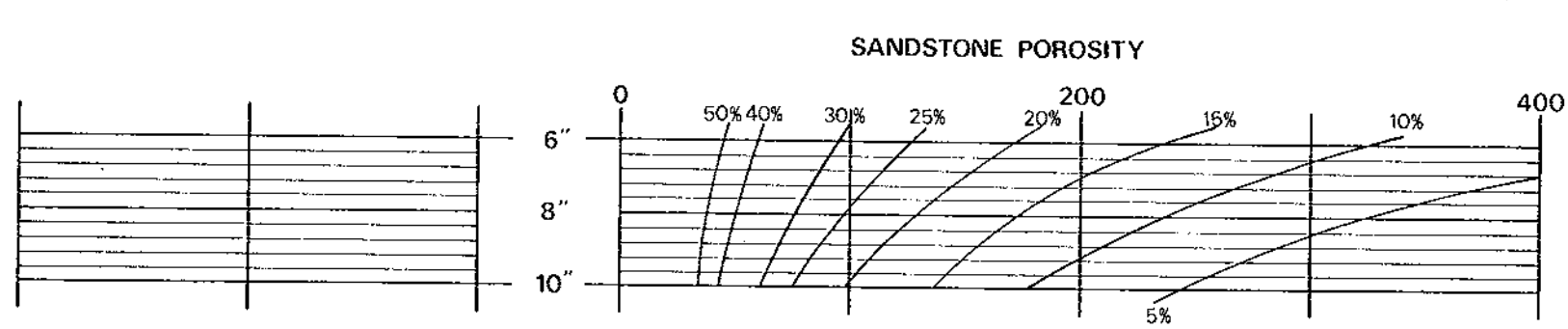


COAL LITHOLOGY LOG

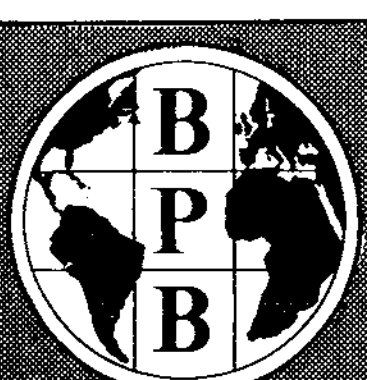


| | | | | | | | |
|------------------------------|------------------------|----------------------|-------|---|---|------|------|
| NEUTRON-NEUTRON GAMMA RAY | | | | | | | |
| BOREHOLE | QHR 87-039 | | | | | | |
| CLIENT | QUINLETTE | | | | | | |
| AREA | TRANSFER | | | | | | |
| COUNTRY | CANADA | | | | | | |
| DATE LOGGED | 87 08 15 | | | | | | |
| DEPTH SCALE 0 - 200 | | | | | | | |
| 2 OF 4 LOGS | | | | | | | |
| BOREHOLE DATA | REFER TO LITHOLOGY LOG | | | | | | |
| OPERATION DATA | REFER TO LITHOLOGY LOG | | | | | | |
| EQUIPMENT AND RECORDING DATA | | | | | | | |
| LOG | TAPING | PANEL | COEFF | | | | |
| N-N | Y | 9 | D | 9 | 1 | 11.6 | - |
| GAMMA | Y | 9 | R | 9 | 1 | - | 1.42 |
| REMARKS | | SONDE 215 SERIE 4511 | | | | | |
| 739 | | | | | | | |

| | | |
|-----------|-------|-----------------|
| GAMMA RAY | DEPTH | NEUTRON-NEUTRON |
| 0 150 | | 0 500 |



| | | |
|-----------|-------|-----------------|
| GAMMA RAY | DEPTH | NEUTRON-NEUTRON |
| 0 150 | | 0 500 |



| | | | |
|----------|------------|---------|----------|
| BOREHOLE | QHR 87-039 | AREA | TRANSFER |
| CLIENT | QUINLETTE | COUNTRY | CANADA |

DETAIL LOGS

739

DEPTH SCALE

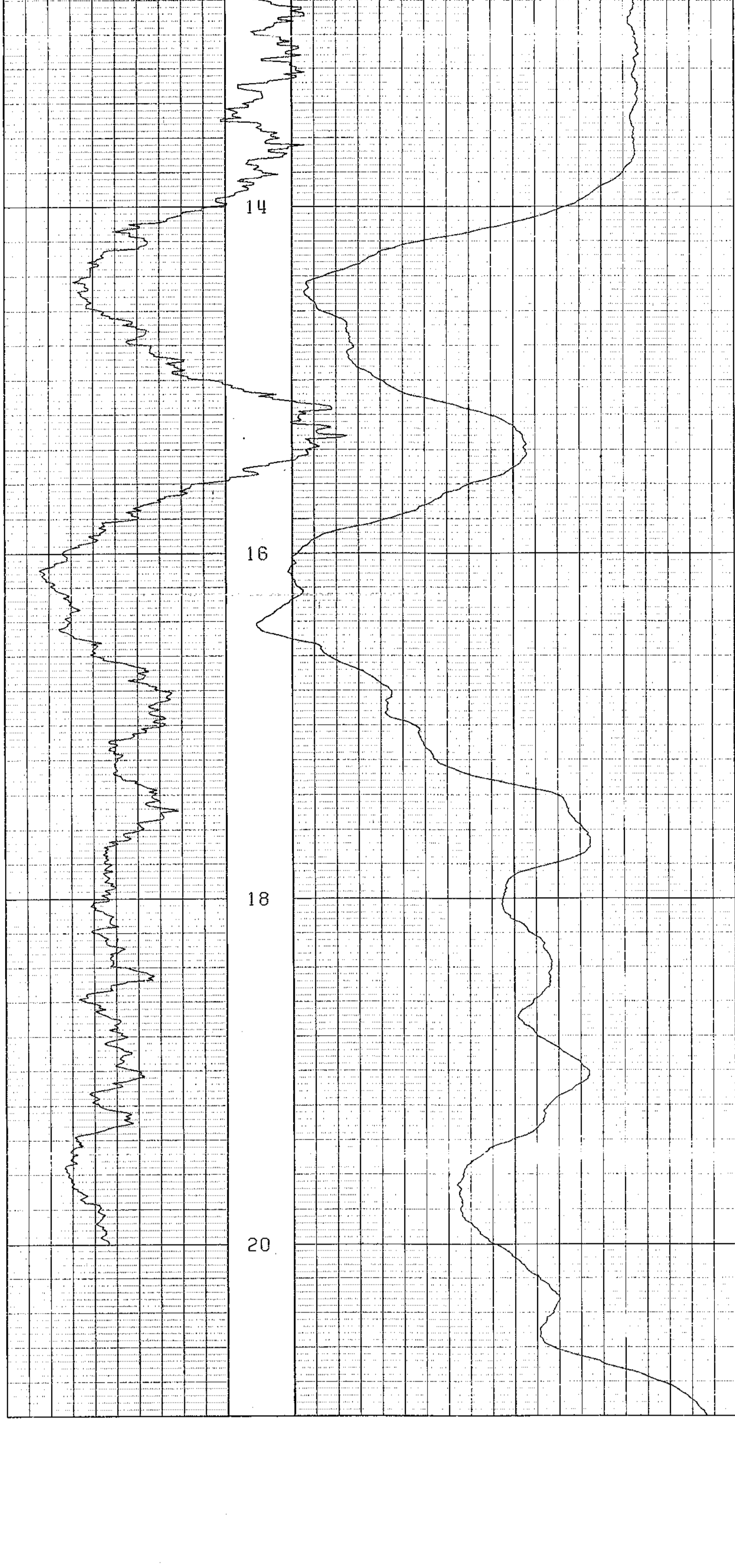
10000

L.S.D (CCS)

0

CLIENT: QUINTETTE COAL
 WELL NO: QHR 87039
 AREA: TRANSFER PIT
 CASING: 1.6M
 WATER: 17.0M
 DEPTH: 12.00-21.00
 DATE PROCESSED: 09-SEP-87

GAMMA RAY



DETAIL LOGS

DEPTH SCALE

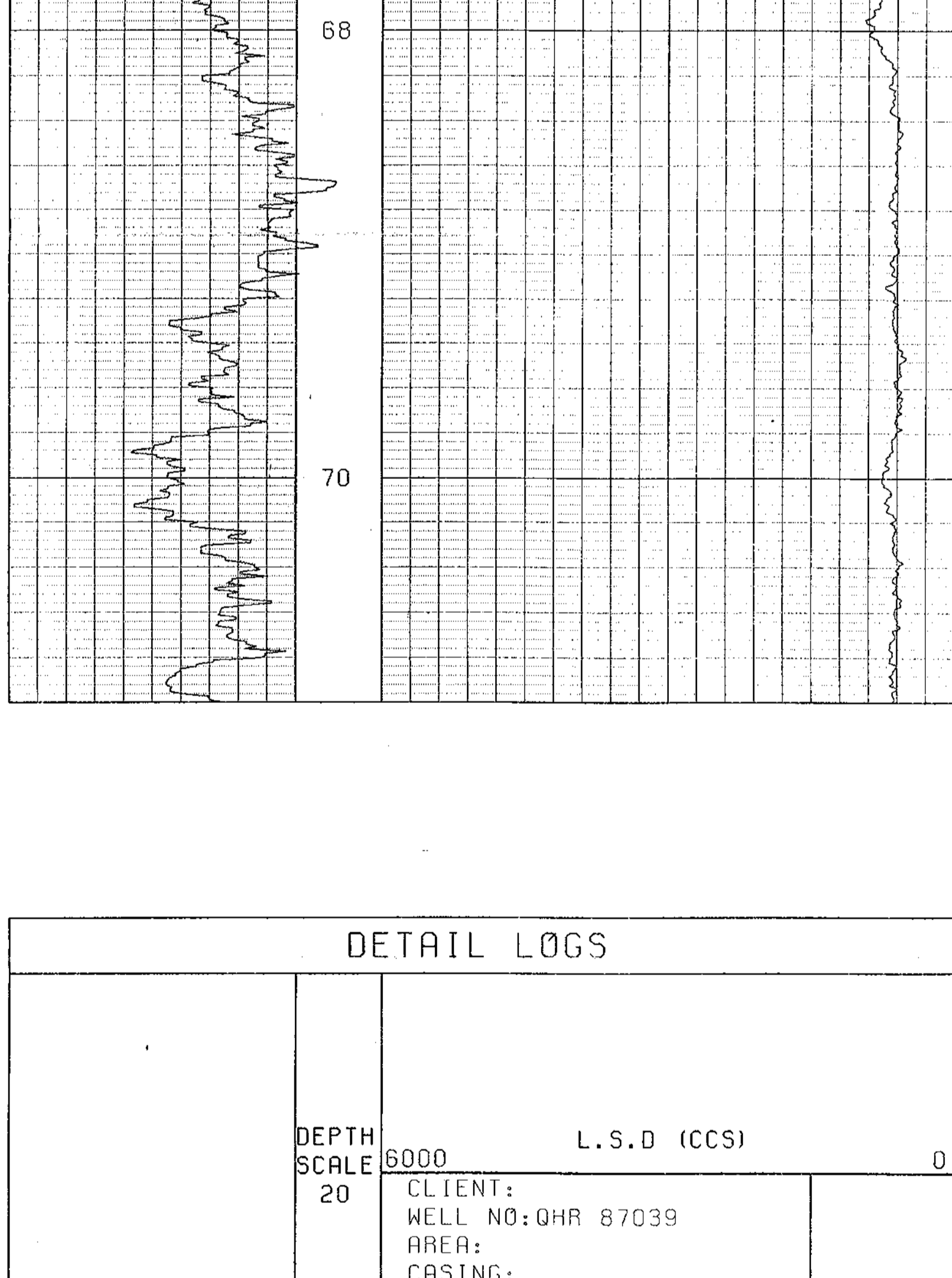
6000

L.S.D (CCS)

0

CLIENT: QHR 87039
 WELL NO: QHR 87039
 AREA: TRANSFER PIT
 CASING: 1.6M
 WATER: 17.0M
 DEPTH: 52.00-71.00
 DATE PROCESSED: 09-SEP-87

GAMMA RAY



DETAIL LOGS

DEPTH SCALE

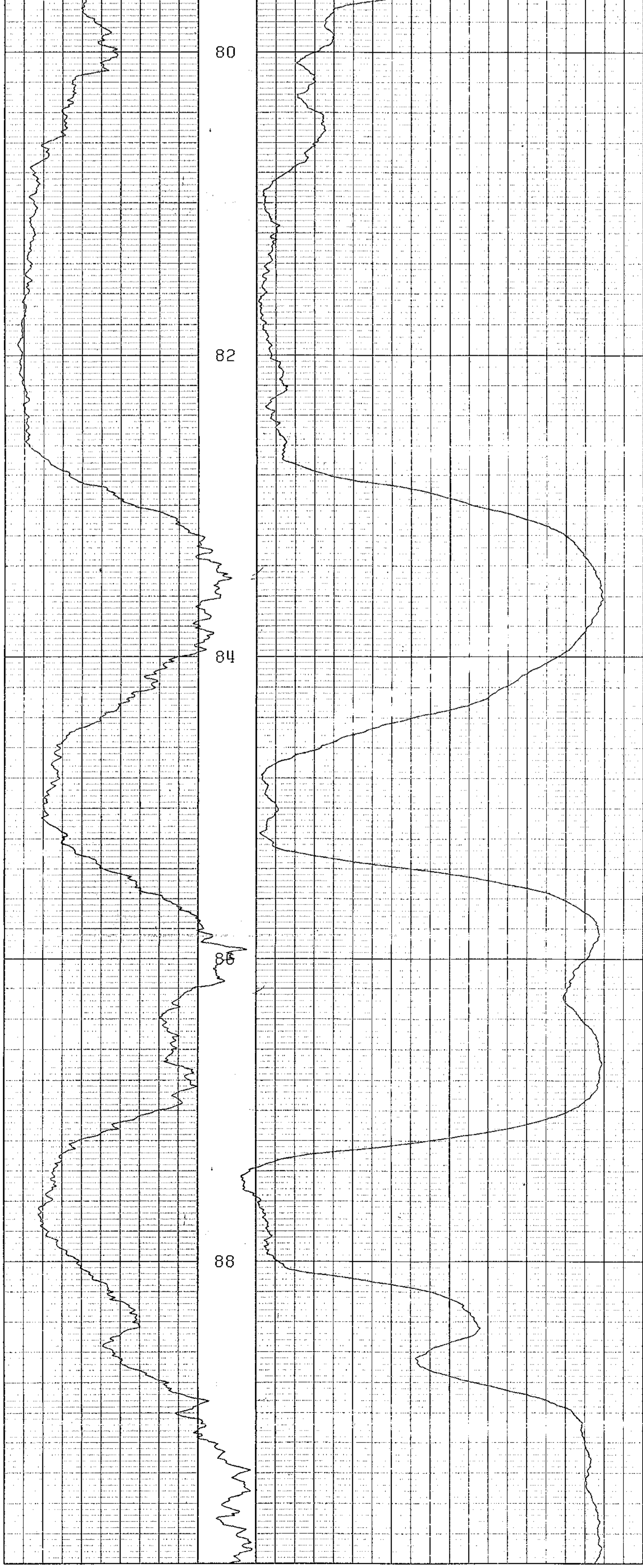
6000

L.S.D (CCS)

0

CLIENT: QHR 87039
 WELL NO: QHR 87039
 AREA: TRANSFER PIT
 CASING: 1.6M
 WATER: 17.0M
 DEPTH: 78.00-90.00
 DATE PROCESSED: 09-SEP-87

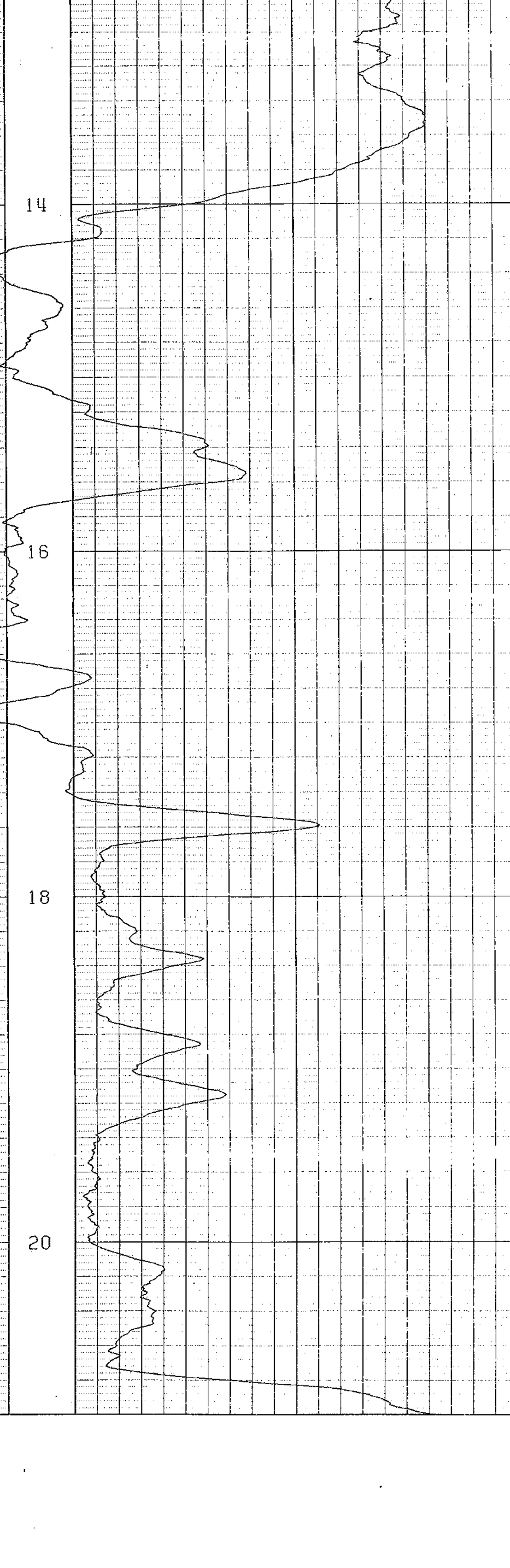
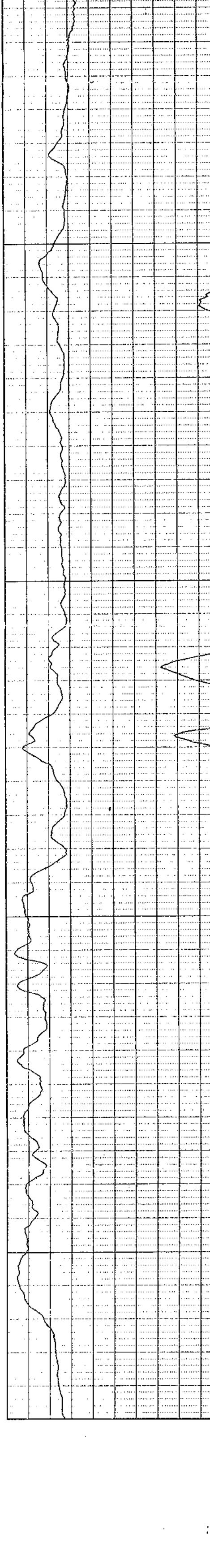
GAMMA RAY



DETAIL LOGS

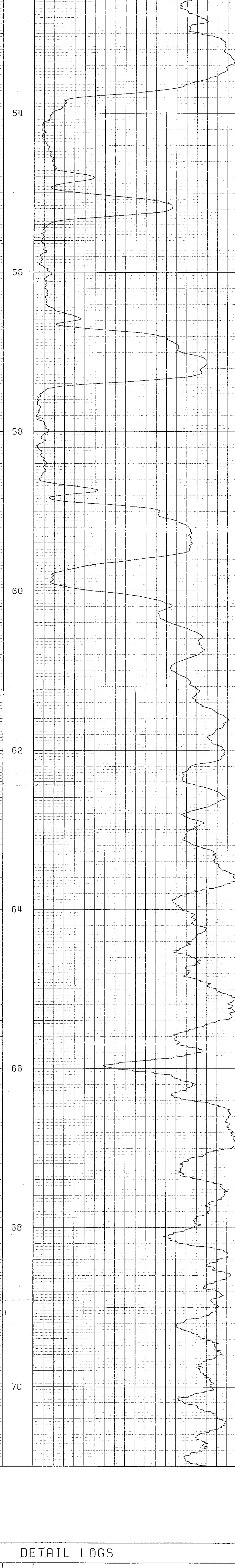
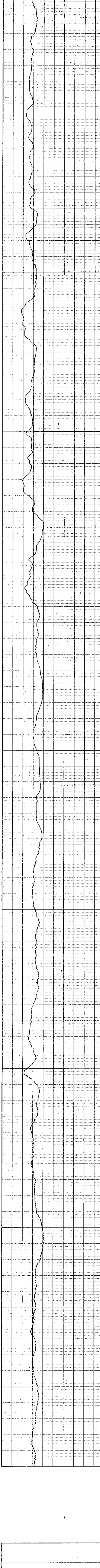
739

DEPTH SCALE 25000 B.R.D (CCS) 15000
CLIENT:
WELL NO: QHR 87039
AREA: TRANSFER PIT
CASING: 1.60M
WATER: 17.0M
DEPTH: 12.00-21.00
DATE PROCESSED: 09-SEP-87



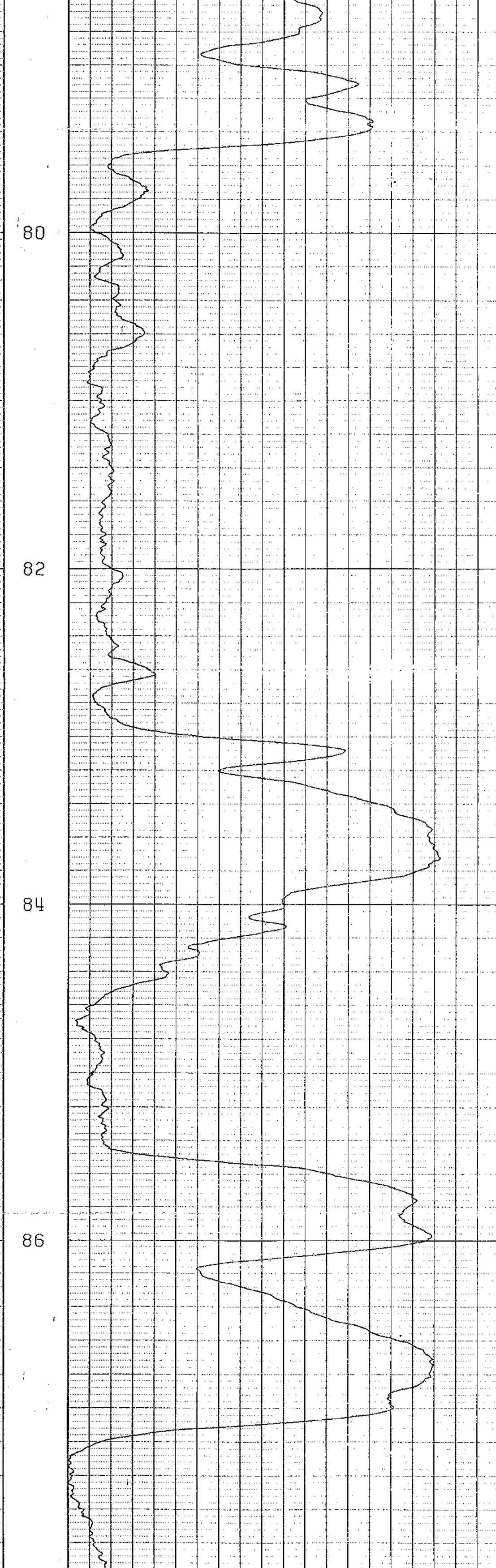
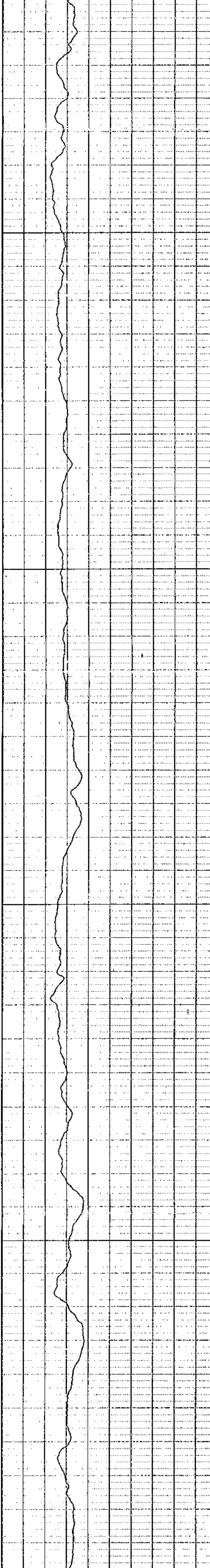
DETAIL LOGS

DEPTH SCALE 25000 B.R.D (CCS) 15000
CLIENT:
WELL NO: QHR 87039
AREA:
CASING:
WATER:
DEPTH: 52.00-71.00
DATE PROCESSED: 09-SEP-87



DETAIL LOGS

DEPTH SCALE 25000 B.R.D (CCS) 15000
CLIENT:
WELL NO: QHR 87039
AREA:
CASING:
WATER:
DEPTH: 78.00-90.00
DATE PROCESSED: 09-SEP-87





CONTINUOUS VERTICALITY ANALYSIS

739

CLIENT _____

QUINTETTE COAL

BOREHOLE _____

QHR-87-039

AREA _____

TRANSFER

COUNTRY _____

CANADA

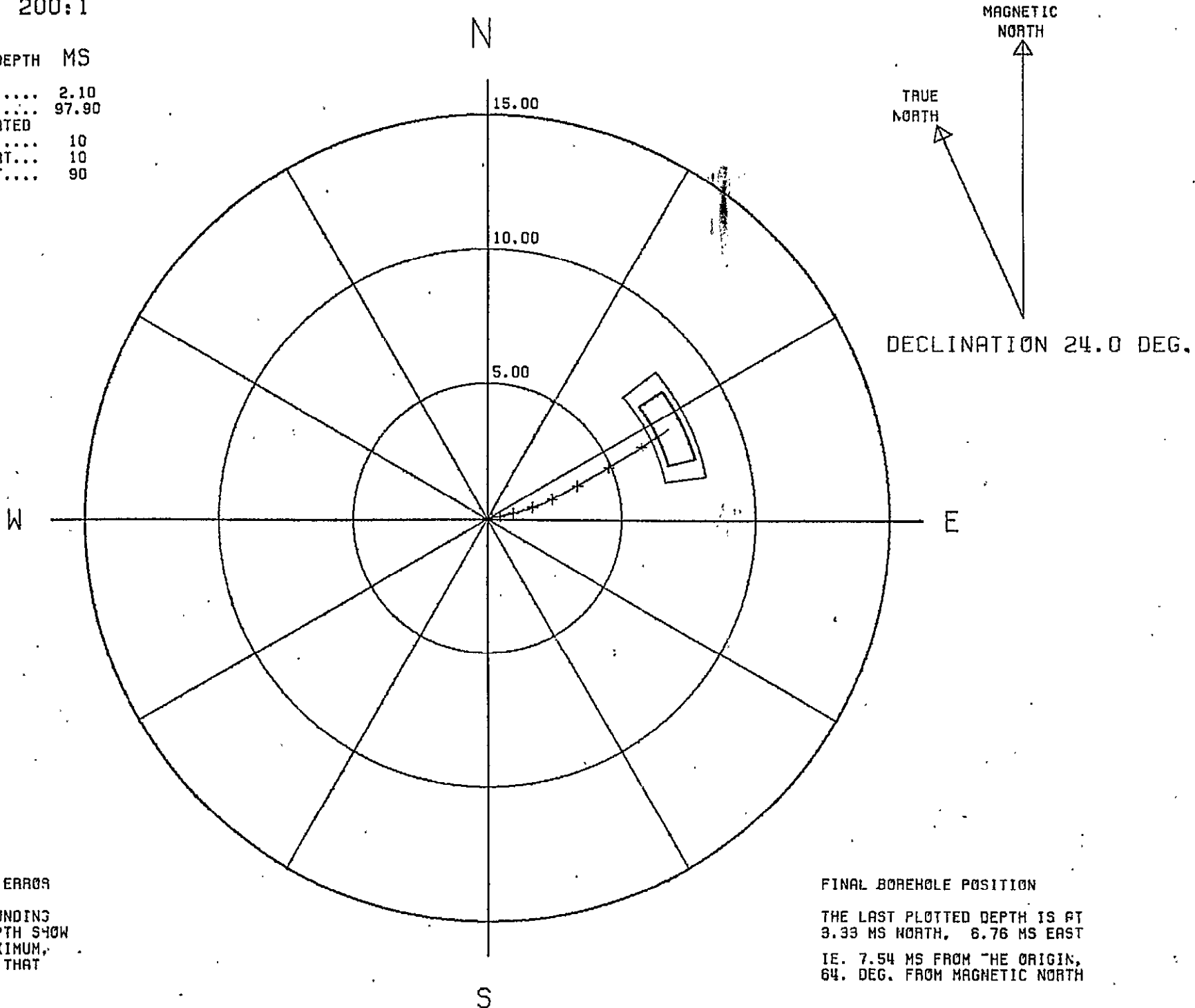
DATE LOGGED.....15-AUG-87
DATE PROCESSED..08-JAN-88
UPPER REFERENCE POINT....
LOWER REFERENCE POINT....T.D.

CROSS-SECTION

SCALE: 200:1

ALL FIGURES IN LOG DEPTH MS

| | |
|--------------------------|-------|
| TARGET ORIGIN DEPTH..... | 2.10 |
| LAST PLOTTED DEPTH..... | 97.90 |
| DEPTH MARKERS ANNOTATED | |
| IN MULTIPLES OF..... | 10 |
| FIRST DEPTH MARKER AT... | 10 |
| LAST DEPTH MARKER AT.... | 90 |



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT 3.33 MS NORTH, 6.76 MS EAST
IE. 7.54 MS FROM THE ORIGIN,
64. DEG. FROM MAGNETIC NORTH

VERTICAL SECTIONS

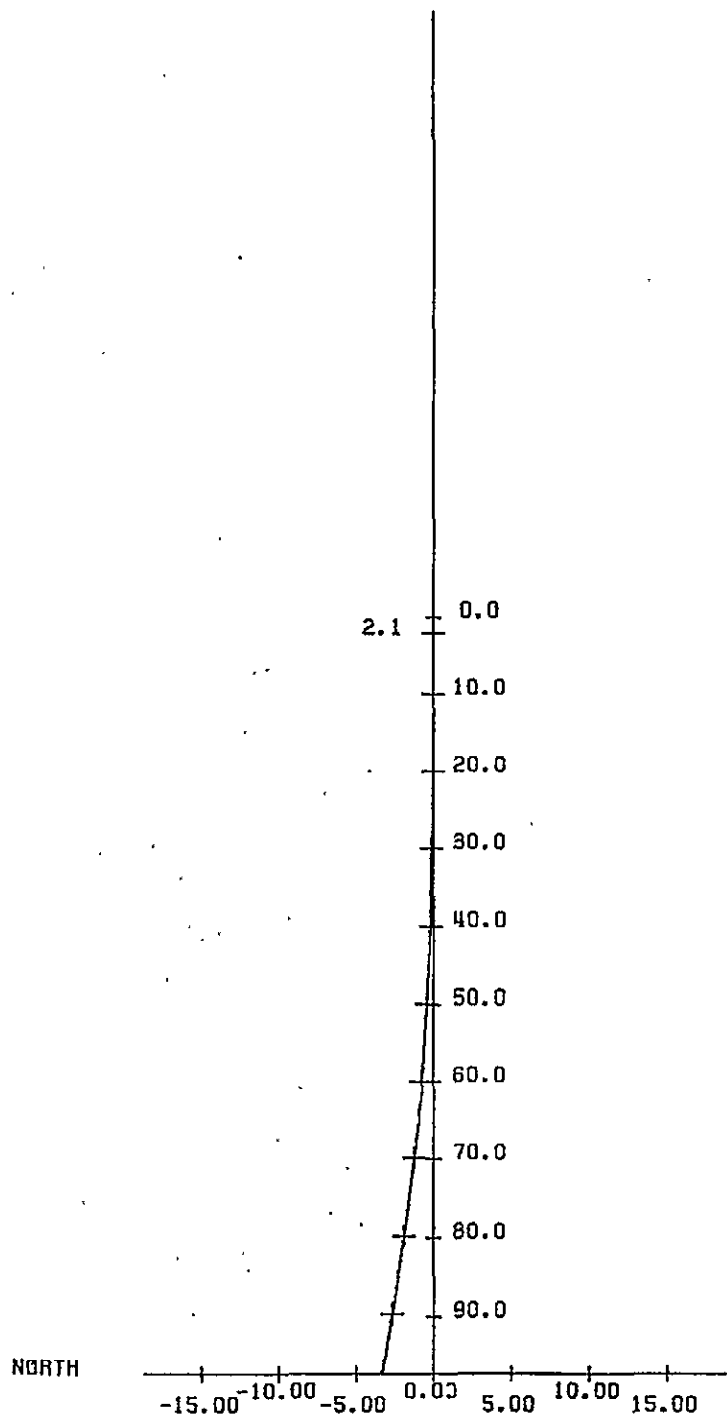
(TRUE DEPTH VS. DISPLACEMENT)

N-S SECTION

W-E SECTION

VERTICAL SCALE 1000 : 1

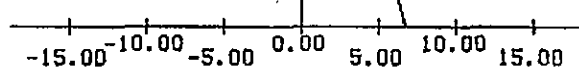
MARKERS ANNOTATED
AS ABOVE



NORTH

SOUTH

WEST



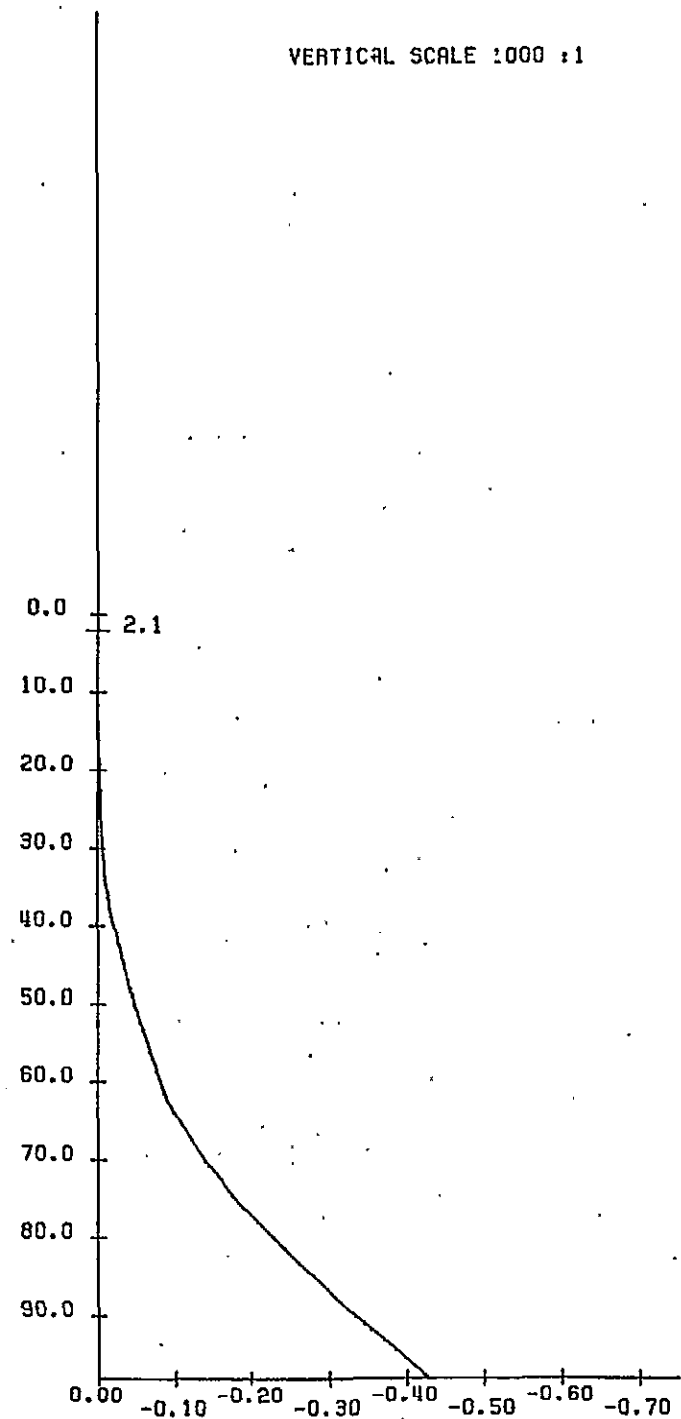
EAST

HORIZONTAL SCALE 1000 : 1

DEPTH CORRECTION ANALYSIS

LOG
DEPTH

VERTICAL SCALE 1000 : 1



| DEPTHS: | | DEPTHS: | |
|---------|-------|---------|-------|
| LOG | TRUE | LOG | TRUE |
| 3.00 | 3.00 | 73.00 | 72.84 |
| 4.00 | 4.00 | 74.00 | 73.83 |
| 5.00 | 5.00 | 75.00 | 74.82 |
| 6.00 | 6.00 | 76.00 | 75.81 |
| 7.00 | 7.00 | 77.00 | 76.80 |
| 8.00 | 8.00 | 78.00 | 77.79 |
| 9.00 | 9.00 | 79.00 | 78.78 |
| 10.00 | 10.00 | 80.00 | 79.77 |
| 11.00 | 11.00 | 81.00 | 80.76 |
| 12.00 | 12.00 | 82.00 | 81.75 |
| 13.00 | 13.00 | 83.00 | 82.74 |
| 14.00 | 14.00 | 84.00 | 83.73 |
| 15.00 | 15.00 | 85.00 | 84.72 |
| 16.00 | 16.00 | 86.00 | 85.71 |
| 17.00 | 17.00 | 87.00 | 86.70 |
| 18.00 | 18.00 | 88.00 | 87.69 |
| 19.00 | 19.00 | 89.00 | 88.68 |
| 20.00 | 20.00 | 90.00 | 89.67 |
| 21.00 | 21.00 | 91.00 | 90.66 |
| 22.00 | 22.00 | 92.00 | 91.64 |
| 23.00 | 23.00 | 93.00 | 92.63 |
| 24.00 | 24.00 | 94.00 | 93.62 |
| 25.00 | 25.00 | 95.00 | 94.61 |
| 26.00 | 26.00 | 96.00 | 95.59 |
| 27.00 | 27.00 | 97.00 | 96.58 |
| 28.00 | 27.99 | 98.00 | 97.57 |
| 29.00 | 28.99 | | |
| 30.00 | 29.99 | | |
| 31.00 | 30.99 | | |
| 32.00 | 31.99 | | |
| 33.00 | 32.99 | | |
| 34.00 | 33.99 | | |
| 35.00 | 34.99 | | |
| 36.00 | 35.99 | | |
| 37.00 | 36.98 | | |
| 38.00 | 37.98 | | |
| 39.00 | 38.98 | | |
| 40.00 | 39.98 | | |
| 41.00 | 40.98 | | |
| 42.00 | 41.97 | | |
| 43.00 | 42.97 | | |
| 44.00 | 43.97 | | |
| 45.00 | 44.97 | | |
| 46.00 | 45.96 | | |
| 47.00 | 46.96 | | |
| 48.00 | 47.96 | | |
| 49.00 | 48.96 | | |
| 50.00 | 49.95 | | |
| 51.00 | 50.95 | | |
| 52.00 | 51.95 | | |
| 53.00 | 52.94 | | |
| 54.00 | 53.94 | | |
| 55.00 | 54.94 | | |
| 56.00 | 55.93 | | |
| 57.00 | 56.93 | | |
| 58.00 | 57.93 | | |
| 59.00 | 58.92 | | |
| 60.00 | 59.92 | | |
| 61.00 | 60.91 | | |
| 62.00 | 61.91 | | |
| 63.00 | 62.91 | | |
| 64.00 | 63.90 | | |
| 65.00 | 64.89 | | |
| 66.00 | 65.89 | | |
| 67.00 | 66.88 | | |
| 68.00 | 67.88 | | |
| 69.00 | 68.87 | | |
| 70.00 | 69.86 | | |
| 71.00 | 70.85 | | |
| 72.00 | 71.85 | | |

BPB VERTICALITY ANALYSIS
INTERPRETATION NOTES

1. All plotted output is automatically scaled to obtain the best visual effect within the physical space available. The maximum scales being 50000:1 (metric) & 48000:1 (imperial), and the minimum 1:1.
2. The analysis is derived by integrating 10 cm./6" sampled data down the borehole. However the listing supplied will contain a maximum of 200 points in multiples of 1,2,5,10,20,25,50, or 100 metres/feet depending upon the total range of the analysis. However the analysis is calculated for the entire range of the borehole, and the final borehole position is included in the listing.
3. Computed verticality may only be fully derived in open sections of the borehole, away from the influence of any magnetic media (as the azimuth calculations are derived from three solid state magnetometers). So the analysis will generally begin at the end of the casing, and all borehole positional information will relate to this depth.
4. Up to ten cross-sections may be requested for any borehole to be displayed at any scale (the default scale is that of the cross-section for the entire hole).

5. Borehole positional error is derived assuming the following parameters:

| | TILT(degrees) | AZIMUTH(degrees) |
|---------------|---------------|------------------|
| Typical Error | +/- 0.33333 | +/- 10.0 |
| Maximum Error | +/- 0.5 | +/- 15.0 |

6. Error analysis may be calculated and plotted from the data listing as follows:

- a) Plot the four coordinates from the error listing (based upon zero azimuth error) on a target plot, origin at the start of the analysis.
- b) Describe arcs of +/- 10 degrees & +/- 15 degrees (centre at the origin) through the inner and outer points respectively.
- c) Connect the respective arcs together with straight lines to give the typical & maximum borehole positional error.

7. Given below is a full description of the parameters displayed on the ensuing listing:

| | |
|---------------------|--|
| LOG DEPTH | the depth recorded on the field logs for the borehole |
| TRUE DEPTH | the true vertical depth corresponding to the above depth, corrected from the start of the analysis |
| HOLE TILT & AZIMUTH | the SAMPLED borehole orientation |
| AXIAL COORDINATES | the coordinates North & East from the target origin |
| POLAR COORDINATES | the polar, or radial, coordinates of the borehole |
| ERROR COORDINATES | the polar coordinates corresponding to the typical and maximum tilt error |

N.B. The reference point for ALL bearing angles on this listing is given at the top of each sheet

Verticality Data Listing

All co-ordinates with respect to True North

| DEPTHS | | BOREHOLE | | AXIAL CO-ORDS. | | POLAR | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | |
|--------|-------|----------|------|----------------|-------|-------|--------|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| log | true | tilt | AZI | North | East | brng | radius | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius |
| 3.00 | 3.00 | 0.4 | 14. | 0.01 | 0.00 | 342. | 0.01 | 343. | 0.02 | 337. | 0.01 | 343. | 0.02 | 340. | 0.01 |
| 4.00 | 4.00 | 0.7 | 51. | 0.02 | 0.00 | 353. | 0.02 | 353. | 0.03 | 357. | 0.01 | 353. | 0.03 | 355. | 0.01 |
| 5.00 | 5.00 | 0.1 | 341. | 0.02 | -0.01 | 345. | 0.02 | 338. | 0.03 | 22. | 0.01 | 339. | 0.03 | 359. | 0.01 |
| 6.00 | 6.00 | 0.1 | 103. | 0.02 | 0.00 | 344. | 0.02 | 340. | 0.03 | 4. | 0.01 | 341. | 0.02 | 352. | 0.01 |
| 7.00 | 7.00 | 0.3 | 93. | 0.01 | 0.00 | 348. | 0.01 | 348. | 0.02 | 347. | 0.01 | 348. | 0.02 | 347. | 0.01 |
| 8.00 | 8.00 | 0.7 | 96. | 0.02 | 0.00 | 6. | 0.02 | 15. | 0.03 | 331. | 0.01 | 13. | 0.02 | 349. | 0.01 |
| 9.00 | 9.00 | 0.7 | 65. | 0.02 | 0.01 | 27. | 0.02 | 36. | 0.03 | 320. | 0.01 | 34. | 0.03 | 1. | 0.01 |
| 10.00 | 10.00 | 0.3 | 100. | 0.02 | 0.01 | 40. | 0.02 | 48. | 0.05 | 317. | 0.01 | 47. | 0.04 | 11. | 0.01 |
| 11.00 | 11.00 | 0.6 | 92. | 0.02 | 0.02 | 53. | 0.03 | 58. | 0.06 | 330. | 0.01 | 57. | 0.05 | 33. | 0.01 |
| 12.00 | 12.00 | 0.5 | 78. | 0.02 | 0.03 | 65. | 0.04 | 69. | 0.08 | 354. | 0.00 | 68. | 0.06 | 52. | 0.01 |
| 13.00 | 13.00 | 0.4 | 98. | 0.02 | 0.05 | 72. | 0.05 | 74. | 0.10 | 49. | 0.01 | 74. | 0.08 | 67. | 0.02 |
| 14.00 | 14.00 | 1.7 | 114. | 0.01 | 0.07 | 80. | 0.07 | 80. | 0.12 | 76. | 0.01 | 80. | 0.10 | 79. | 0.03 |
| 15.00 | 15.00 | 1.6 | 104. | 0.01 | 0.08 | 84. | 0.08 | 84. | 0.15 | 86. | 0.02 | 84. | 0.13 | 85. | 0.04 |
| 16.00 | 16.00 | 1.7 | 104. | 0.00 | 0.10 | 89. | 0.10 | 88. | 0.17 | 94. | 0.04 | 88. | 0.15 | 91. | 0.06 |
| 17.00 | 17.00 | 1.0 | 106. | 0.00 | 0.12 | 91. | 0.12 | 90. | 0.20 | 96. | 0.05 | 90. | 0.17 | 93. | 0.07 |
| 18.00 | 18.00 | 1.7 | 106. | -0.01 | 0.14 | 94. | 0.14 | 93. | 0.23 | 99. | 0.06 | 93. | 0.20 | 96. | 0.09 |
| 19.00 | 19.00 | 1.3 | 106. | -0.02 | 0.17 | 96. | 0.17 | 94. | 0.26 | 101. | 0.07 | 95. | 0.23 | 98. | 0.11 |
| 20.00 | 20.00 | 1.2 | 88. | -0.02 | 0.19 | 97. | 0.19 | 95. | 0.29 | 101. | 0.09 | 96. | 0.26 | 99. | 0.12 |
| 21.00 | 21.00 | 1.6 | 116. | -0.03 | 0.21 | 98. | 0.21 | 97. | 0.32 | 102. | 0.10 | 97. | 0.29 | 100. | 0.14 |
| 22.00 | 22.00 | 1.3 | 88. | -0.04 | 0.23 | 99. | 0.24 | 98. | 0.36 | 103. | 0.12 | 98. | 0.32 | 101. | 0.16 |
| 23.00 | 23.00 | 1.8 | 113. | -0.05 | 0.26 | 100. | 0.26 | 99. | 0.39 | 104. | 0.14 | 99. | 0.35 | 102. | 0.18 |
| 24.00 | 24.00 | 1.3 | 108. | -0.05 | 0.29 | 100. | 0.29 | 99. | 0.43 | 104. | 0.15 | 100. | 0.38 | 102. | 0.20 |
| 25.00 | 25.00 | 1.7 | 68. | -0.05 | 0.31 | 100. | 0.31 | 99. | 0.46 | 103. | 0.17 | 99. | 0.41 | 102. | 0.22 |
| 26.00 | 26.00 | 1.4 | 109. | -0.06 | 0.34 | 100. | 0.34 | 99. | 0.49 | 103. | 0.19 | 99. | 0.44 | 102. | 0.24 |
| 27.00 | 27.00 | 1.7 | 107. | -0.07 | 0.37 | 101. | 0.37 | 100. | 0.53 | 104. | 0.21 | 100. | 0.48 | 102. | 0.27 |
| 28.00 | 27.99 | 1.9 | 99. | -0.08 | 0.40 | 101. | 0.41 | 100. | 0.58 | 104. | 0.24 | 100. | 0.52 | 102. | 0.29 |
| 29.00 | 28.99 | 1.7 | 110. | -0.09 | 0.43 | 101. | 0.44 | 100. | 0.62 | 104. | 0.27 | 101. | 0.56 | 103. | 0.32 |
| 30.00 | 29.99 | 2.6 | 98. | -0.10 | 0.47 | 102. | 0.48 | 101. | 0.67 | 104. | 0.29 | 101. | 0.61 | 103. | 0.36 |
| 31.00 | 30.99 | 2.3 | 110. | -0.11 | 0.51 | 102. | 0.52 | 101. | 0.71 | 104. | 0.32 | 101. | 0.65 | 103. | 0.39 |
| 32.00 | 31.99 | 2.3 | 104. | -0.12 | 0.55 | 102. | 0.56 | 101. | 0.76 | 104. | 0.36 | 102. | 0.70 | 103. | 0.42 |
| 33.00 | 32.99 | 2.3 | 107. | -0.12 | 0.58 | 102. | 0.59 | 101. | 0.81 | 104. | 0.38 | 101. | 0.74 | 103. | 0.45 |
| 34.00 | 33.99 | 2.9 | 107. | -0.13 | 0.63 | 102. | 0.64 | 101. | 0.86 | 103. | 0.42 | 101. | 0.79 | 103. | 0.50 |
| 35.00 | 34.99 | 3.2 | 99. | -0.14 | 0.68 | 102. | 0.70 | 101. | 0.93 | 103. | 0.47 | 101. | 0.85 | 103. | 0.55 |
| 36.00 | 35.99 | 3.7 | 103. | -0.15 | 0.74 | 102. | 0.75 | 101. | 0.99 | 103. | 0.51 | 101. | 0.91 | 103. | 0.59 |
| 37.00 | 36.98 | 3.1 | 98. | -0.17 | 0.80 | 102. | 0.81 | 101. | 1.06 | 103. | 0.57 | 101. | 0.98 | 102. | 0.65 |
| 38.00 | 37.98 | 3.5 | 99. | -0.18 | 0.85 | 102. | 0.87 | 101. | 1.13 | 103. | 0.61 | 101. | 1.04 | 102. | 0.70 |
| 39.00 | 38.98 | 4.1 | 107. | -0.19 | 0.92 | 102. | 0.93 | 101. | 1.20 | 103. | 0.67 | 101. | 1.11 | 102. | 0.76 |
| 40.00 | 39.98 | 3.7 | 103. | -0.20 | 0.98 | 102. | 1.00 | 101. | 1.27 | 103. | 0.73 | 101. | 1.18 | 102. | 0.82 |
| 41.00 | 40.98 | 4.0 | 94. | -0.21 | 1.04 | 102. | 1.07 | 101. | 1.35 | 102. | 0.78 | 101. | 1.25 | 102. | 0.88 |
| 42.00 | 41.97 | 3.8 | 97. | -0.23 | 1.11 | 101. | 1.14 | 101. | 1.43 | 102. | 0.84 | 101. | 1.33 | 102. | 0.94 |
| 43.00 | 42.97 | 4.4 | 102. | -0.24 | 1.19 | 101. | 1.21 | 101. | 1.51 | 102. | 0.91 | 101. | 1.41 | 102. | 1.01 |
| 44.00 | 43.97 | 3.8 | 97. | -0.25 | 1.26 | 101. | 1.28 | 101. | 1.59 | 102. | 0.97 | 101. | 1.49 | 102. | 1.08 |
| 45.00 | 44.97 | 3.9 | 95. | -0.26 | 1.32 | 101. | 1.35 | 101. | 1.66 | 101. | 1.03 | 101. | 1.56 | 101. | 1.14 |
| 46.00 | 45.96 | 4.4 | 100. | -0.26 | 1.39 | 101. | 1.42 | 100. | 1.74 | 101. | 1.09 | 100. | 1.64 | 101. | 1.20 |
| 47.00 | 46.96 | 4.5 | 95. | -0.27 | 1.47 | 101. | 1.49 | 100. | 1.83 | 101. | 1.16 | 100. | 1.72 | 101. | 1.27 |
| 48.00 | 47.96 | 4.4 | 100. | -0.28 | 1.54 | 100. | 1.57 | 100. | 1.91 | 101. | 1.23 | 100. | 1.80 | 101. | 1.34 |
| 49.00 | 48.96 | 4.9 | 89. | -0.29 | 1.62 | 100. | 1.65 | 100. | 2.00 | 100. | 1.30 | 100. | 1.88 | 100. | 1.41 |
| 50.00 | 49.95 | 4.5 | 93. | -0.29 | 1.70 | 100. | 1.73 | 100. | 2.09 | 100. | 1.37 | 100. | 1.97 | 100. | 1.49 |
| 51.00 | 50.95 | 4.3 | 95. | -0.30 | 1.78 | 100. | 1.81 | 99. | 2.18 | 100. | 1.44 | 99. | 2.05 | 100. | 1.56 |
| 52.00 | 51.95 | 4.4 | 93. | -0.30 | 1.86 | 99. | 1.88 | 99. | 2.26 | 99. | 1.50 | 99. | 2.13 | 99. | 1.63 |

Verticality Data Listing

All co-ordinates with respect to True North

| DEPTH log | true | BOREHOLE | | AXIAL CO-ORDS. | | POLAR | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | |
|-----------|-------|----------|-----|----------------|------|-------|--------|--|-------------|-------------|-------------|-------------|-------------|-------------|------|
| | | tilt | AZI | North | East | brng | radius | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius | |
| 53.00 | 52.94 | 5.2 | 94. | -0.31 | 1.94 | 99. | 1.96 | 99. | 2.35 | 99. | 1.58 | 99. | 2.22 | 99. | 1.71 |
| 54.00 | 53.94 | 4.8 | 94. | -0.32 | 2.02 | 99. | 2.05 | 99. | 2.44 | 99. | 1.65 | 99. | 2.31 | 99. | 1.79 |
| 55.00 | 54.94 | 4.4 | 92. | -0.32 | 2.11 | 99. | 2.13 | 99. | 2.53 | 99. | 1.73 | 99. | 2.40 | 99. | 1.86 |
| 56.00 | 55.93 | 4.4 | 86. | -0.32 | 2.19 | 98. | 2.21 | 98. | 2.62 | 98. | 1.80 | 98. | 2.48 | 98. | 1.93 |
| 57.00 | 56.93 | 4.7 | 92. | -0.32 | 2.27 | 98. | 2.29 | 98. | 2.71 | 98. | 1.87 | 98. | 2.57 | 98. | 2.01 |
| 58.00 | 57.93 | 4.5 | 89. | -0.32 | 2.35 | 98. | 2.37 | 98. | 2.80 | 98. | 1.94 | 98. | 2.66 | 98. | 2.09 |
| 59.00 | 58.92 | 4.9 | 86. | -0.32 | 2.43 | 97. | 2.45 | 97. | 2.89 | 97. | 2.01 | 97. | 2.74 | 97. | 2.16 |
| 60.00 | 59.92 | 4.7 | 89. | -0.31 | 2.51 | 97. | 2.53 | 97. | 2.98 | 97. | 2.09 | 97. | 2.83 | 97. | 2.24 |
| 61.00 | 60.91 | 5.0 | 88. | -0.30 | 2.60 | 97. | 2.62 | 97. | 3.07 | 97. | 2.16 | 97. | 2.92 | 97. | 2.32 |
| 62.00 | 61.91 | 5.4 | 87. | -0.30 | 2.69 | 96. | 2.71 | 96. | 3.17 | 96. | 2.25 | 96. | 3.02 | 96. | 2.40 |
| 63.00 | 62.91 | 5.9 | 88. | -0.29 | 2.79 | 96. | 2.81 | 96. | 3.28 | 96. | 2.34 | 96. | 3.12 | 96. | 2.49 |
| 64.00 | 63.90 | 6.1 | 87. | -0.29 | 2.90 | 96. | 2.91 | 96. | 3.39 | 95. | 2.43 | 96. | 3.23 | 96. | 2.59 |
| 65.00 | 64.89 | 6.6 | 85. | -0.28 | 3.01 | 95. | 3.02 | 96. | 3.51 | 95. | 2.53 | 95. | 3.35 | 95. | 2.69 |
| 66.00 | 65.89 | 6.2 | 86. | -0.28 | 3.12 | 95. | 3.13 | 95. | 3.63 | 95. | 2.63 | 95. | 3.46 | 95. | 2.80 |
| 67.00 | 66.88 | 6.8 | 85. | -0.27 | 3.23 | 95. | 3.24 | 95. | 3.75 | 94. | 2.74 | 95. | 3.58 | 95. | 2.90 |
| 68.00 | 67.88 | 6.0 | 84. | -0.26 | 3.34 | 94. | 3.35 | 95. | 3.86 | 94. | 2.83 | 95. | 3.69 | 94. | 3.01 |
| 69.00 | 68.87 | 6.8 | 84. | -0.25 | 3.45 | 94. | 3.46 | 94. | 3.98 | 94. | 2.94 | 94. | 3.81 | 94. | 3.11 |
| 70.00 | 69.86 | 6.5 | 87. | -0.24 | 3.57 | 94. | 3.58 | 94. | 4.11 | 93. | 3.04 | 94. | 3.93 | 94. | 3.22 |
| 71.00 | 70.85 | 7.1 | 86. | -0.22 | 3.69 | 93. | 3.70 | 94. | 4.24 | 93. | 3.16 | 94. | 4.06 | 93. | 3.34 |
| 72.00 | 71.85 | 7.4 | 82. | -0.21 | 3.81 | 93. | 3.82 | 93. | 4.37 | 93. | 3.27 | 93. | 4.19 | 93. | 3.45 |
| 73.00 | 72.84 | 7.3 | 86. | -0.20 | 3.94 | 93. | 3.94 | 93. | 4.50 | 93. | 3.39 | 93. | 4.31 | 93. | 3.57 |
| 74.00 | 73.83 | 7.0 | 84. | -0.19 | 4.06 | 93. | 4.07 | 93. | 4.63 | 92. | 3.50 | 93. | 4.45 | 92. | 3.69 |
| 75.00 | 74.82 | 7.4 | 86. | -0.17 | 4.19 | 92. | 4.20 | 93. | 4.77 | 92. | 3.62 | 93. | 4.58 | 92. | 3.81 |
| 76.00 | 75.81 | 7.9 | 87. | -0.16 | 4.33 | 92. | 4.33 | 92. | 4.91 | 92. | 3.75 | 92. | 4.72 | 92. | 3.94 |
| 77.00 | 76.80 | 8.5 | 83. | -0.15 | 4.47 | 92. | 4.47 | 92. | 5.06 | 92. | 3.88 | 92. | 4.87 | 92. | 4.08 |
| 78.00 | 77.79 | 8.0 | 85. | -0.13 | 4.61 | 92. | 4.61 | 92. | 5.21 | 91. | 4.01 | 92. | 5.01 | 91. | 4.21 |
| 79.00 | 78.78 | 8.1 | 87. | -0.12 | 4.75 | 91. | 4.75 | 92. | 5.36 | 91. | 4.15 | 92. | 5.16 | 91. | 4.35 |
| 80.00 | 79.77 | 8.3 | 81. | -0.10 | 4.89 | 91. | 4.89 | 92. | 5.51 | 91. | 4.28 | 91. | 5.31 | 91. | 4.48 |
| 81.00 | 80.76 | 8.4 | 82. | -0.09 | 5.03 | 91. | 5.03 | 91. | 5.66 | 91. | 4.41 | 91. | 5.45 | 91. | 4.62 |
| 82.00 | 81.75 | 8.1 | 82. | -0.07 | 5.17 | 91. | 5.18 | 91. | 5.81 | 90. | 4.54 | 91. | 5.60 | 91. | 4.75 |
| 83.00 | 82.74 | 8.4 | 82. | -0.05 | 5.32 | 91. | 5.32 | 91. | 5.96 | 90. | 4.68 | 91. | 5.75 | 90. | 4.89 |
| 84.00 | 83.73 | 8.2 | 82. | -0.03 | 5.46 | 90. | 5.46 | 91. | 6.11 | 90. | 4.81 | 91. | 5.90 | 90. | 5.03 |
| 85.00 | 84.72 | 8.2 | 80. | -0.01 | 5.61 | 90. | 5.61 | 90. | 6.27 | 90. | 4.95 | 90. | 6.05 | 90. | 5.17 |
| 86.00 | 85.71 | 8.4 | 82. | 0.01 | 5.75 | 90. | 5.75 | 90. | 6.42 | 90. | 5.08 | 90. | 6.19 | 90. | 5.30 |
| 87.00 | 86.70 | 8.3 | 83. | 0.03 | 5.89 | 90. | 5.89 | 90. | 6.57 | 89. | 5.22 | 90. | 6.34 | 89. | 5.44 |
| 88.00 | 87.69 | 8.0 | 83. | 0.05 | 6.04 | 90. | 6.04 | 90. | 6.72 | 89. | 5.35 | 90. | 6.49 | 89. | 5.58 |
| 89.00 | 88.68 | 8.3 | 83. | 0.07 | 6.18 | 89. | 6.18 | 90. | 6.87 | 89. | 5.49 | 90. | 6.64 | 89. | 5.72 |
| 90.00 | 89.67 | 8.7 | 81. | 0.09 | 6.33 | 89. | 6.33 | 90. | 7.03 | 89. | 5.63 | 89. | 6.80 | 89. | 5.86 |
| 91.00 | 90.66 | 9.1 | 81. | 0.12 | 6.48 | 89. | 6.48 | 89. | 7.19 | 89. | 5.77 | 89. | 6.95 | 89. | 6.01 |
| 92.00 | 91.64 | 9.1 | 83. | 0.14 | 6.63 | 89. | 6.64 | 89. | 7.35 | 88. | 5.92 | 89. | 7.11 | 89. | 6.16 |
| 93.00 | 92.63 | 8.8 | 79. | 0.17 | 6.79 | 89. | 6.79 | 89. | 7.52 | 88. | 6.06 | 89. | 7.27 | 88. | 6.31 |
| 94.00 | 93.62 | 9.4 | 80. | 0.19 | 6.95 | 88. | 6.95 | 89. | 7.68 | 88. | 6.21 | 89. | 7.44 | 88. | 6.46 |
| 95.00 | 94.61 | 8.2 | 81. | 0.22 | 7.09 | 88. | 7.10 | 89. | 7.84 | 88. | 6.36 | 88. | 7.59 | 88. | 6.60 |
| 96.00 | 95.59 | 8.8 | 80. | 0.24 | 7.24 | 88. | 7.25 | 88. | 8.00 | 88. | 6.50 | 88. | 7.75 | 88. | 6.75 |
| 97.00 | 96.58 | 8.5 | 83. | 0.27 | 7.39 | 88. | 7.40 | 88. | 8.16 | 87. | 6.64 | 88. | 7.90 | 88. | 6.89 |
| 97.90 | 97.47 | 9.2 | 79. | 0.29 | 7.53 | 88. | 7.54 | 88. | 8.30 | 87. | 6.77 | 88. | 8.05 | 87. | 7.03 |

COPY 1

QHR 87040 - 87068

QHR 87040
TRANSFER

LOG DEPTH 0090.00
TRUE DEPTH 0089.90
TILT 3.81 DG
BEARING 220.84 DG
NORTHING -002.45
EASTING -002.53

LOG DEPTH 0080.00
TRUE DEPTH 0079.92
TILT 4.00 DG
BEARING 222.85 DG
NORTHING -001.94
EASTING -002.09

LOG DEPTH 0070.00
TRUE DEPTH 0069.94
TILT 3.58 DG
BEARING 221.41 DG
NORTHING -001.43
EASTING -001.62

LOG DEPTH 0060.00
TRUE DEPTH 0059.96
TILT 3.28 DG
BEARING 222.88 DG
NORTHING -000.96
EASTING -001.21

LOG DEPTH 0050.00
TRUE DEPTH 0049.98
TILT 2.92 DG
BEARING 222.38 DG
NORTHING -000.54
EASTING -000.82

LOG DEPTH 0040.00
TRUE DEPTH 0039.99
TILT 1.92 DG
BEARING 228.05 DG
NORTHING -000.16
EASTING -000.47

LOG DEPTH 0030.00
TRUE DEPTH 0030.00
TILT .96 DG
BEARING 238.03 DG
NORTHING +000.05
EASTING -000.22

LOG DEPTH 0020.00
TRUE DEPTH 0020.00
TILT .71 DG
BEARING 322.02 DG
NORTHING +000.14
EASTING -000.08

LOG DEPTH 0010.00
TRUE DEPTH 0010.00
TILT .53 DG
BEARING 350.49 DG
NORTHING +000.04
EASTING -000.00

LOG DEPTH 0005.00
TRUE DEPTH 0005.00
TILT .00 DG
BEARING 293.99 DG
NORTHING +000.00
EASTING +000.00

739

DEPTH = 0010.00
TILT = 1.06 DG
BEARING = 46.98 DG

DEPTH = 0020.00
TILT = .37 DG
BEARING = 237.07 DG

DEPTH = 0030.00
TILT = 1.55 DG
BEARING = 238.99 DG

DEPTH = 0040.00
TILT = 2.29 DG
BEARING = 217.11 DG

DEPTH = 0050.00
TILT = 3.55 DG
BEARING = 227.48 DG

DEPTH = 0060.00
TILT = 3.02 DG
BEARING = 218.28 DG

DEPTH = 0070.00
TILT = 4.15 DG
BEARING = 224.54 DG

DEPTH = 0080.00
TILT = 3.85 DG
BEARING = 221.16 DG

DEPTH = 0090.00
TILT = 3.76 DG
BEARING = 220.51 DG

DATE 870816
JOB NUMBER 0040
LOG LABEL 026.1
MAG 1 MAX 229
MAG 1 MIN 129
MAG 2 MAX 229
MAG 2 MIN 130
MAG 3 MAX 205
MAG 3 MIN 155
L. CELL 1 TILT 1 20
L. CELL 1 CPS 1 233
L. CELL 1 TILT 2 -20
L. CELL 1 CPS 2 126
L. CELL 2 TILT 1 20
L. CELL 2 CPS 1 232
L. CELL 2 TILT 2 -20
L. CELL 2 CPS 2 126
MAG 1 CENTRE 179
MAG 2 CENTRE 179
MAG 3 CENTRE 180
L. CELL 1 CENTRE 180
L. CELL 2 CENTRE 179

MAG DECL 024
STOP DEPTH 005

QHR87040
TRANSFER



SONDE TYPE: COAL
 COMBINATION: SONDE
 LOG SUITE: GAMMA RAY
 L. S. DENSITY
 CALIPER

COAL
 LITHOLOGY
 LOG

BOREHOLE: OHR 87-040
 CLIENT: QUINTEITE
 AREA: TRANSFER
 COUNTRY: CANADA
 DATE LOGGED: 27/04/95
 DEPTH SCALE: 1:200
 LOG SCALES: 1 OF 4 LOGS

PERMANENT DATUM: QUINTEITE LEVEL
 ELEVATION OF P.D.: 898
 DRILLER: C.L.L.
 MEASUREMENTS FROM: 98.70m
 DEPTH REACHED: 99.00m
 CASING SHOE: 2.30m
 BIT SIZES: 1 8.1" TO 2.00" 2 5.1" TO 3.0" 3 3.0" TO 2.0" 4 2.0" TO 1.5" 5 1.5" TO 1.0" 6 1.0" TO 0.75" 7 0.75" TO 0.5" 8 0.5" TO 0.25" 9 0.25" TO 0.125"

FLUID DATA
 NATURE: WATER
 LEVEL: 1.01 m b.c.c.
 VISCOSITY: N.A.
 SpH at meas. temp: N.A.
 SHIT: N.A.

OPERATION DATA
 FIRST READING: 98.70m
 LAST READING: 100m
 INTERVAL LOGGED: 1.6m
 UNIT TRACK No: 46, 41, 17
 ENGINEER: M. COX
 WITNESS: N. COX

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EQUIPMENT AND RECORDING DATA

| LOG | EQUIPMENT | | | LOG TAPED | TAPING | | PANEL | | | CAL COEFF | DEPTHS | | | SEAM LOG RUN | |
|--------------|-------------------|--------|------------|-----------|--------------|------------------|-------|---------|------|-----------|--------|----|----------|--------------|---|
| | SONDE | SOURCE | CALIBRATOR | | RECORD SPEED | DIRECT or REPLAY | SPEED | TC SECS | NORM | | FROM | TO | INTERVAL | | |
| GAMMA RAY | 153 | | 367 | Y | 9 | D | 9 | 1 | - | .44 | 96 | 0 | 96 | Y | |
| L.S. DENSITY | | | 5852 | 0041 | Y | 9 | D | 9 | 1 | 7.38 | - | 97 | 1 | 96 | Y |
| CALIPER | SIDEWALL POSITION | | | Y | 9 | D | 9 | 1 | - | 1.0 | - | 97 | 1 | 96 | Y |

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

| FROM | 86m | 49m | 21m | INTERVAL |
|----------|-----|-----|-----|----------|
| TO | 70m | 43m | 12m | TOTAL |
| INTERVAL | 16m | 6m | 9m | 31m |

ADDITIONAL SONDES RUN

| SONDE | LOG | GENERAL SCALE LOG | DETAIL SCALE LOG | REFER TO ADDITIONAL HEADINGS |
|-------|------|-------------------|------------------|------------------------------|
| 215 | N-N | 1:200 | | |
| 231 | VERT | | | |

REMARKS

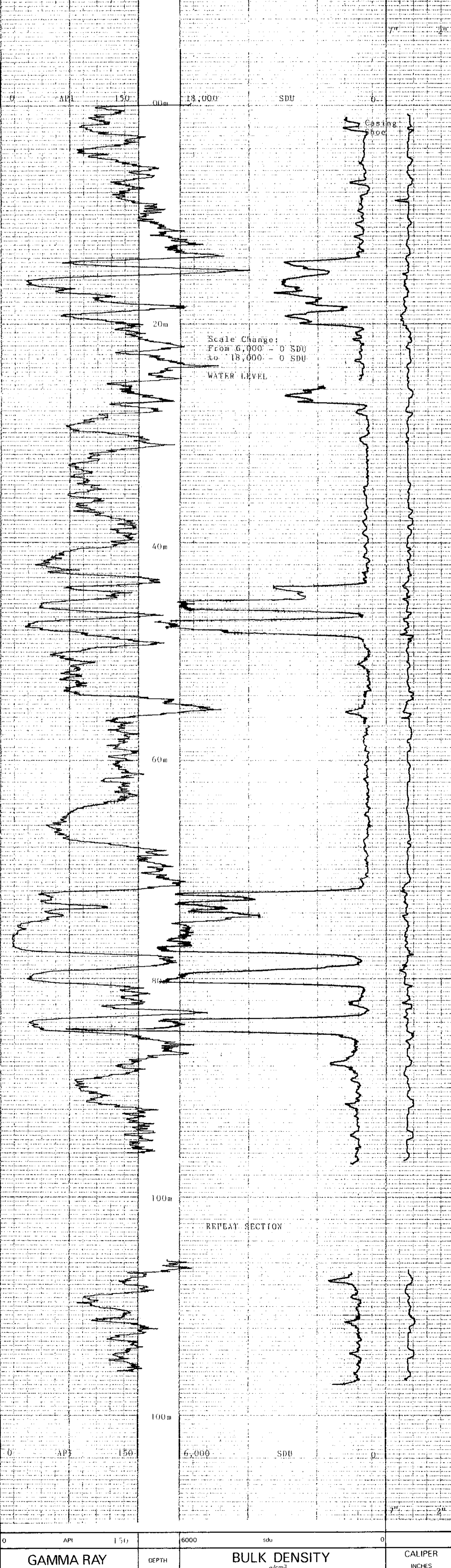
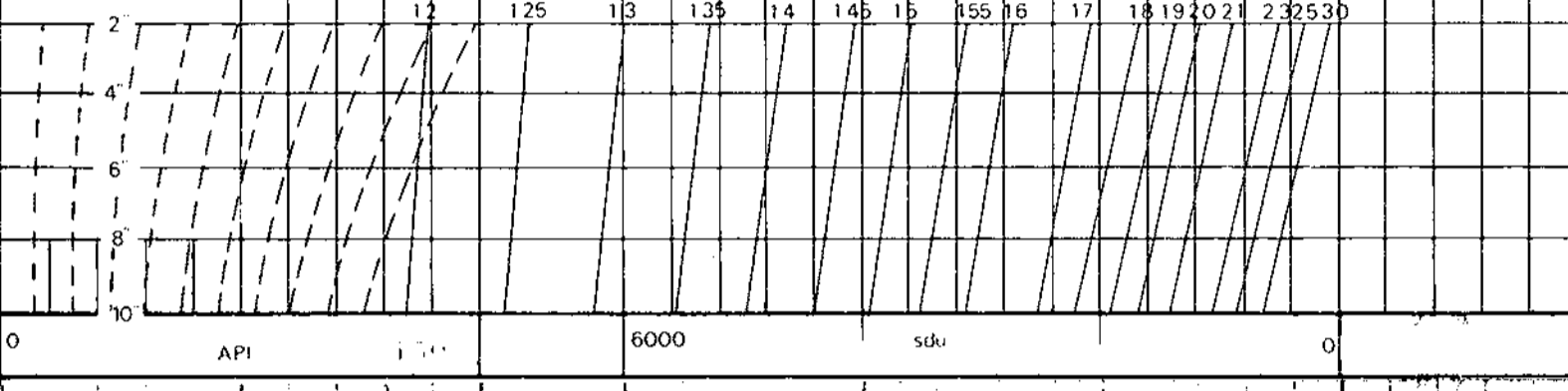
BPB COAL LITHOLOGY LOG

CALIBRATION DATA

| JIG No | VALUE @ 5' DIAM | JIG CAL DATE | JIG VALUE | SDU @ | g/cm ³ | ms | cps |
|---------------------------------|-----------------|--------------|-----------|-------|-------------------|----|-----|
| JIG MARK SHOWN AT ABOVE VALUE - | | | | | | | |

| GAMMA RAY | DEPTH | BULK DENSITY g/cm ³ | CALIPER INCHES |
|-----------|-------|--------------------------------|----------------|
|-----------|-------|--------------------------------|----------------|

HOLE SIZE CORRECTION DATA



| GAMMA RAY | DEPTH | BULK DENSITY g/cm ³ | CALIPER INCHES |
|-----------|-------|--------------------------------|----------------|
|-----------|-------|--------------------------------|----------------|

BOREHOLE: OHR 87-040
 CLIENT: QUINTEITE
 AREA: TRANSFER
 COUNTRY: CANADA



COAL LITHOLOGY LOG



NEUTRON-NEUTRON
GAMMA RAY

BOREHOLE QHR 87-020
CLIENT QUINTELL

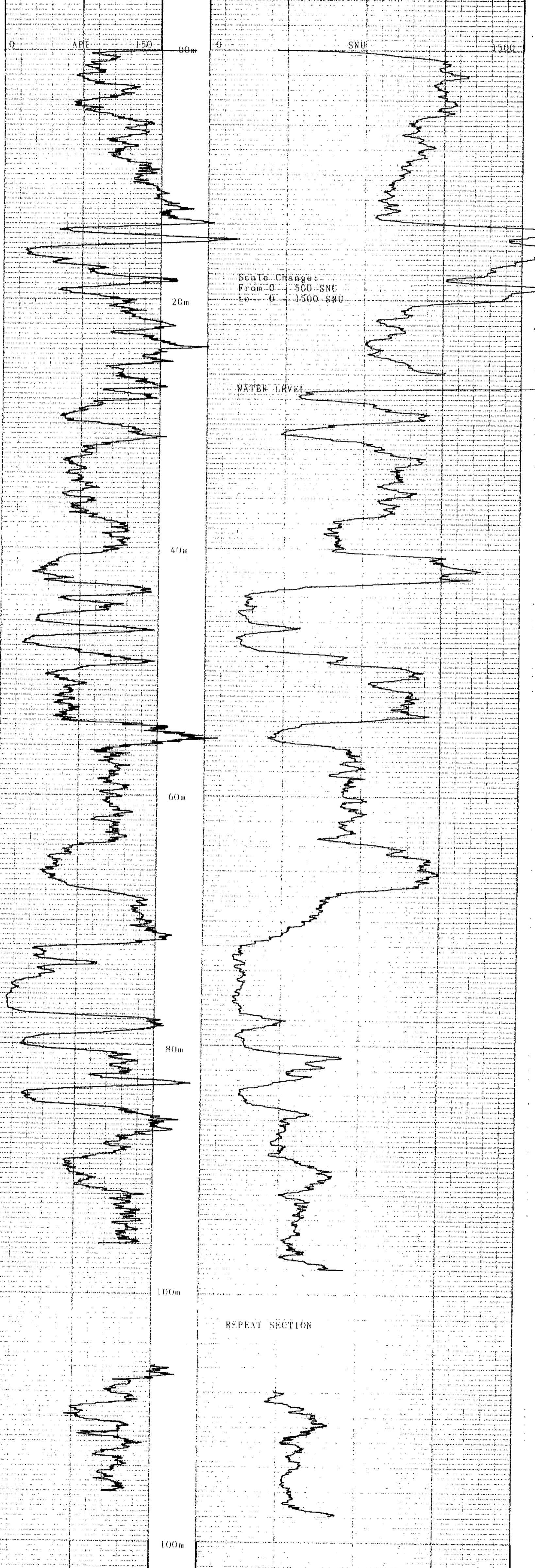
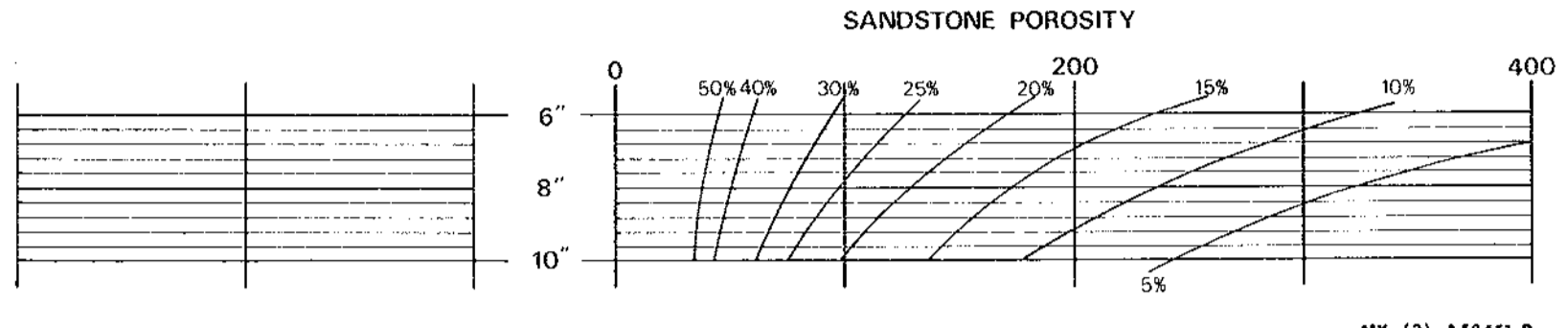
AREA TRANSFER
COUNTRY CANADA
DATE LOGGED 97 09 16

BOREHOLE DATA REFER TO LITHOLOGY LOG
OPERATION DATA REFER TO LITHOLOGY LOG
EQUIPMENT AND RECORDING DATA

| LOG | TAPING | RECORDING | PANEL | COEFF | |
|-------|--------|-----------|-------|-------|------|
| | TAPED | SPEED | T.C | NORM | |
| | | RECORDING | SEC | | |
| N-N | Y | 9 | D | 9 | 1.44 |
| GAMMA | Y | 9 | R | 9 | 1.44 |

REMARKS
739

| GAMMA RAY | DEPTH | NEUTRON-NEUTRON |
|-----------|-------|-----------------|
| 150 | 0 | 500 |



| GAMMA RAY | DEPTH | NEUTRON-NEUTRON |
|-----------|-------|-----------------|
| 150 | 0 | 500 |



BOREHOLE QHR 87-020
CLIENT QUINTELL
AREA TRANSFER
COUNTRY CANADA

DETAIL LOGS

739

DEPTH SCALE

10000

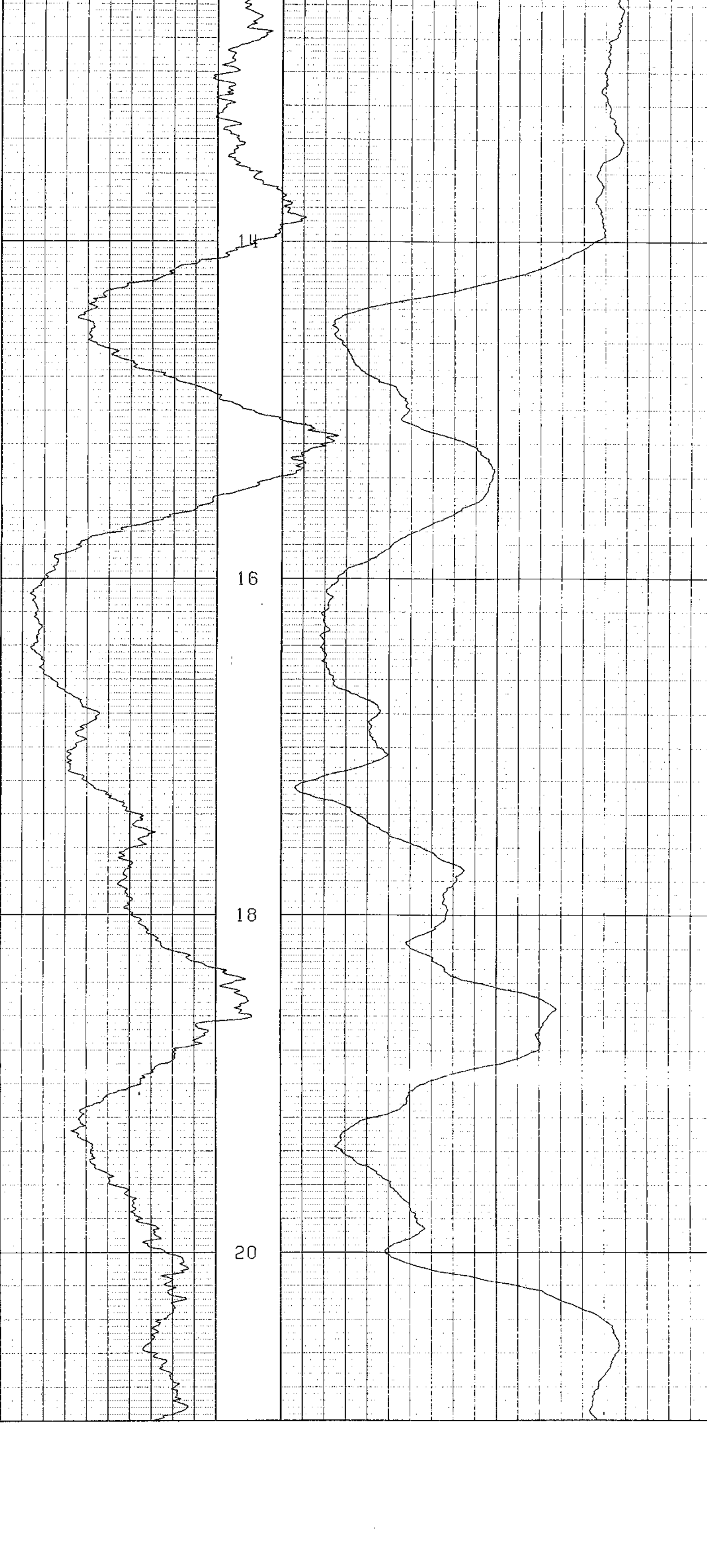
L.S.D (CCS)

0

CLIENT: QUINTETTE COAL
 WELL NO: QHR 87040
 AREA: TRANSFER PIT
 CASING: 2.0M
 WATER: 27.2M
 DEPTH: 12.00-21.00
 DATE PROCESSED: 10-SEP-87

GAMMA RAY

150



DETAIL LOGS

DEPTH SCALE

6000

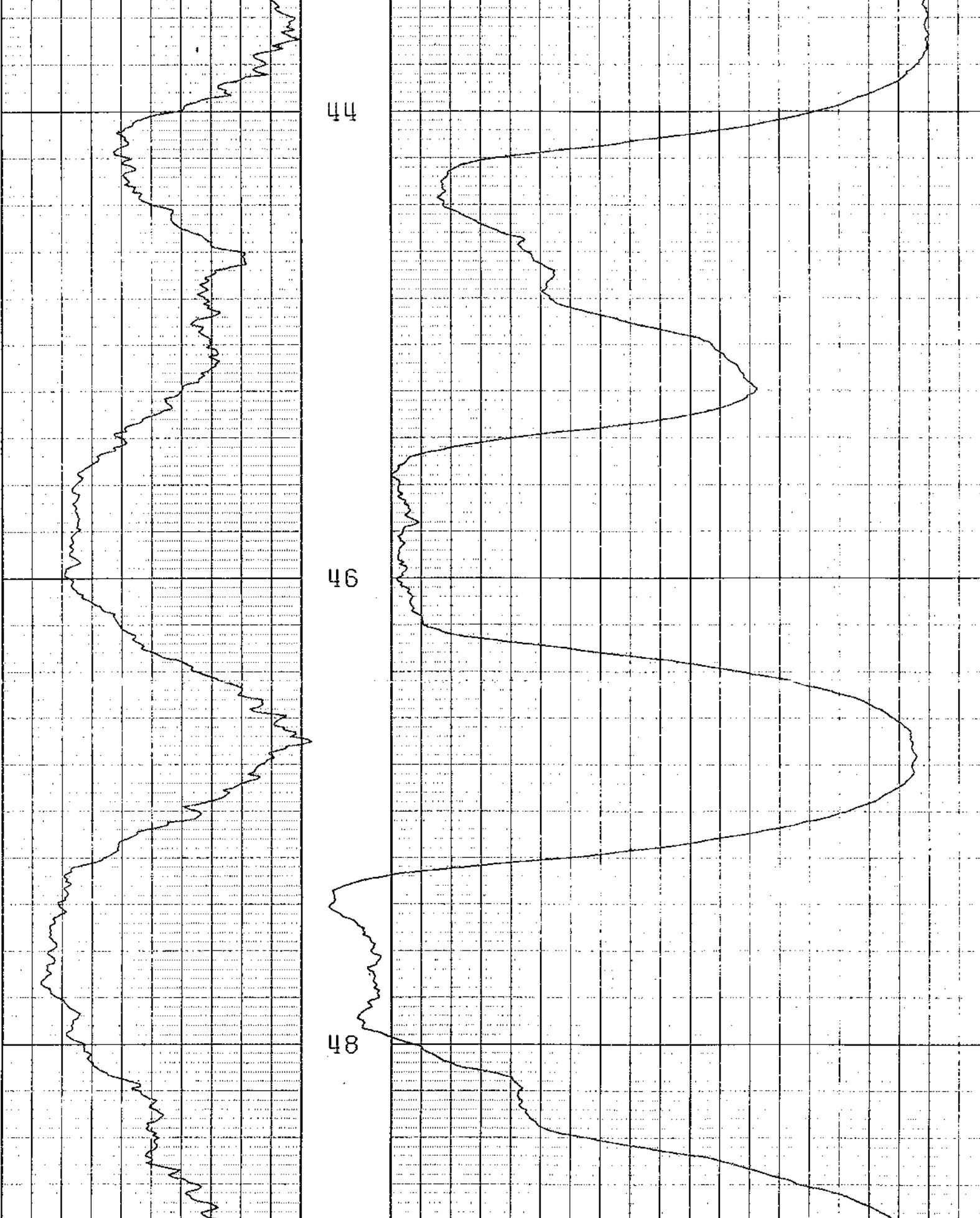
L.S.D (CCS)

0

CLIENT: QHR 87040
 WELL NO: QHR 87040
 AREA:
 CASING:
 WATER:
 DEPTH: 43.00-49.00
 DATE PROCESSED: 10-SEP-87

GAMMA RAY

150



DETAIL LOGS

DEPTH SCALE

6000

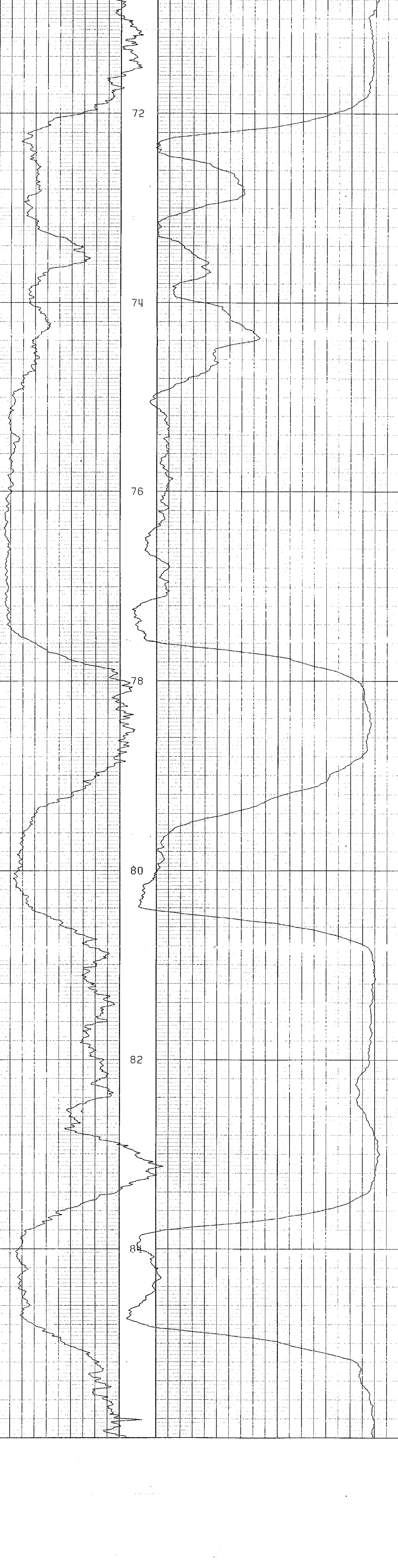
L.S.D (CCS)

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CLIENT:
 WELL NO: QHR 87040
 AREA:
 CASING:
 WATER:
 DEPTH: 70.00-86.00
 DATE PROCESSED: 10-SEP-87

GAMMA RAY

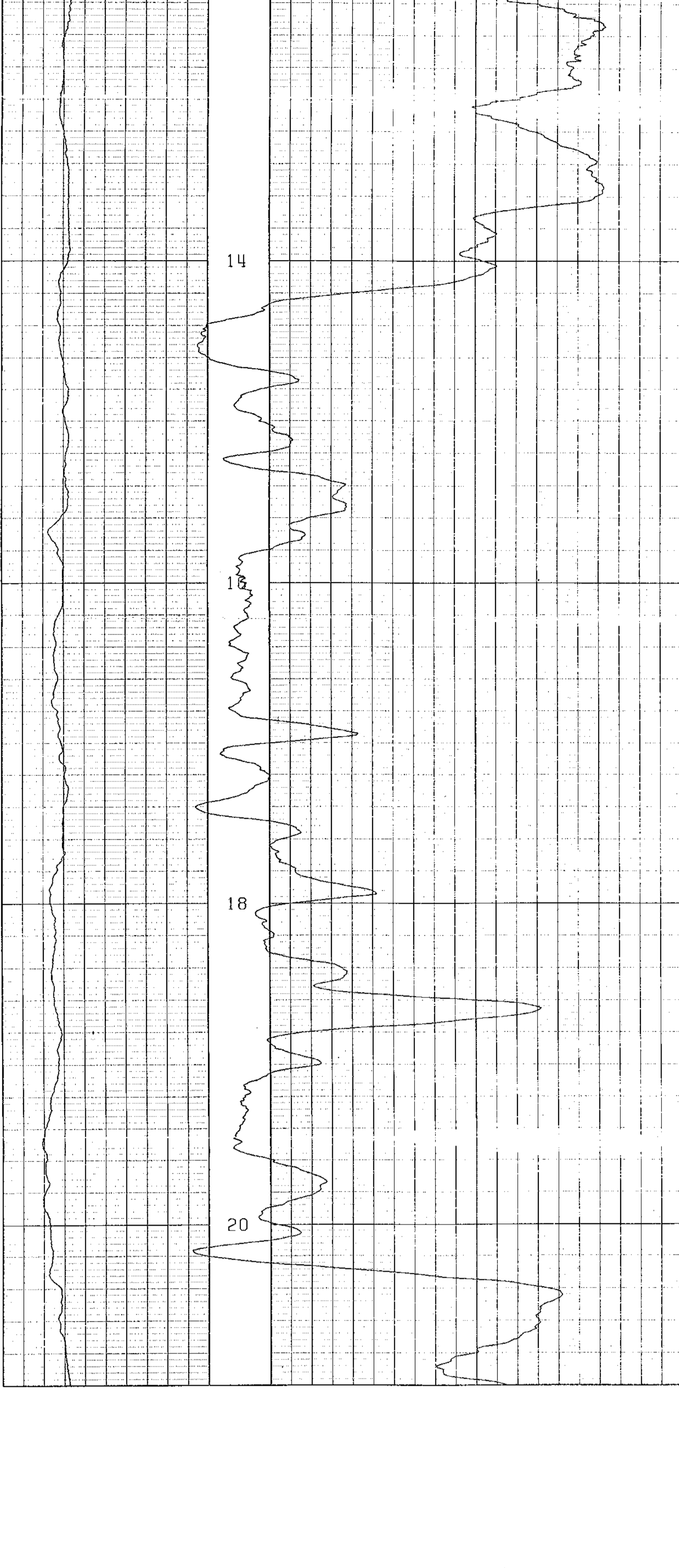
150



DETAIL LOGS

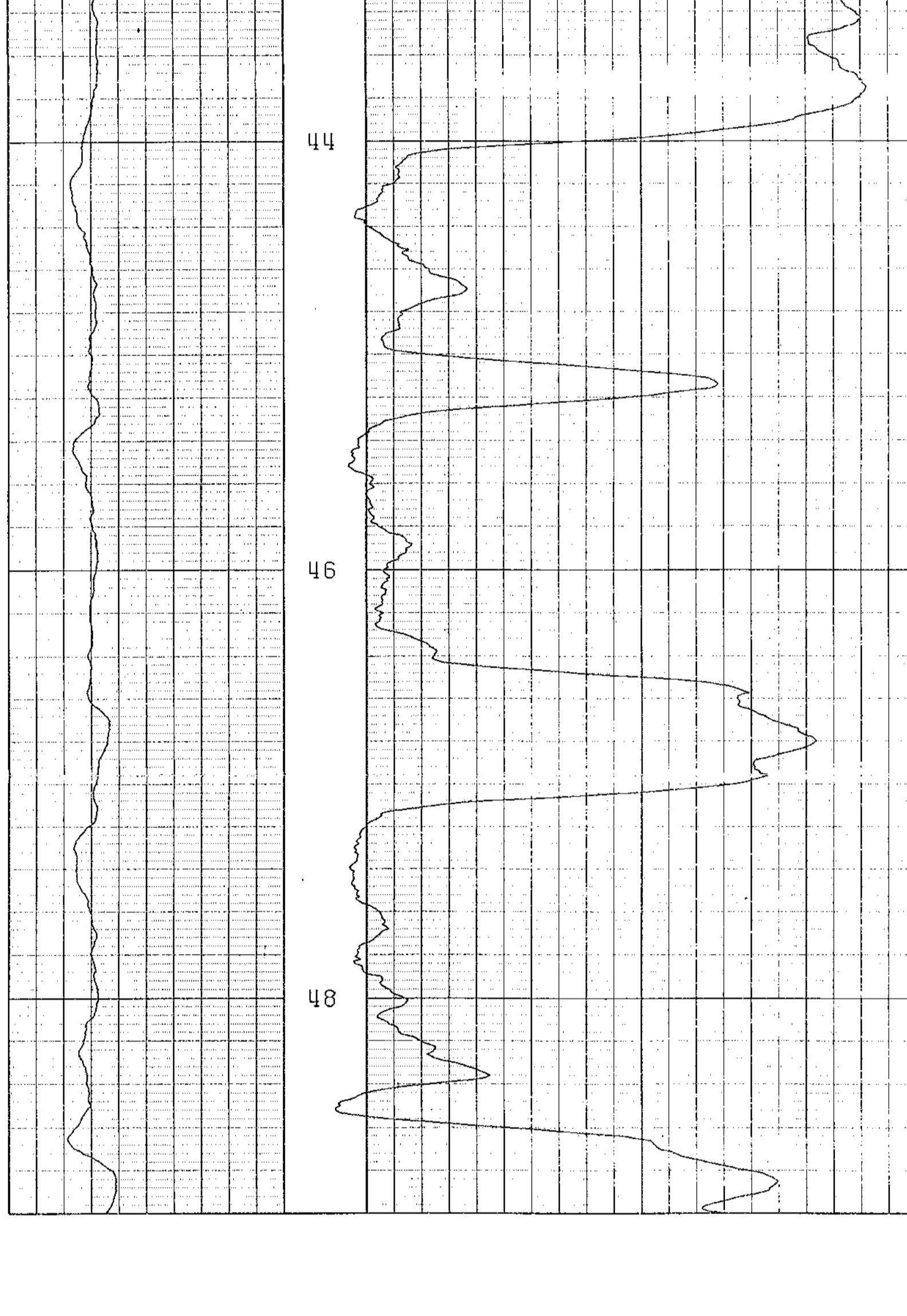
739

DEPTH SCALE 25000 B.R.D (CCS) 15000
 20 CLIENT: QUINTETTE COAL
 WELL NO: QHR 87040
 AREA: TRANSFER PIT
 CASING: 2.0M
 WATER: 27.2M
 DEPTH: 12.00-21.00
 DATE PROCESSED: 10-SEP-87



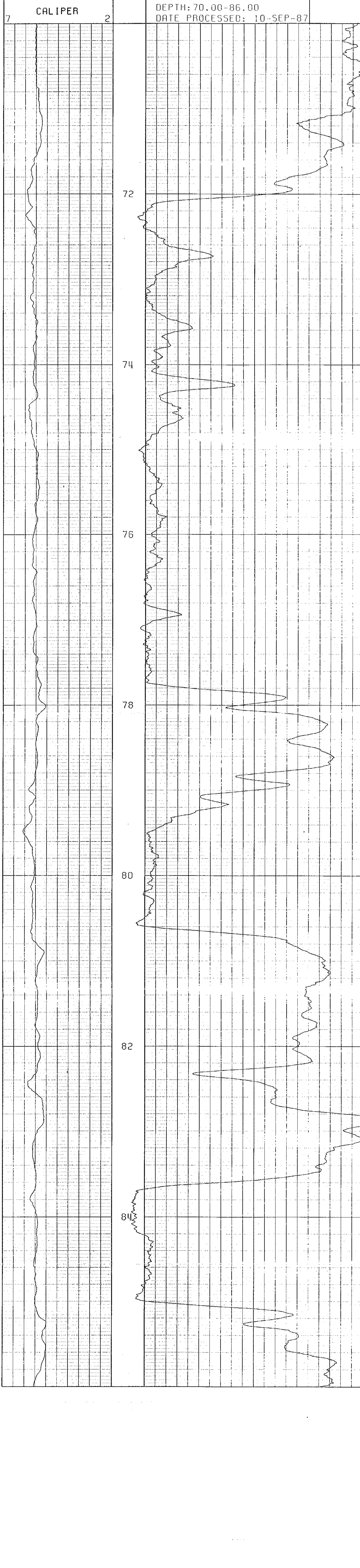
DETAIL LOGS

DEPTH SCALE 25000 B.R.D (CCS) 15000
 20 CLIENT: QHR 87040
 WELL NO: QHR 87040
 AREA:
 CASING:
 WATER:
 DEPTH: 43.00-49.00
 DATE PROCESSED: 10-SEP-87



DETAIL LOGS

DEPTH SCALE 25000 B.R.D (CCS) 15000
 20 CLIENT: QHR 87040
 WELL NO: QHR 87040
 AREA:
 CASING:
 WATER:
 DEPTH: 70.00-86.00
 DATE PROCESSED: 10-SEP-87



Verticality Data Listing

All co-ordinates with respect to True North

| DEPTHS | | BOREHOLE | | AXIAL CO-ORDS. | | POLAR | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | |
|--------|-------|----------|------|----------------|-------|-------|--------|--|--------|------|--------|------|--------|------|------|
| log | true | tilt | AZI | North | East | brng | radius | brng | radius | brng | radius | brng | radius | | |
| 53.00 | 52.98 | 2.5 | 213. | -0.71 | -0.78 | 227. | 1.06 | 229. | 1.37 | 225. | 0.74 | 228. | 1.27 | 226. | 0.84 |
| 54.00 | 53.98 | 3.1 | 220. | -0.75 | -0.81 | 227. | 1.11 | 228. | 1.43 | 225. | 0.78 | 228. | 1.32 | 226. | 0.89 |
| 55.00 | 54.98 | 3.1 | 216. | -0.80 | -0.84 | 227. | 1.16 | 228. | 1.49 | 225. | 0.83 | 227. | 1.38 | 226. | 0.94 |
| 56.00 | 55.98 | 3.0 | 234. | -0.84 | -0.88 | 227. | 1.22 | 228. | 1.56 | 225. | 0.87 | 227. | 1.45 | 225. | 0.99 |
| 57.00 | 56.97 | 2.8 | 214. | -0.87 | -0.91 | 226. | 1.26 | 227. | 1.61 | 225. | 0.91 | 227. | 1.50 | 225. | 1.03 |
| 58.00 | 57.97 | 3.4 | 214. | -0.91 | -0.94 | 226. | 1.31 | 227. | 1.67 | 224. | 0.95 | 227. | 1.55 | 225. | 1.07 |
| 59.00 | 58.97 | 2.8 | 225. | -0.96 | -0.98 | 226. | 1.37 | 227. | 1.74 | 224. | 1.00 | 226. | 1.61 | 225. | 1.12 |
| 60.00 | 59.97 | 3.0 | 222. | -1.00 | -1.01 | 226. | 1.42 | 227. | 1.80 | 224. | 1.05 | 226. | 1.67 | 225. | 1.17 |
| 61.00 | 60.97 | 2.7 | 228. | -1.03 | -1.05 | 225. | 1.47 | 226. | 1.86 | 224. | 1.09 | 226. | 1.73 | 224. | 1.22 |
| 62.00 | 61.97 | 3.3 | 215. | -1.07 | -1.08 | 225. | 1.53 | 226. | 1.92 | 224. | 1.13 | 226. | 1.79 | 224. | 1.26 |
| 63.00 | 62.97 | 3.1 | 221. | -1.12 | -1.12 | 225. | 1.58 | 226. | 1.98 | 223. | 1.18 | 226. | 1.85 | 224. | 1.31 |
| 64.00 | 63.96 | 3.5 | 218. | -1.16 | -1.15 | 225. | 1.64 | 226. | 2.05 | 223. | 1.23 | 225. | 1.91 | 224. | 1.36 |
| 65.00 | 64.96 | 3.3 | 218. | -1.21 | -1.19 | 225. | 1.69 | 225. | 2.11 | 223. | 1.28 | 225. | 1.97 | 224. | 1.41 |
| 66.00 | 65.96 | 3.1 | 225. | -1.25 | -1.22 | 224. | 1.75 | 225. | 2.17 | 223. | 1.32 | 225. | 2.03 | 224. | 1.46 |
| 67.00 | 66.96 | 3.1 | 221. | -1.29 | -1.26 | 224. | 1.80 | 225. | 2.24 | 223. | 1.36 | 225. | 2.09 | 223. | 1.51 |
| 68.00 | 67.96 | 3.3 | 225. | -1.33 | -1.29 | 224. | 1.85 | 225. | 2.30 | 223. | 1.41 | 225. | 2.15 | 223. | 1.56 |
| 69.00 | 68.96 | 3.5 | 218. | -1.38 | -1.33 | 224. | 1.92 | 225. | 2.37 | 222. | 1.46 | 224. | 2.22 | 223. | 1.61 |
| 70.00 | 69.95 | 3.6 | 220. | -1.44 | -1.37 | 224. | 1.98 | 224. | 2.44 | 222. | 1.52 | 224. | 2.29 | 223. | 1.67 |
| 71.00 | 70.95 | 3.6 | 213. | -1.49 | -1.41 | 223. | 2.05 | 224. | 2.52 | 222. | 1.58 | 224. | 2.36 | 223. | 1.73 |
| 72.00 | 71.95 | 4.1 | 221. | -1.54 | -1.45 | 223. | 2.12 | 224. | 2.60 | 222. | 1.64 | 224. | 2.44 | 222. | 1.80 |
| 73.00 | 72.95 | 3.8 | 222. | -1.59 | -1.49 | 223. | 2.18 | 224. | 2.67 | 222. | 1.70 | 224. | 2.51 | 222. | 1.86 |
| 74.00 | 73.95 | 3.8 | 218. | -1.64 | -1.53 | 223. | 2.24 | 224. | 2.74 | 222. | 1.75 | 223. | 2.58 | 222. | 1.91 |
| 75.00 | 74.94 | 3.6 | 217. | -1.69 | -1.57 | 223. | 2.31 | 224. | 2.81 | 222. | 1.80 | 223. | 2.64 | 222. | 1.97 |
| 76.00 | 75.94 | 3.9 | 213. | -1.74 | -1.61 | 223. | 2.37 | 223. | 2.88 | 221. | 1.86 | 223. | 2.71 | 222. | 2.03 |
| 77.00 | 76.94 | 3.3 | 219. | -1.80 | -1.64 | 222. | 2.43 | 223. | 2.96 | 221. | 1.91 | 223. | 2.78 | 222. | 2.09 |
| 78.00 | 77.94 | 3.4 | 213. | -1.85 | -1.68 | 222. | 2.50 | 223. | 3.03 | 221. | 1.97 | 223. | 2.85 | 222. | 2.14 |
| 79.00 | 78.94 | 4.1 | 214. | -1.90 | -1.72 | 222. | 2.56 | 223. | 3.10 | 221. | 2.03 | 223. | 2.92 | 221. | 2.20 |
| 80.00 | 79.93 | 3.8 | 212. | -1.96 | -1.76 | 222. | 2.63 | 223. | 3.18 | 221. | 2.09 | 223. | 3.00 | 221. | 2.27 |
| 81.00 | 80.93 | 3.6 | 215. | -2.01 | -1.80 | 222. | 2.70 | 223. | 3.25 | 221. | 2.14 | 222. | 3.07 | 221. | 2.33 |
| 82.00 | 81.93 | 3.7 | 210. | -2.07 | -1.84 | 222. | 2.76 | 222. | 3.33 | 221. | 2.20 | 222. | 3.14 | 221. | 2.39 |
| 83.00 | 82.93 | 4.0 | 213. | -2.12 | -1.88 | 221. | 2.84 | 222. | 3.41 | 220. | 2.26 | 222. | 3.22 | 221. | 2.45 |
| 84.00 | 83.92 | 4.0 | 220. | -2.18 | -1.92 | 221. | 2.90 | 222. | 3.49 | 220. | 2.32 | 222. | 3.29 | 221. | 2.52 |
| 85.00 | 84.92 | 3.5 | 210. | -2.23 | -1.95 | 221. | 2.97 | 222. | 3.56 | 220. | 2.38 | 222. | 3.36 | 221. | 2.57 |
| 86.00 | 85.92 | 4.2 | 215. | -2.29 | -1.99 | 221. | 3.03 | 222. | 3.63 | 220. | 2.44 | 221. | 3.43 | 220. | 2.64 |
| 87.00 | 86.92 | 4.6 | 216. | -2.35 | -2.04 | 221. | 3.11 | 222. | 3.71 | 220. | 2.50 | 221. | 3.51 | 220. | 2.70 |
| 88.00 | 87.91 | 4.8 | 215. | -2.41 | -2.08 | 221. | 3.18 | 221. | 3.80 | 220. | 2.57 | 221. | 3.59 | 220. | 2.77 |
| 89.00 | 88.91 | 4.6 | 219. | -2.48 | -2.12 | 221. | 3.27 | 221. | 3.89 | 220. | 2.64 | 221. | 3.68 | 220. | 2.85 |
| 90.00 | 89.91 | 3.8 | 215. | -2.55 | -2.17 | 220. | 3.34 | 221. | 3.98 | 219. | 2.71 | 221. | 3.76 | 220. | 2.92 |
| 91.00 | 90.90 | 4.1 | 215. | -2.61 | -2.21 | 220. | 3.41 | 221. | 4.06 | 219. | 2.77 | 221. | 3.84 | 220. | 2.99 |
| 92.00 | 91.90 | 4.6 | 214. | -2.67 | -2.25 | 220. | 3.49 | 221. | 4.14 | 219. | 2.84 | 221. | 3.93 | 219. | 3.06 |
| 93.00 | 92.90 | 5.2 | 211. | -2.75 | -2.30 | 220. | 3.58 | 221. | 4.24 | 219. | 2.92 | 220. | 4.02 | 219. | 3.14 |
| 94.00 | 93.89 | 5.4 | 209. | -2.82 | -2.35 | 220. | 3.67 | 220. | 4.34 | 219. | 3.01 | 220. | 4.12 | 219. | 3.23 |
| 95.00 | 94.89 | 5.6 | 217. | -2.90 | -2.40 | 220. | 3.77 | 220. | 4.44 | 219. | 3.09 | 220. | 4.21 | 219. | 3.32 |
| 96.00 | 95.88 | 5.8 | 215. | -2.99 | -2.45 | 219. | 3.86 | 220. | 4.55 | 218. | 3.18 | 220. | 4.32 | 219. | 3.41 |
| 97.00 | 96.88 | 5.4 | 215. | -3.07 | -2.51 | 219. | 3.96 | 220. | 4.65 | 218. | 3.27 | 220. | 4.42 | 219. | 3.50 |
| 97.90 | 97.77 | 5.7 | 216. | -3.14 | -2.55 | 219. | 4.05 | 220. | 4.74 | 218. | 3.35 | 220. | 4.51 | 219. | 3.58 |

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CONTINUOUS VERTICALITY ANALYSIS

CLIENT_____

QUINTETTE COAL

BOREHOLE_____

QHR-87-040

AREA_____

TRANSFER

COUNTRY_____

CANADA

DATE LOGGED.....16-AUG-87

DATE PROCESSED..08-JAN-88

UPPER REFERENCE POINT....

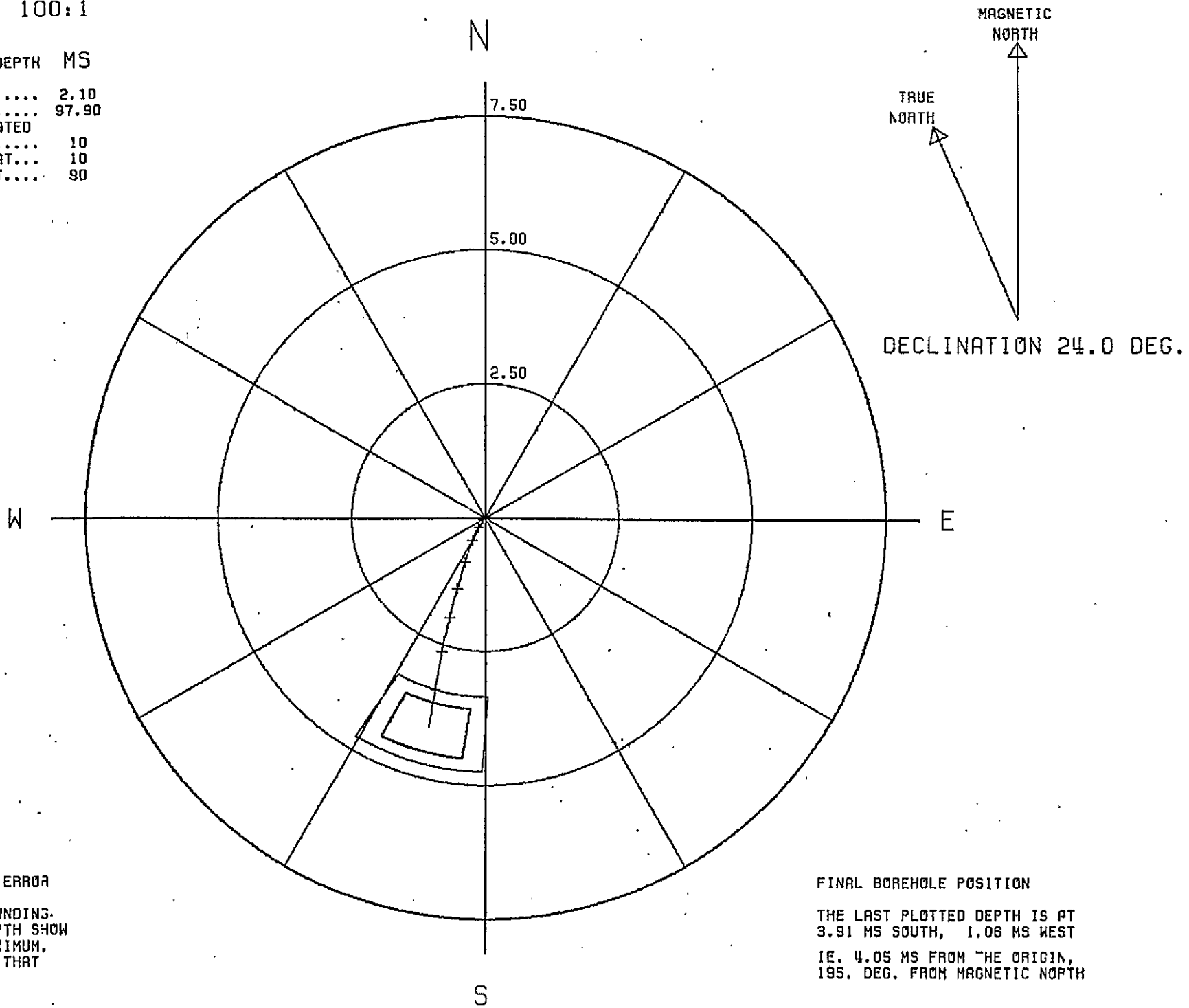
LOWER REFERENCE POINT....T.D.

CROSS-SECTION

SCALE: 100:1

ALL FIGURES IN LOG DEPTH MS

| | |
|---------------------------|-------|
| TARGET ORIGIN DEPTH..... | 2.10 |
| LAST PLOTTED DEPTH..... | 97.90 |
| DEPTH MARKERS ANNOTATED | |
| IN MULTIPLES OF..... | 10 |
| FIRST DEPTH MARKER AT... | 10 |
| LAST DEPTH MARKER AT..... | 90 |



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT 3.91 MS SOUTH, 1.06 MS WEST
IE. 4.05 MS FROM THE ORIGIN,
195. DEG. FROM MAGNETIC NORTH

VERTICAL SECTIONS

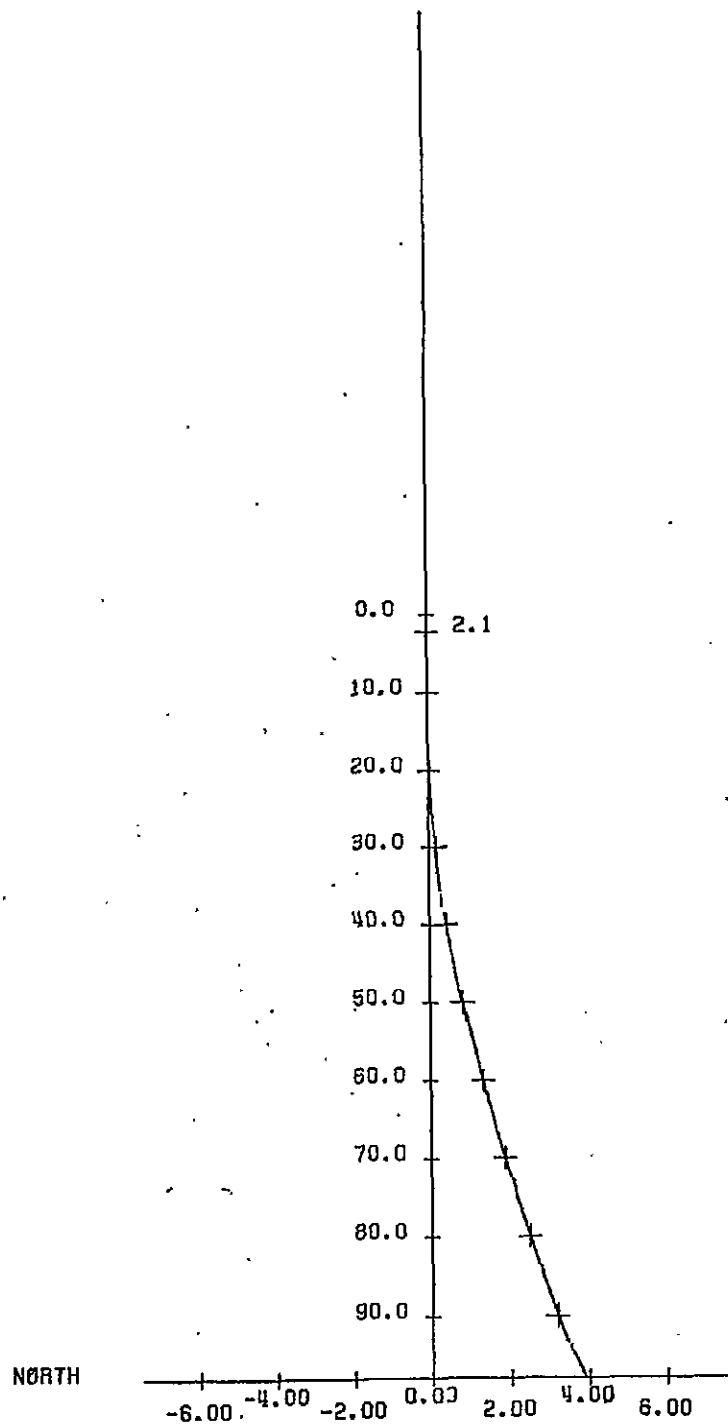
(TRUE DEPTH VS. DISPLACEMENT)

N-S SECTION

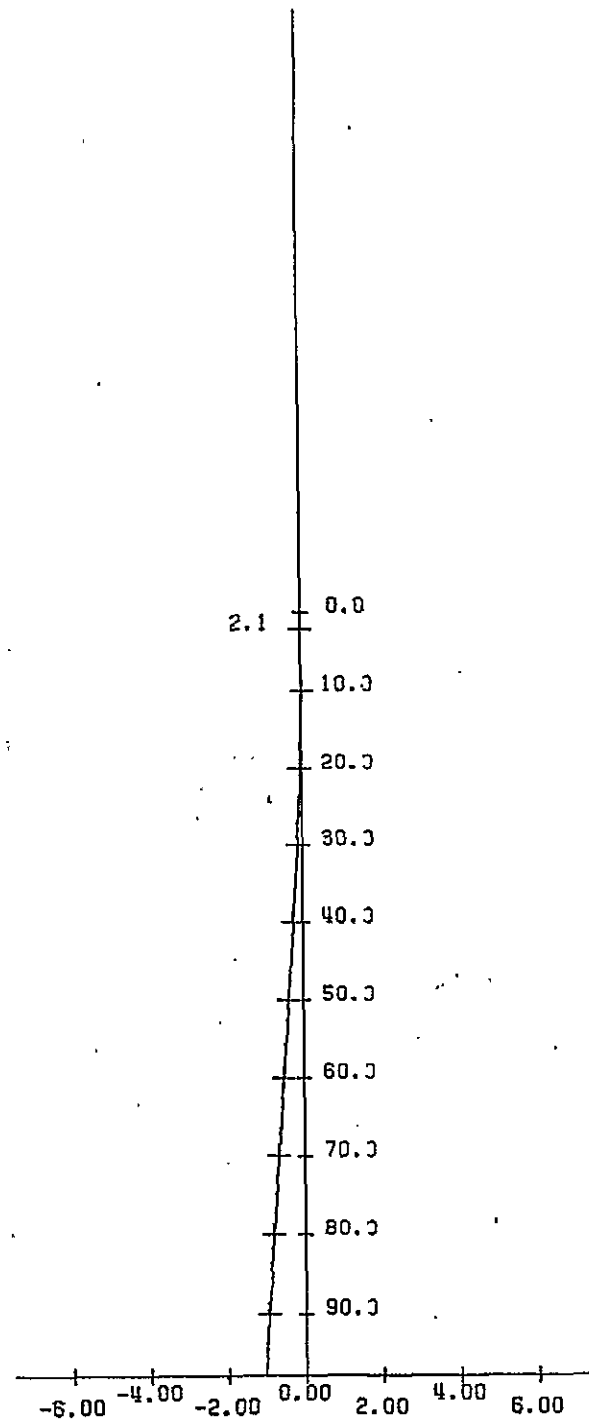
W-E SECTION

VERTICAL SCALE 1000 : 1

MARKERS ANNOTATED
AS ABOVE



SOUTH



WEST

EAST

DEPTH CORRECTION ANALYSIS

LOG
DEPTH

VERTICAL SCALE 1000 : 1

0.0
2.1

10.0

20.0

30.0

40.0

50.0

60.0

70.0

80.0

90.0

0.00 -0.02 -0.04 -0.06 -0.08 -0.10 -0.12 -0.14

CORRECTION FOR TRUE DEPTH
SCALE 2 : 1

| DEPTHS: | | DEPTHS: | |
|---------|-------|---------|-------|
| LOG | TRUE | LOG | TRUE |
| 3.00 | 3.00 | 73.00 | 72.95 |
| 4.00 | 4.00 | 74.00 | 73.95 |
| 5.00 | 5.00 | 75.00 | 74.94 |
| 6.00 | 6.00 | 76.00 | 75.94 |
| 7.00 | 7.00 | 77.00 | 76.94 |
| 8.00 | 8.00 | 78.00 | 77.94 |
| 9.00 | 9.00 | 79.00 | 78.94 |
| 10.00 | 10.00 | 80.00 | 79.93 |
| 11.00 | 11.00 | 81.00 | 80.93 |
| 12.00 | 12.00 | 82.00 | 81.93 |
| 13.00 | 13.00 | 83.00 | 82.93 |
| 14.00 | 14.00 | 84.00 | 83.92 |
| 15.00 | 15.00 | 85.00 | 84.92 |
| 16.00 | 16.00 | 86.00 | 85.92 |
| 17.00 | 17.00 | 87.00 | 86.92 |
| 18.00 | 18.00 | 88.00 | 87.91 |
| 19.00 | 19.00 | 89.00 | 88.91 |
| 20.00 | 20.00 | 90.00 | 89.91 |
| 21.00 | 21.00 | 91.00 | 90.90 |
| 22.00 | 22.00 | 92.00 | 91.90 |
| 23.00 | 23.00 | 93.00 | 92.90 |
| 24.00 | 24.00 | 94.00 | 93.89 |
| 25.00 | 25.00 | 95.00 | 94.89 |
| 26.00 | 26.00 | 96.00 | 95.88 |
| 27.00 | 27.00 | 97.00 | 96.88 |
| 28.00 | 28.00 | 98.00 | 97.87 |
| 29.00 | 29.00 | | |
| 30.00 | 30.00 | | |
| 31.00 | 31.00 | | |
| 32.00 | 32.00 | | |
| 33.00 | 33.00 | | |
| 34.00 | 34.00 | | |
| 35.00 | 35.00 | | |
| 36.00 | 36.00 | | |
| 37.00 | 37.00 | | |
| 38.00 | 37.99 | | |
| 39.00 | 38.99 | | |
| 40.00 | 39.99 | | |
| 41.00 | 40.99 | | |
| 42.00 | 41.99 | | |
| 43.00 | 42.99 | | |
| 44.00 | 43.99 | | |
| 45.00 | 44.99 | | |
| 46.00 | 45.99 | | |
| 47.00 | 46.99 | | |
| 48.00 | 47.99 | | |
| 49.00 | 48.99 | | |
| 50.00 | 49.98 | | |
| 51.00 | 50.98 | | |
| 52.00 | 51.98 | | |
| 53.00 | 52.98 | | |
| 54.00 | 53.98 | | |
| 55.00 | 54.98 | | |
| 56.00 | 55.98 | | |
| 57.00 | 56.97 | | |
| 58.00 | 57.97 | | |
| 59.00 | 58.97 | | |
| 60.00 | 59.97 | | |
| 61.00 | 60.97 | | |
| 62.00 | 61.97 | | |
| 63.00 | 62.97 | | |
| 64.00 | 63.96 | | |
| 65.00 | 64.96 | | |
| 66.00 | 65.96 | | |
| 67.00 | 66.96 | | |
| 68.00 | 67.96 | | |
| 69.00 | 68.96 | | |
| 70.00 | 69.95 | | |
| 71.00 | 70.95 | | |
| 72.00 | 71.95 | | |

BPB VERTICALITY ANALYSIS
INTERPRETATION NOTES

1. All plotted output is automatically scaled to obtain the best visual effect within the physical space available. The maximum scales being 50000:1 (metric) & 48000:1 (imperial), and the minimum 1:1.
 2. The analysis is derived by integrating 10 cm./6" sampled data down the borehole. However the listing supplied will contain a maximum of 200 points in multiples of 1,2,5,10,20,25,50, or 100 metres/feet depending upon the total range of the analysis. However the analysis is calculated for the entire range of the borehole, and the final borehole position is included in the listing.
 3. Computed verticality may only be fully derived in open sections of the borehole, away from the influence of any magnetic media (as the azimuth calculations are derived from three solid state magnetometers). So the analysis will generally begin at the end of the casing, and all borehole positional information will relate to this depth.
 4. Up to ten cross-sections may be requested for any borehole to be displayed at any scale (the default scale is that of the cross-section for the entire hole).
 5. Borehole positional error is derived assuming the following parameters:

| | | |
|---------------|---------------|------------------|
| | TILT(degrees) | AZIMUTH(degrees) |
| Typical Error | +/- 0.33333 | +/- 10.0 |
| Maximum Error | +/- 0.5 | +/- 15.0 |
 6. Error analysis may be calculated and plotted from the data listing as follows:
 - a) Plot the four coordinates from the error listing (based upon zero azimuth error) on a target plot, origin at the start of the analysis.
 - b) Describe arcs of +/- 10 degrees & +/- 15 degrees (centre at the origin) through the inner and outer points respectively.
 - c) Connect the respective arcs together with straight lines to give the typical & maximum borehole positional error.
 7. Given below is a full description of the parameters displayed on the ensuing listing:

| | |
|---------------------|--|
| LOG DEPTH | the depth recorded on the field logs for the borehole |
| TRUE DEPTH | the true vertical depth corresponding to the above depth, corrected from the start of the analysis |
| HOLE TILT & AZIMUTH | the SAMPLED borehole orientation |
| AXIAL COORDINATES | the coordinates North & East from the target origin |
| POLAR COORDINATES | the polar, or radial, coordinates of the borehole |
| ERROR COORDINATES | the polar coordinates corresponding to the typical and maximum tilt error |
- N.B. The reference point for ALL bearing angles on this listing is given at the top of each sheet

Verticality Data Listing

Date processed: 08-JAN-88

All co-ordinates with respect to True North

| DEPTHS | | BOREHOLE tilt | AZI | AXIAL CO-ORDS. | | POLAR | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | |
|--------|-------|------------------|------|----------------|-------|-------|--------|--|--------|------|--------|------|--------|------|------|
| log | true | | | North | East | brng | radius | brng | radius | brng | radius | brng | radius | | |
| 3.00 | 3.00 | 0.2 | 328. | 0.00 | 0.00 | 28. | 0.00 | 26. | 0.01 | 200. | 0.00 | 26. | 0.01 | 187. | 0.00 |
| 4.00 | 4.00 | 0.0 | 13. | 0.01 | 0.00 | 26. | 0.01 | 25. | 0.02 | 197. | 0.00 | 25. | 0.02 | 85. | 0.00 |
| 5.00 | 5.00 | 0.3 | 237. | 0.01 | 0.00 | 16. | 0.01 | 10. | 0.01 | 170. | 0.00 | 11. | 0.01 | 128. | 0.00 |
| 6.00 | 6.00 | 0.5 | 156. | 0.00 | 0.00 | 30. | 0.00 | 17. | 0.01 | 153. | 0.00 | 20. | 0.01 | 106. | 0.00 |
| 7.00 | 7.00 | 0.2 | 27. | 0.00 | 0.00 | 80. | 0.00 | 68. | 0.01 | 186. | 0.00 | 70. | 0.01 | 131. | 0.00 |
| 8.00 | 8.00 | 0.6 | 292. | 0.00 | 0.01 | 70. | 0.01 | 62. | 0.01 | 187. | 0.00 | 64. | 0.01 | 110. | 0.00 |
| 9.00 | 9.00 | 0.3 | 324. | 0.00 | 0.01 | 83. | 0.01 | 75. | 0.02 | 158. | 0.00 | 77. | 0.02 | 108. | 0.00 |
| 10.00 | 10.00 | 0.1 | 256. | 0.01 | 0.02 | 72. | 0.02 | 66. | 0.03 | 104. | 0.01 | 68. | 0.03 | 84. | 0.01 |
| 11.00 | 11.00 | 0.1 | 169. | 0.01 | 0.01 | 71. | 0.02 | 68. | 0.03 | 86. | 0.00 | 69. | 0.02 | 76. | 0.01 |
| 12.00 | 12.00 | 0.2 | 341. | 0.00 | 0.01 | 77. | 0.01 | 78. | 0.02 | 74. | 0.00 | 78. | 0.02 | 76. | 0.01 |
| 13.00 | 13.00 | 0.7 | 5. | 0.01 | 0.01 | 61. | 0.01 | 62. | 0.02 | 54. | 0.00 | 62. | 0.02 | 58. | 0.01 |
| 14.00 | 14.00 | 0.5 | 238. | 0.00 | 0.01 | 62. | 0.01 | 61. | 0.02 | 66. | 0.01 | 61. | 0.01 | 64. | 0.01 |
| 15.00 | 15.00 | 0.7 | 268. | 0.01 | 0.00 | 2. | 0.01 | 336. | 0.01 | 66. | 0.00 | 342. | 0.01 | 43. | 0.00 |
| 16.00 | 16.00 | 0.7 | 302. | 0.01 | -0.01 | 310. | 0.01 | 298. | 0.02 | 61. | 0.00 | 300. | 0.02 | 5. | 0.00 |
| 17.00 | 17.00 | 0.5 | 237. | 0.00 | -0.02 | 284. | 0.02 | 280. | 0.04 | 58. | 0.00 | 280. | 0.03 | 310. | 0.00 |
| 18.00 | 18.00 | 1.0 | 270. | 0.00 | -0.03 | 271. | 0.03 | 270. | 0.05 | 354. | 0.00 | 270. | 0.05 | 276. | 0.01 |
| 19.00 | 19.00 | 0.6 | 249. | 0.00 | -0.04 | 265. | 0.04 | 265. | 0.07 | 281. | 0.00 | 265. | 0.06 | 268. | 0.02 |
| 20.00 | 20.00 | 0.6 | 299. | -0.01 | -0.05 | 259. | 0.05 | 260. | 0.09 | 257. | 0.01 | 259. | 0.08 | 259. | 0.02 |
| 21.00 | 21.00 | 0.9 | 250. | -0.01 | -0.06 | 257. | 0.06 | 257. | 0.11 | 253. | 0.01 | 257. | 0.09 | 256. | 0.03 |
| 22.00 | 22.00 | 0.8 | 235. | -0.02 | -0.07 | 253. | 0.07 | 254. | 0.13 | 248. | 0.01 | 254. | 0.11 | 252. | 0.03 |
| 23.00 | 23.00 | 1.1 | 227. | -0.03 | -0.08 | 251. | 0.08 | 251. | 0.15 | 244. | 0.02 | 251. | 0.13 | 249. | 0.04 |
| 24.00 | 24.00 | 0.8 | 232. | -0.04 | -0.09 | 248. | 0.09 | 249. | 0.17 | 240. | 0.02 | 248. | 0.15 | 245. | 0.05 |
| 25.00 | 25.00 | 1.4 | 236. | -0.05 | -0.11 | 246. | 0.12 | 247. | 0.20 | 238. | 0.03 | 247. | 0.17 | 243. | 0.06 |
| 26.00 | 26.00 | 0.7 | 211. | -0.06 | -0.12 | 244. | 0.13 | 245. | 0.22 | 237. | 0.04 | 245. | 0.19 | 241. | 0.07 |
| 27.00 | 27.00 | 1.0 | 217. | -0.07 | -0.13 | 243. | 0.15 | 244. | 0.24 | 237. | 0.05 | 243. | 0.21 | 240. | 0.08 |
| 28.00 | 28.00 | 1.2 | 221. | -0.08 | -0.15 | 241. | 0.17 | 242. | 0.27 | 235. | 0.06 | 242. | 0.24 | 239. | 0.10 |
| 29.00 | 29.00 | 1.3 | 237. | -0.09 | -0.16 | 240. | 0.19 | 241. | 0.30 | 235. | 0.07 | 241. | 0.27 | 238. | 0.11 |
| 30.00 | 30.00 | 1.9 | 233. | -0.11 | -0.18 | 239. | 0.21 | 240. | 0.34 | 235. | 0.09 | 240. | 0.30 | 237. | 0.13 |
| 31.00 | 31.00 | 1.2 | 234. | -0.12 | -0.20 | 239. | 0.24 | 240. | 0.37 | 235. | 0.11 | 240. | 0.33 | 237. | 0.15 |
| 32.00 | 32.00 | 1.5 | 251. | -0.13 | -0.22 | 239. | 0.26 | 240. | 0.40 | 236. | 0.12 | 240. | 0.35 | 238. | 0.17 |
| 33.00 | 33.00 | 1.4 | 233. | -0.15 | -0.24 | 238. | 0.28 | 240. | 0.43 | 235. | 0.13 | 239. | 0.38 | 237. | 0.18 |
| 34.00 | 34.00 | 1.3 | 234. | -0.16 | -0.26 | 238. | 0.31 | 239. | 0.47 | 235. | 0.15 | 239. | 0.41 | 236. | 0.20 |
| 35.00 | 35.00 | 1.5 | 215. | -0.18 | -0.28 | 237. | 0.34 | 238. | 0.50 | 234. | 0.17 | 238. | 0.45 | 236. | 0.23 |
| 36.00 | 36.00 | 1.6 | 249. | -0.20 | -0.30 | 237. | 0.36 | 238. | 0.53 | 234. | 0.18 | 238. | 0.47 | 235. | 0.24 |
| 37.00 | 37.00 | 1.4 | 212. | -0.21 | -0.32 | 236. | 0.38 | 237. | 0.57 | 234. | 0.20 | 237. | 0.50 | 235. | 0.26 |
| 38.00 | 37.99 | 2.2 | 223. | -0.23 | -0.34 | 235. | 0.41 | 236. | 0.60 | 233. | 0.22 | 236. | 0.54 | 234. | 0.29 |
| 39.00 | 38.99 | 1.6 | 218. | -0.26 | -0.36 | 235. | 0.45 | 236. | 0.65 | 232. | 0.25 | 235. | 0.58 | 233. | 0.31 |
| 40.00 | 39.99 | 2.2 | 224. | -0.29 | -0.39 | 234. | 0.49 | 235. | 0.69 | 231. | 0.28 | 235. | 0.62 | 232. | 0.35 |
| 41.00 | 40.99 | 2.2 | 221. | -0.31 | -0.42 | 233. | 0.52 | 234. | 0.74 | 230. | 0.31 | 234. | 0.67 | 232. | 0.38 |
| 42.00 | 41.99 | 2.5 | 229. | -0.34 | -0.45 | 232. | 0.56 | 234. | 0.79 | 230. | 0.34 | 233. | 0.71 | 231. | 0.41 |
| 43.00 | 42.99 | 2.6 | 218. | -0.37 | -0.47 | 232. | 0.60 | 233. | 0.83 | 229. | 0.37 | 233. | 0.76 | 230. | 0.45 |
| 44.00 | 43.99 | 2.6 | 226. | -0.40 | -0.50 | 231. | 0.65 | 233. | 0.89 | 229. | 0.40 | 232. | 0.81 | 230. | 0.48 |
| 45.00 | 44.99 | 2.7 | 234. | -0.43 | -0.54 | 231. | 0.69 | 232. | 0.94 | 229. | 0.44 | 232. | 0.86 | 230. | 0.52 |
| 46.00 | 45.99 | 2.4 | 224. | -0.47 | -0.57 | 230. | 0.73 | 232. | 0.99 | 228. | 0.48 | 231. | 0.91 | 229. | 0.56 |
| 47.00 | 46.99 | 2.7 | 224. | -0.50 | -0.60 | 230. | 0.78 | 231. | 1.05 | 228. | 0.51 | 231. | 0.96 | 229. | 0.60 |
| 48.00 | 47.99 | 2.9 | 217. | -0.53 | -0.62 | 230. | 0.82 | 231. | 1.09 | 227. | 0.54 | 230. | 1.00 | 228. | 0.64 |
| 49.00 | 48.99 | 2.8 | 213. | -0.57 | -0.65 | 229. | 0.86 | 230. | 1.15 | 227. | 0.58 | 230. | 1.05 | 228. | 0.68 |
| 50.00 | 49.98 | 2.7 | 217. | -0.61 | -0.69 | 228. | 0.92 | 230. | 1.21 | 226. | 0.62 | 229. | 1.11 | 227. | 0.72 |
| 51.00 | 50.98 | 2.8 | 217. | -0.65 | -0.72 | 228. | 0.97 | 229. | 1.27 | 226. | 0.67 | 229. | 1.17 | 227. | 0.77 |
| 52.00 | 51.98 | 2.5 | 233. | -0.68 | -0.75 | 228. | 1.01 | 229. | 1.32 | 226. | 0.71 | 229. | 1.22 | 227. | 0.81 |

QHR87041
VALLEY ROAD

LOG DEPTH 0100.00
TRUE DEPTH 0178.84
TILT 8.84 DG
BEARING 227.33 DG
NORTHING -013.71
EASTING -012.46

LOG DEPTH 0170.00
TRUE DEPTH 0168.96
TILT 8.50 DG
BEARING 226.84 DG
NORTHING -012.66
EASTING -011.33

LOG DEPTH 0160.00
TRUE DEPTH 0159.07
TILT 8.56 DG
BEARING 225.19 DG
NORTHING -011.65
EASTING -010.25

LOG DEPTH 0150.00
TRUE DEPTH 0149.18
TILT 8.24 DG
BEARING 225.56 DG
NORTHING -010.60
EASTING -009.20

LOG DEPTH 0140.00
TRUE DEPTH 0139.28
TILT 8.11 DG
BEARING 224.03 DG
NORTHING -009.60
EASTING -008.17

LOG DEPTH 0130.00
TRUE DEPTH 0129.38
TILT 8.14 DG
BEARING 220.09 DG
NORTHING -008.58
EASTING -007.19

LOG DEPTH 0120.00
TRUE DEPTH 0119.48
TILT 7.77 DG
BEARING 220.43 DG
NORTHING -007.50
EASTING -006.28

LOG DEPTH 0110.00
TRUE DEPTH 0109.57
TILT 7.16 DG
BEARING 219.64 DG
NORTHING -006.47
EASTING -005.40

LOG DEPTH 0100.00
TRUE DEPTH 0099.65
TILT 6.96 DG
BEARING 215.66 DG
NORTHING -005.51
EASTING -004.61

LOG DEPTH 0090.00
TRUE DEPTH 0089.72
TILT 6.94 DG
BEARING 217.10 DG
NORTHING -004.52
EASTING -003.90

LOG DEPTH 0080.00
TRUE DEPTH 0079.79
TILT 6.57 DG
BEARING 223.24 DG
NORTHING -003.56
EASTING -003.17

LOG DEPTH 0070.00
TRUE DEPTH 0069.86
TILT 5.95 DG
BEARING 220.26 DG
NORTHING -002.72
EASTING -002.38

LOG DEPTH 0060.00
TRUE DEPTH 0059.91
TILT 5.13 DG
BEARING 218.27 DG
NORTHING -001.93
EASTING -001.71

LOG DEPTH 0050.00
TRUE DEPTH 0049.95
TILT 4.57 DG
BEARING 226.40 DG
NORTHING -001.23
EASTING -001.16

LOG DEPTH 0040.00
TRUE DEPTH 0039.98
TILT 3.44 DG
BEARING 218.61 DG
NORTHING -000.68
EASTING -000.58

LOG DEPTH 0030.00
TRUE DEPTH 0030.00
TILT 1.52 DG
BEARING 189.73 DG
NORTHING -000.21
EASTING -000.21

LOG DEPTH 0020.00
TRUE DEPTH 0020.00
TILT .68 DG
BEARING 253.74 DG
NORTHING +000.04
EASTING -000.16

LOG DEPTH 0010.00
TRUE DEPTH 0010.00
TILT 1.09 DG
BEARING 326.81 DG
NORTHING +000.08
EASTING -000.05

LOG DEPTH 0005.00
TRUE DEPTH 0005.00
TILT 1.35 DG
BEARING 318.98 DG
NORTHING +000.00
EASTING +000.00

739

DEPTH = 0010.00
TILT = 84 DG
BEARING = 334.65 DG

DEPTH = 0020.00
TILT = 53 DG
BEARING = 172.83 DG

DEPTH = 0030.00
TILT = 2.52 DG
BEARING = 206.64 DG

DEPTH = 0040.00
TILT = 4.37 DG
BEARING = 230.58 DG

DEPTH = 0050.00
TILT = 4.76 DG
BEARING = 222.22 DG

DEPTH = 0060.00
TILT = 5.49 DG
BEARING = 214.31 DG

DEPTH = 0070.00
TILT = 6.41 DG
BEARING = 226.20 DG

DEPTH = 0080.00
TILT = 6.73 DG
BEARING = 220.29 DG

DEPTH = 0090.00
TILT = 7.15 DG
BEARING = 213.92 DG

DEPTH = 0100.00
TILT = 6.77 DG
BEARING = 217.40 DG

DEPTH = 0110.00
TILT = 7.56 DG
BEARING = 221.88 DG

DEPTH = 0120.00
TILT = 7.99 DG
BEARING = 218.98 DG

DEPTH = 0130.00
TILT = 8.30 DG
BEARING = 221.21 DG

DEPTH = 0140.00
TILT = 7.93 DG
BEARING = 226.85 DG

DEPTH = 0150.00
TILT = 8.56 DG
BEARING = 224.27 DG

DEPTH = 0160.00
TILT = 8.56 DG
BEARING = 226.11 DG

DEPTH = 0170.00
TILT = 8.44 DG
BEARING = 227.57 DG

DEPTH = 0180.00
TILT = 9.25 DG
BEARING = 227.09 DG

DATE 870816
JOB NUMBER 0041
LOG LABEL 026.1
MAG 1 MAX 229
MAG 1 MIN 129
MAG 2 MAX 229
MAG 2 MIN 130
MAG 3 MAX 205
MAG 3 MIN 155

L. CELL 1 TILT 1 20
L. CELL 1 CPS 1 233
L. CELL 1 TILT 2 -20
L. CELL 1 CPS 2 126
L. CELL 2 TILT 1 20
L. CELL 2 CPS 1 232
L. CELL 2 TILT 2 -20
L. CELL 2 CPS 2 126

MAG 1 CENTRE 179
MAG 2 CENTRE 179
MAG 3 CENTRE 180
L. CELL 1 CENTRE 180
L. CELL 2 CENTRE 179

MAG DECL 024
STOP DEPTH 0005

QHR87041
WALLEY ROAD



BOREHOLE QHR 87-041
CLIENT QUINETTE

AREA TRANSFER
COUNTRY CANADA
DATE LOGGED 8.2.1988

DEPTH SCALE 1:200
LOG SCALE 1:1000

BOREHOLE DATA
PERMANENT DATUM GROUND LEVEL
ELEVATION OF P.D. 889
DRILLER G.L.A.

COAL LITHOLOGY LOG
MATERIALS FROM G.L.A.
DEPTH REACHED 187.50m
CASING SHOE 4.00m
BIT SIZES 1 8.1" TO 4.0" 2 5.5" TO 3.0"
3 3" TO 2.0" 4 2" TO 1.5"
CASING SIZES 1 6.1" TO 4.1m 2 4" TO 3.0m

SONDE TYPE KATLAK
SONDE COMBINATION 1.01 8.7 & C
LEVEL 1.5-2.0m
VISCOSITY N.A.
BAR Form at mark temp N.A.
SONDE N.A.

LOG SUITE
GAMMA RAY 153
L.S. DENSITY 5852
CALIPER 0041

OPERATION DATA
FIRST READING 154.10m
LAST READING 186.6m
INTERVAL LOGGED 46.50m
LIFT-TRUCK No 46.V.2.17
ENGINEER M.C.O.I.
WITNESS

739

EQUIPMENT AND RECORDING DATA

| COAL COMBINATION SONDE | | | | | | | | | | | | | | | |
|------------------------|-------------------|----------|--------------|---------|--------|--------------|----------|----|-----|---|-----|---|--|--|--|
| LOG | EQUIPMENT | TAPING | PANEL | CAL | DEPTHS | SEAM LOG RUN | | | | | | | | | |
| SONDE | SOURCE | LOG TAPE | RECORD SPEED | FC SECS | FROM | TO | INTERVAL | | | | | | | | |
| GAMMA RAY | 153 | 36.7 | Y | 9 | 11 | 9 | 1 | 44 | 186 | 0 | 186 | Y | | | |
| L.S. DENSITY | 5852 | 0041 | Y | 9 | 11 | 9 | 3 | 7 | 187 | 1 | 186 | Y | | | |
| CALIPER | SIDEWALL POSITION | | Y | 9 | 11 | 9 | 3 | 0 | 187 | 1 | 186 | Y | | | |

| COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log) | | | | | | | INTERVAL TOTAL |
|---|------|------|------|------|-----|------|----------------|
| FROM | TO | 140m | 107m | 84m | 62m | 2.8m | |
| 124m | 103m | 78m | 59m | 2.3m | | | |
| INTERVAL | 16m | 4m | 6m | 3m | 5m | | 34m |

| ADDITIONAL SONDES RUN | | | | REFER TO ADDITIONAL HEADINGS | REMARKS |
|-----------------------|------|-------------------|------------------|------------------------------|---------|
| SONDE | LOG | GENERAL SCALE LOG | DETAIL SCALE LOG | | |
| 215 | R-N | | 1:200 | | |
| 231 | VERT | | | | |

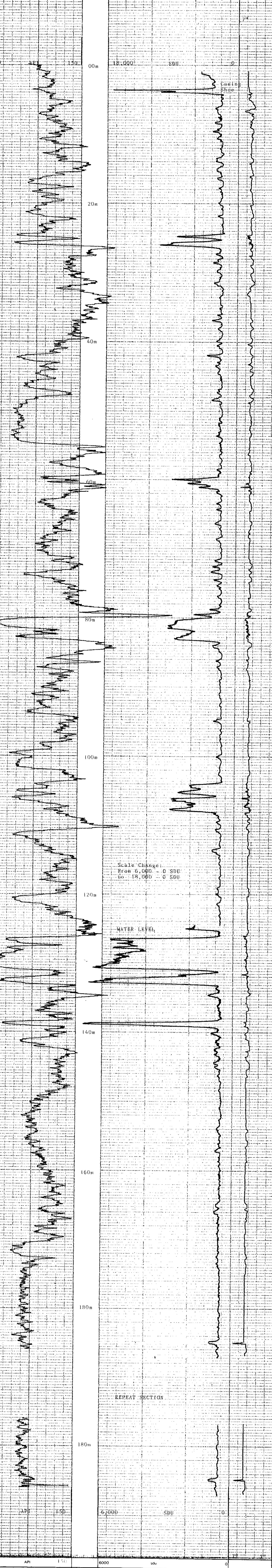
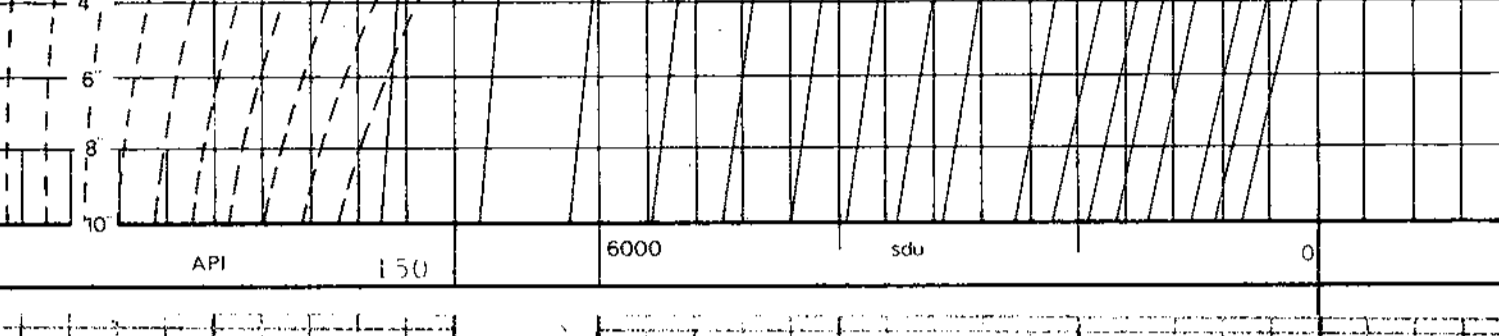
BPB COAL LITHOLOGY LOG

CALIBRATION DATA

| | | | | | | | |
|---------------------------------|-----------------|--------------|-----------|-------|-------------------|-----|-----|
| JIG No | VALUE @ 5' DIAM | JIG CAL DATE | JIG VALUE | SDU @ | g/cm ³ | ins | cps |
| JIG MARK SHOWN AT ABOVE VALUE - | | JIG No | SPAN | NORM | SDU - CPS | ins | cps |

| GAMMA RAY | DEPTH | BULK DENSITY | CALIPER |
|-----------|-------|-------------------|---------|
| | | g/cm ³ | INCHES |

HOLE SIZE CORRECTION DATA



| GAMMA RAY | DEPTH | BULK DENSITY | CALIPER |
|-----------|-------|-------------------|---------|
| | | g/cm ³ | INCHES |



BOREHOLE QHR 87-041 AREA TRANSFER
CLIENT QUINETTE COUNTRY CANADA

COAL LITHOLOGY LOG



NEUTRON-NEUTRON
GAMMA RAY

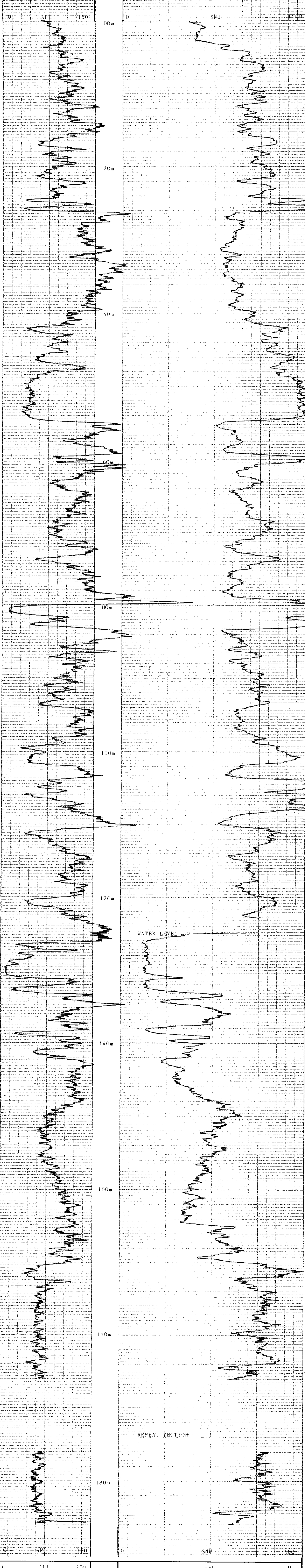
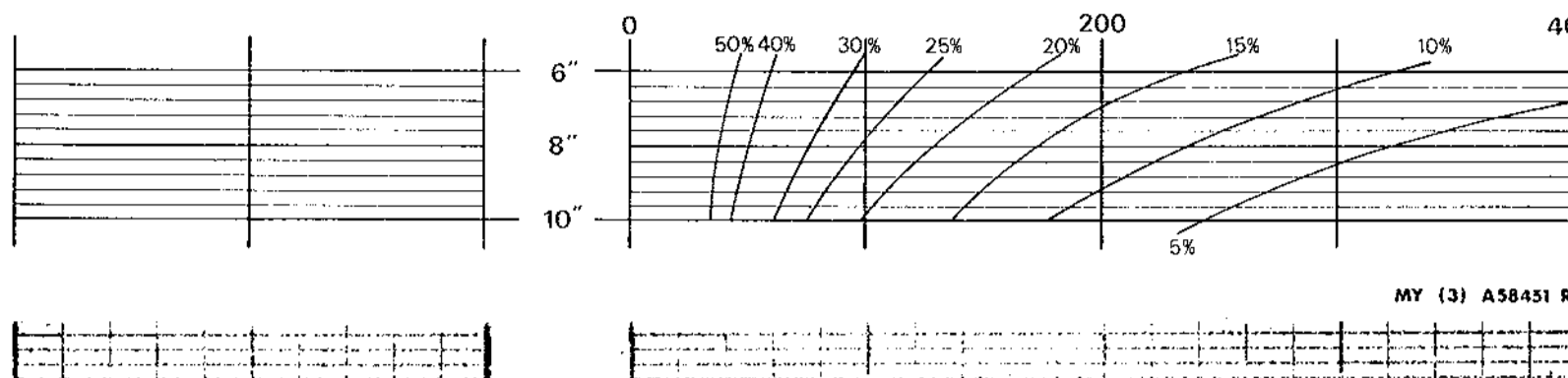
BOREHOLE QHR 87-041
CLIENT QUINTEITE

AREA TRANSFER
COUNTRY CANADA
DATE LOGGED 87 08 16

BOREHOLE DATA REFER TO LITHOLOGY LOG
OPERATION DATA REFER TO LITHOLOGY LOG
EQUIPMENT AND RECORDING DATA

LOG TAPING PANEL
LOG RECORDING SPEED T.C. (NOVA)
TAPED SPEED REPLAY SPEED SECS. (NOVA)
N-N Y 9 D 9 1 3 3 8
G.M.M. Y 9 R 0 1
REMARKS
739

| | | |
|-----------|---------|-----------------|
| GAMMA RAY | DEPTH | NEUTRON-NEUTRON |
| 0 | API 150 | SM 500 |



| | | |
|-----------|---------|-----------------|
| GAMMA RAY | DEPTH | NEUTRON-NEUTRON |
| 0 | API 150 | SM 500 |

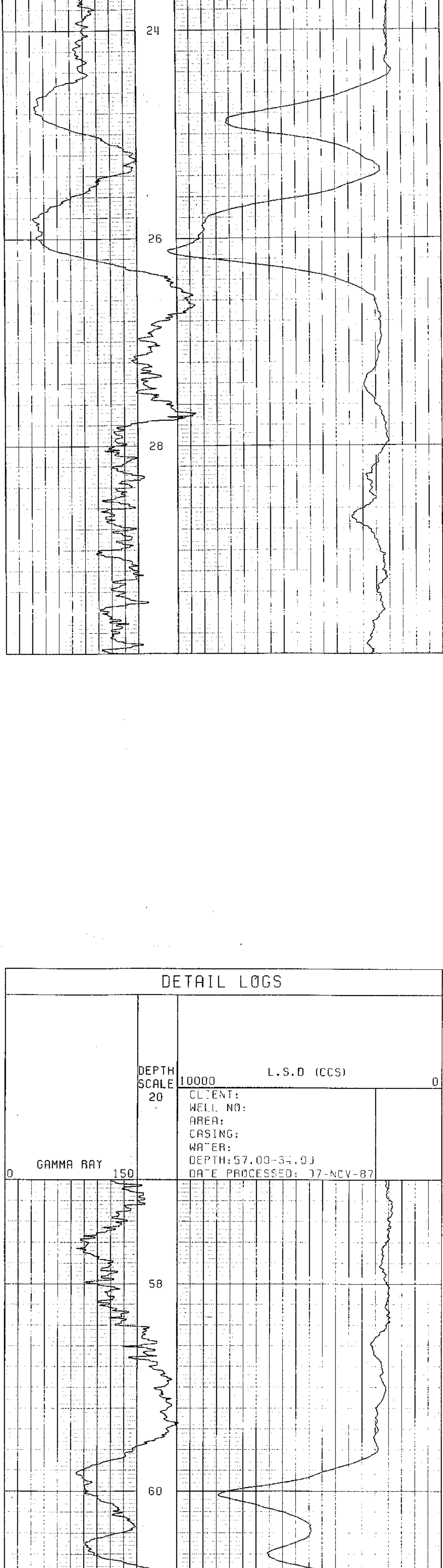
BOREHOLE QHR 87-041 AREA TRANSFER
CLIENT QUINTEITE COUNTRY CANADA



DETAIL LOGS

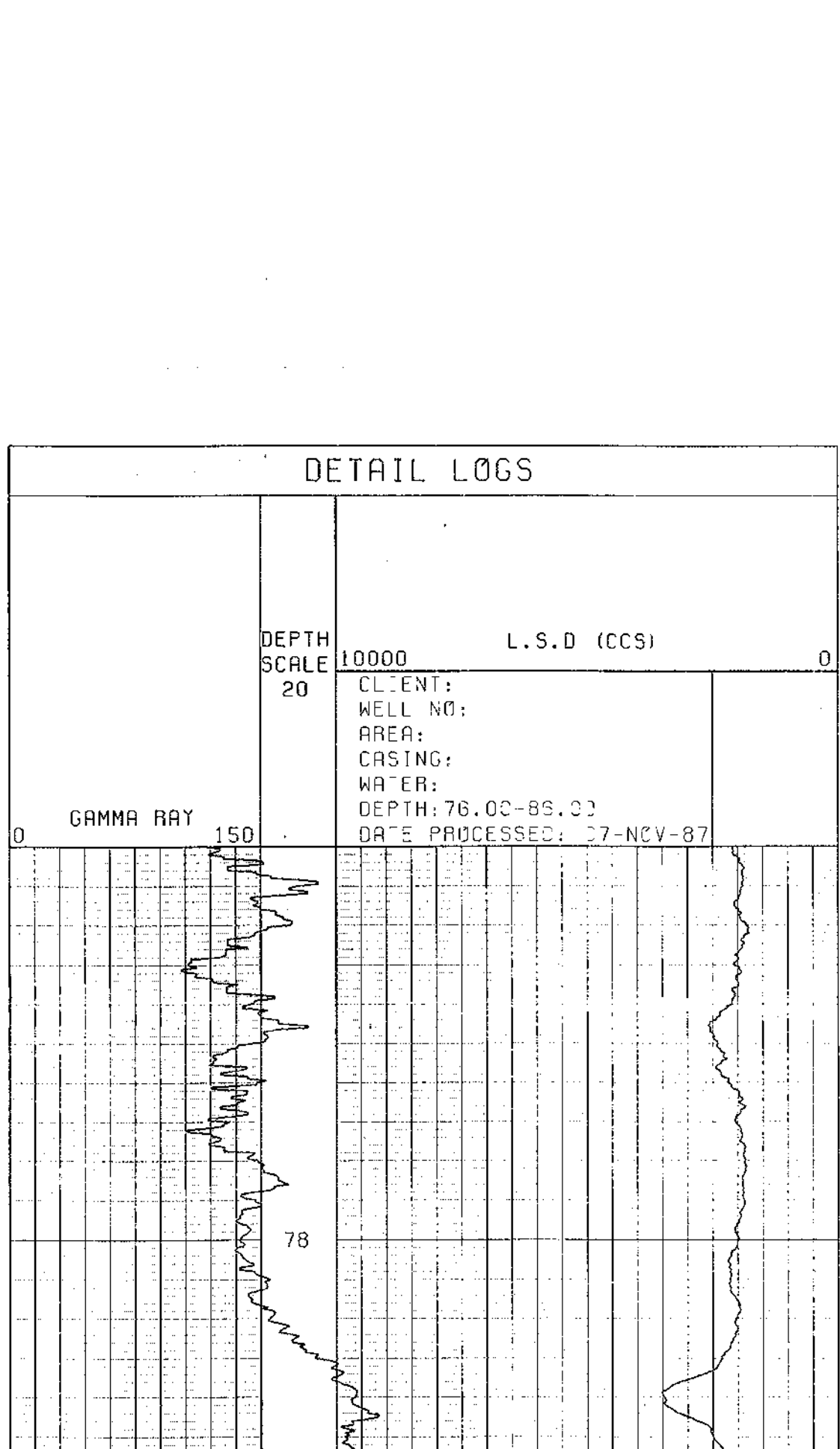
739

DEPTH SCALE 10000 L.S.D (CCS) 0
 CLIENT: QUINETTE CO-OP
 WELL NO: 04R 87-041
 AREA: TRANSFER PIT
 CASING: 4.20M
 WATER: 125.2CM
 DEPTH: 22.00-30.00
 DATE PROCESSED: 27-NOV-87



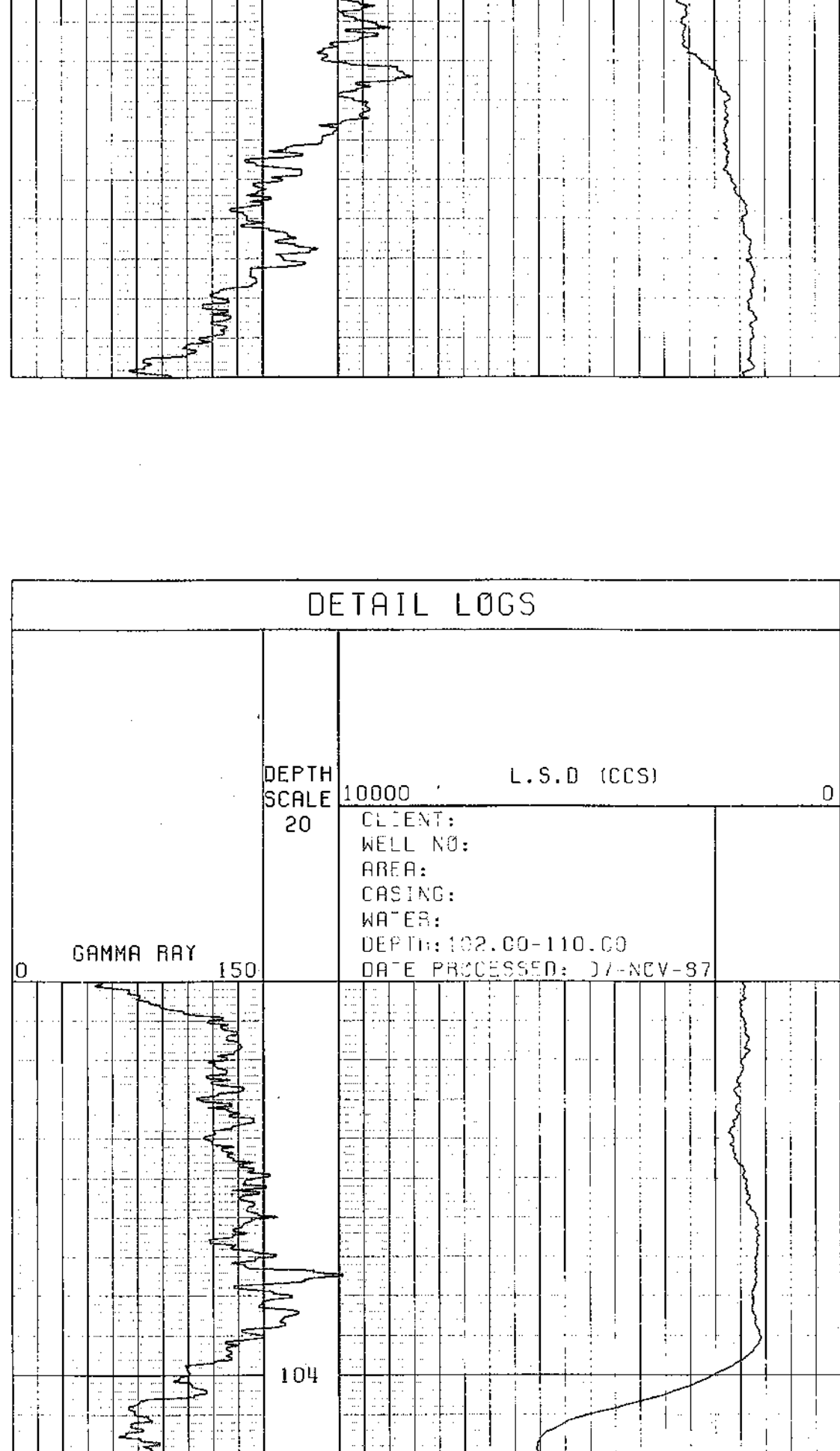
DETAIL LOGS

DEPTH SCALE 10000 L.S.D (CCS) 0
 CLIENT: QUINETTE CO-OP
 WELL NO:
 AREA:
 CASING:
 WATER:
 DEPTH: 57.00-64.00
 DATE PROCESSED: 27-NOV-87



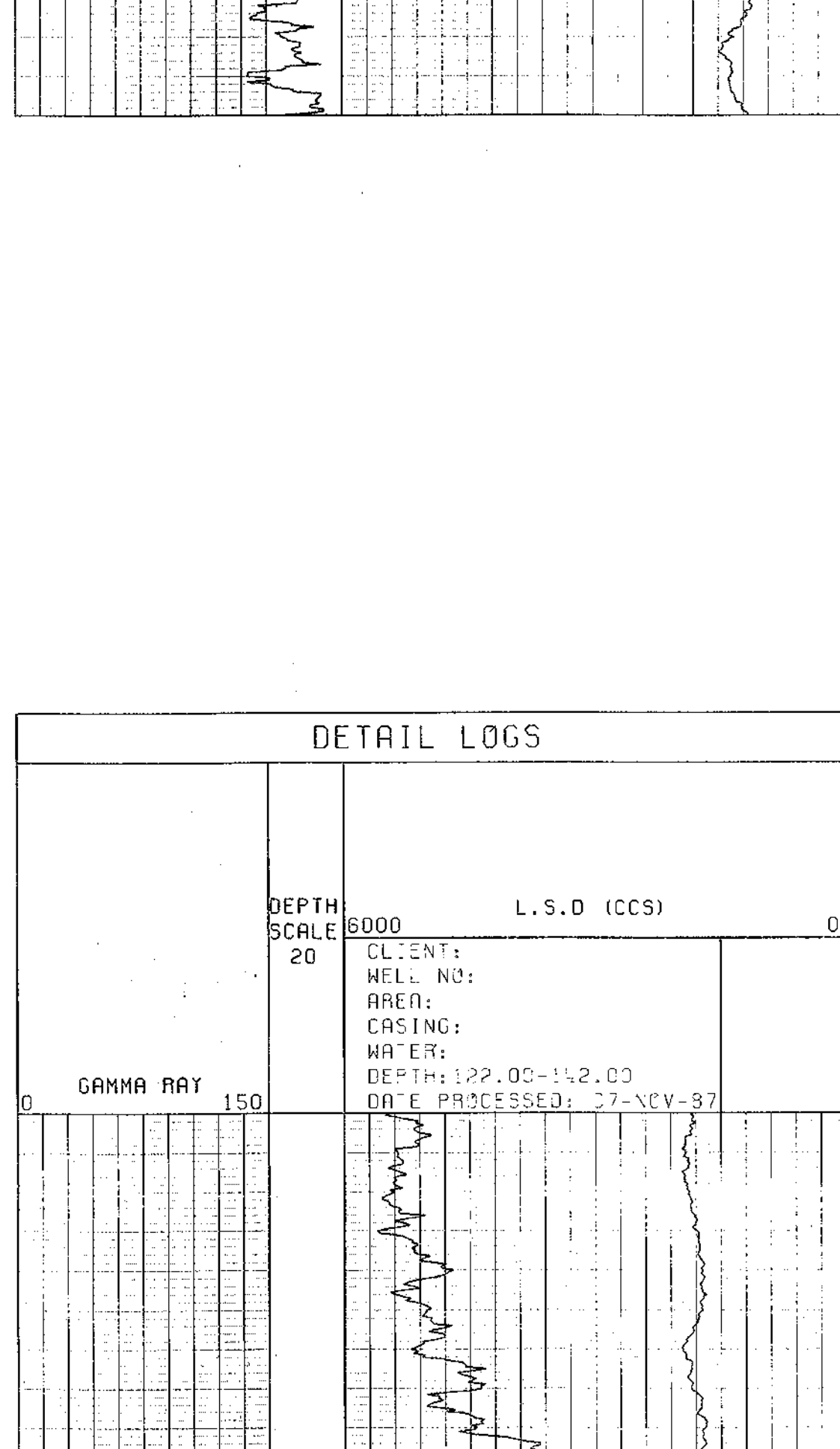
DETAIL LOGS

DEPTH SCALE 10000 L.S.D (CCS) 0
 CLIENT: QUINETTE CO-OP
 WELL NO:
 AREA:
 CASING:
 WATER:
 DEPTH: 76.00-86.00
 DATE PROCESSED: 27-NOV-87



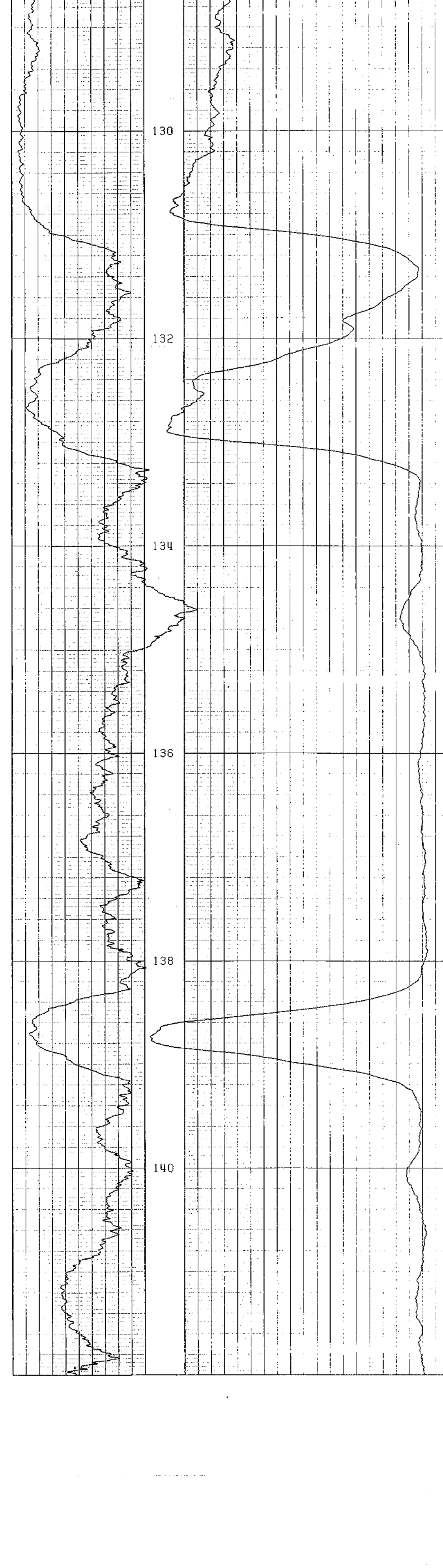
DETAIL LOGS

DEPTH SCALE 10000 L.S.D (CCS) 0
 CLIENT: QUINETTE CO-OP
 WELL NO:
 AREA:
 CASING:
 WATER:
 DEPTH: 102.00-110.00
 DATE PROCESSED: 27-NOV-87



DETAIL LOGS

DEPTH SCALE 6000 L.S.D (CCS) 0
 CLIENT: QUINETTE CO-OP
 WELL NO:
 AREA:
 CASING:
 WATER:
 DEPTH: 122.00-142.00
 DATE PROCESSED: 27-NOV-87



DETAIL LOGS

739

DEPTH SCALE 25000 B.R.D (CCS) 15000

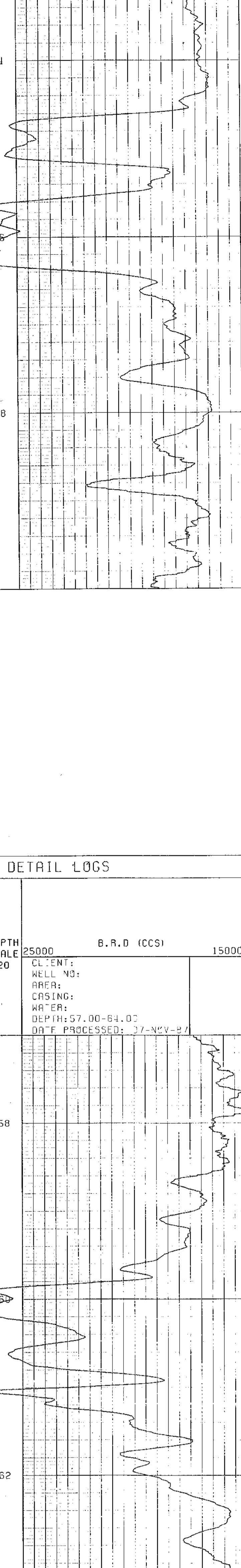
CLIENT: QUINTEITE COPL
WELL NO: 0HR 97-G-1
AREA: TRANSFER PIT
CASING: 11.2CM
WATER: 125.23M
DEPTH: 22.00-30.00
DATE PROCESSED: 27-NOV-87

CALIPER

20

24

28



DETAIL LOGS

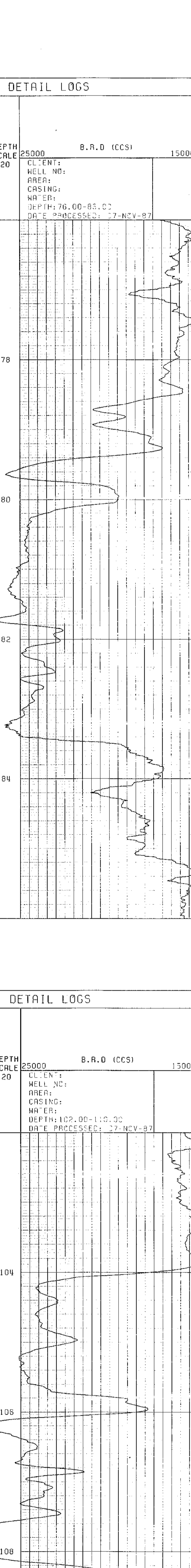
DEPTH SCALE 25000 B.R.D (CCS) 15000

CLIENT:
WELL NO:
AREA:
CASING:
WATER:
DEPTH: 57.00-64.00
DATE PROCESSED: 27-NOV-87

CALIPER

58

62



DETAIL LOGS

DEPTH SCALE 25000 B.R.D (CCS) 15000

CLIENT:
WELL NO:
AREA:
CASING:
WATER:
DEPTH: 76.00-85.00
DATE PROCESSED: 27-NOV-87

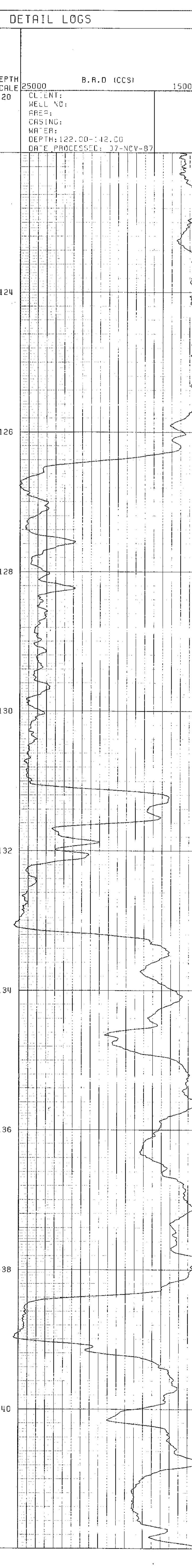
CALIPER

78

80

82

84



DETAIL LOGS

DEPTH SCALE 25000 B.R.D (CCS) 15000

CLIENT:
WELL NO:
AREA:
CASING:
WATER:
DEPTH: 102.00-110.00
DATE PROCESSED: 27-NOV-87

CALIPER

104

106

108

DETAIL LOGS

DEPTH SCALE 25000 B.R.D (CCS) 15000

CLIENT:
WELL NO:
AREA:
CASING:
WATER:
DEPTH: 122.00-142.00
DATE PROCESSED: 27-NOV-87

CALIPER

124

126

128

130

132

134

136

138

140



CONTINUOUS VERTICALITY ANALYSIS

739

CLIENT_____

BOREHOLE_____

AREA_____

COUNTRY_____

QUINTETTE COAL

QHR-87-041

TRANSFER

CANADA

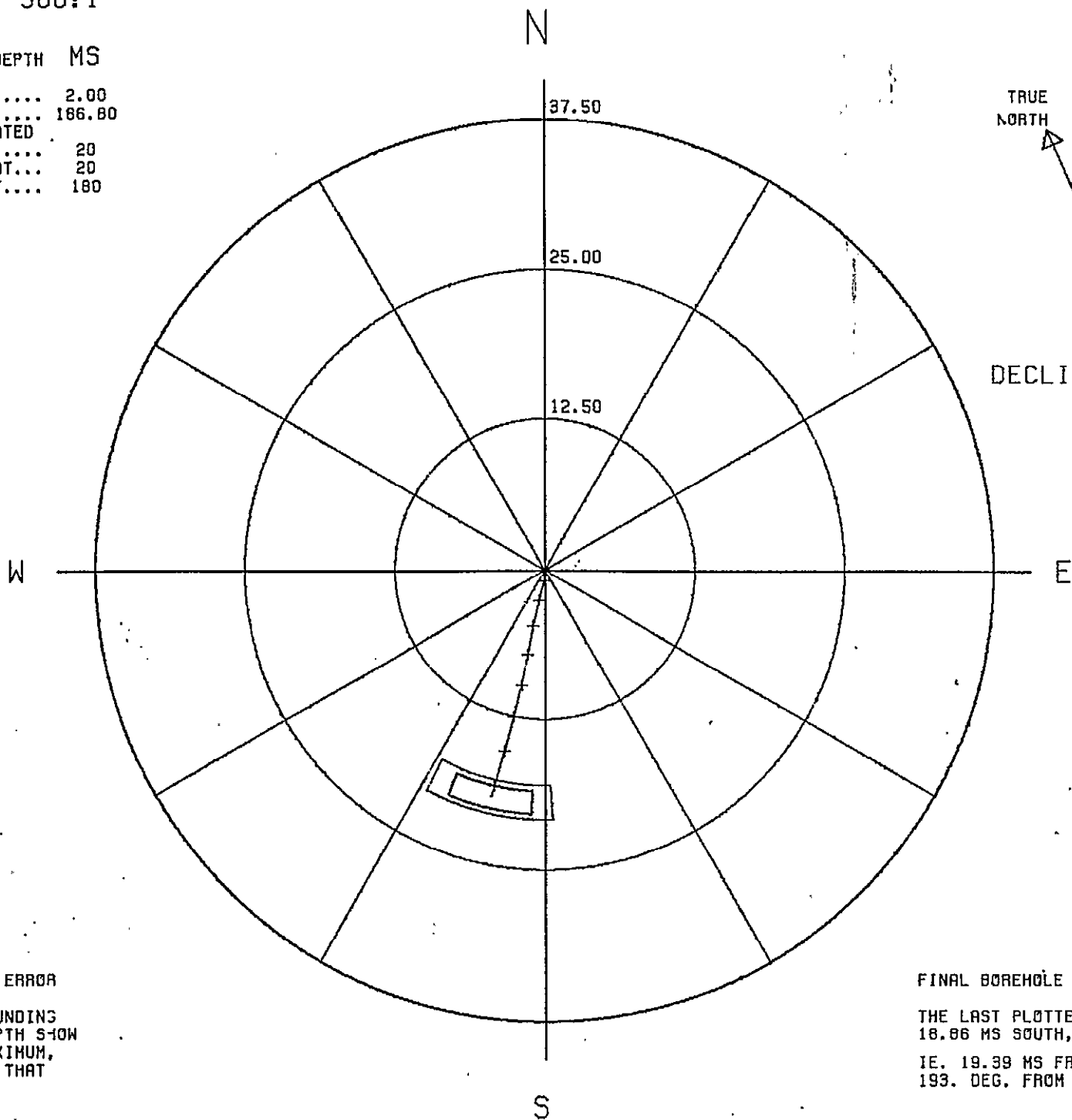
DATE LOGGED.....16-AUG-87
DATE PROCESSED..08-JAN-88
UPPER REFERENCE POINT.....
LOWER REFERENCE POINT.....T.D.

CROSS-SECTION

SCALE: 500:1

ALL FIGURES IN LOG DEPTH MS

| | |
|--------------------------|--------|
| TARGET ORIGIN DEPTH..... | 2.00 |
| LAST PLOTTED DEPTH..... | 186.80 |
| DEPTH MARKERS ANNOTATED | |
| IN MULTIPLES OF..... | 20 |
| FIRST DEPTH MARKER AT... | 20 |
| LAST DEPTH MARKER AT.... | 180 |



MAGNETIC NORTH

TRUE NORTH

DECLINATION 24.0 DEG.

BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT 18.86 MS SOUTH, 4.50 MS WEST IE. 19.99 MS FROM THE ORIGIN, 193. DEG. FROM MAGNETIC NORTH

VERTICAL SECTIONS

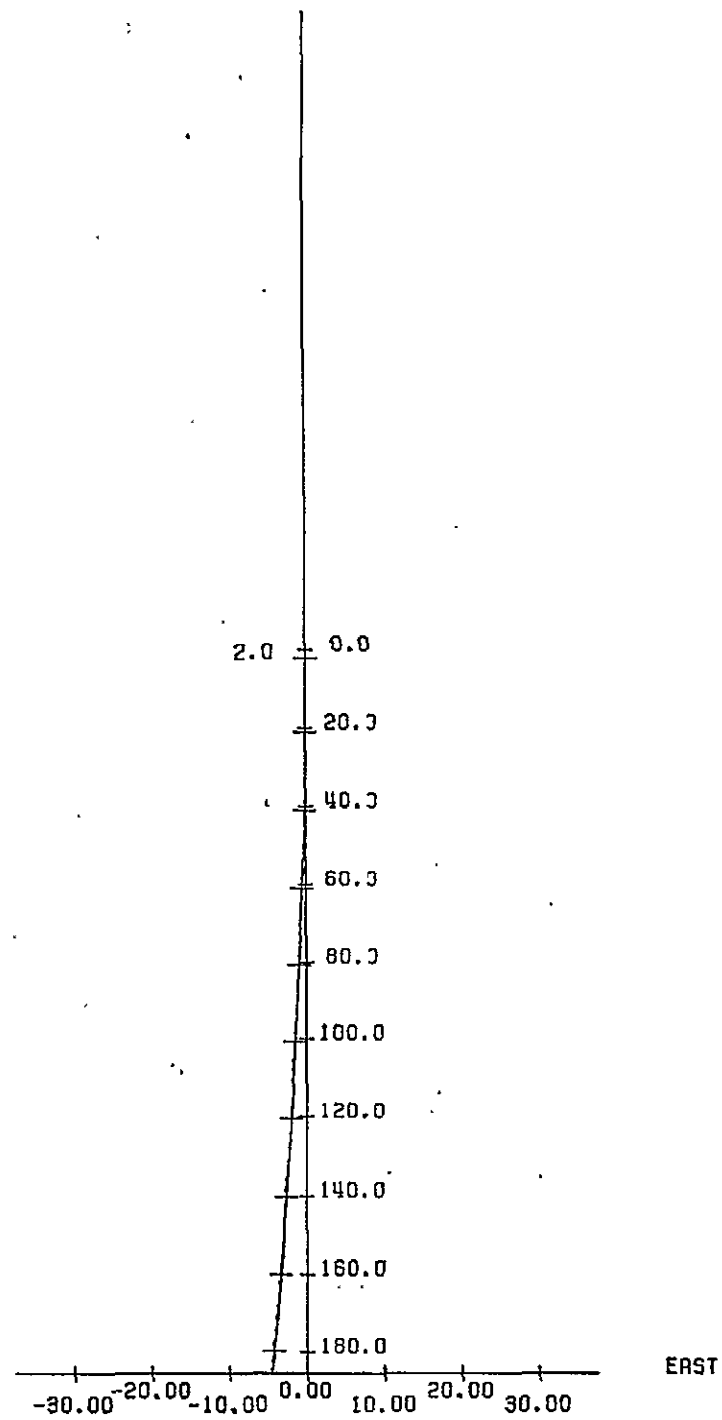
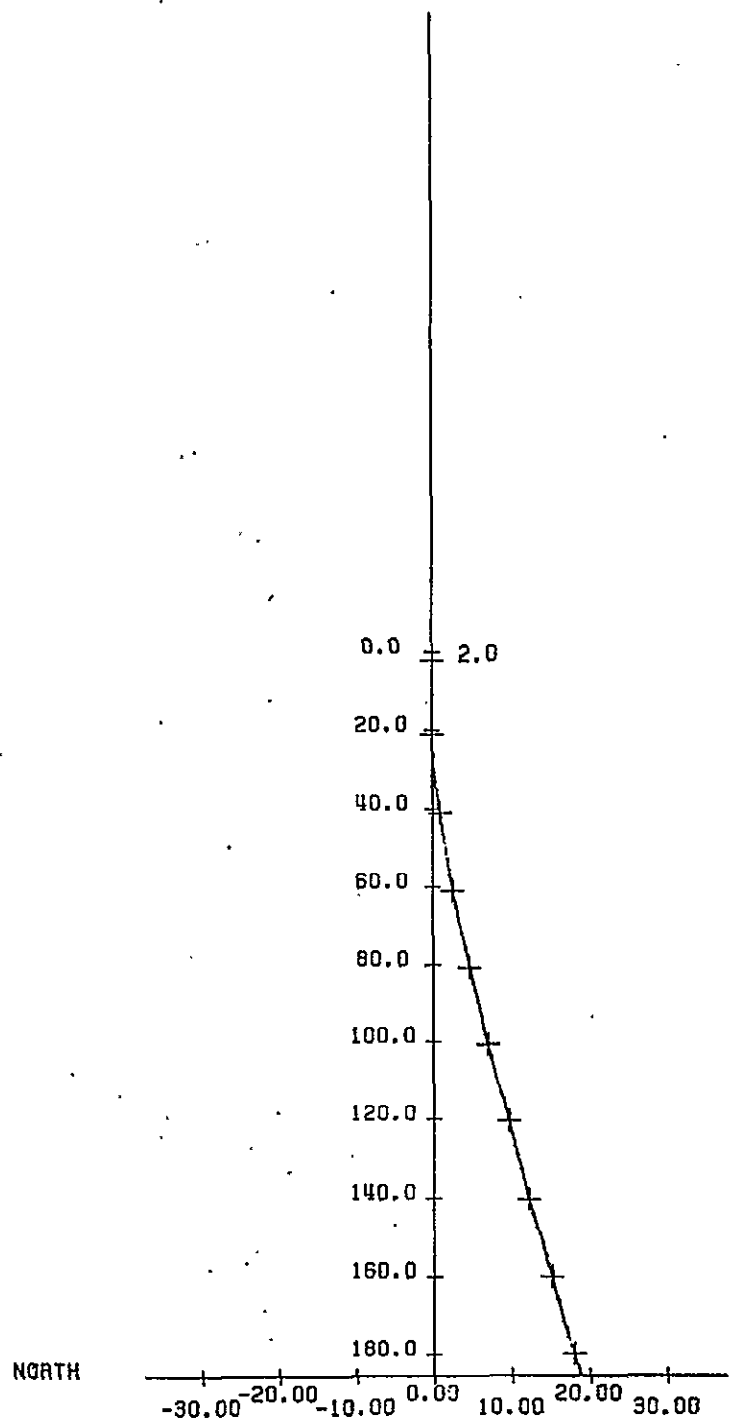
(TRUE DEPTH VS. DISPLACEMENT)

N-S SECTION

W-E SECTION

VERTICAL SCALE 2000 : 1

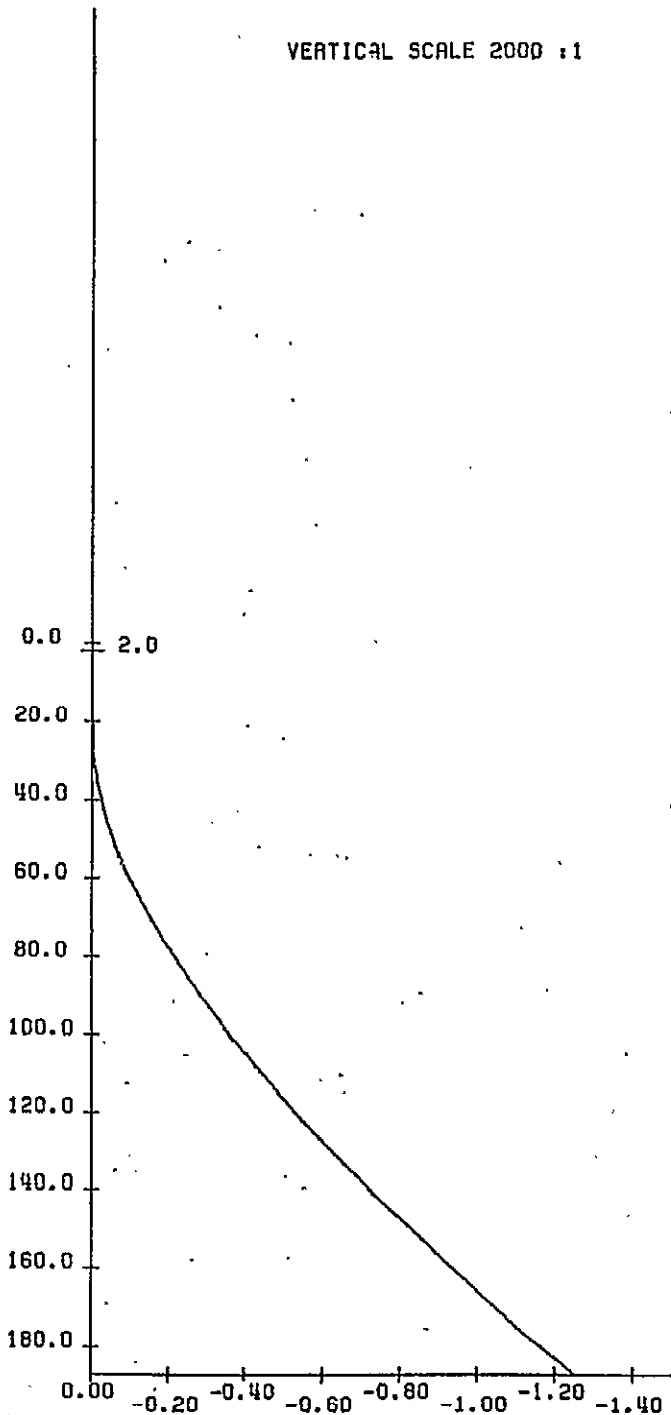
MARKERS ANNOTATED
AS ABOVE



DEPTH CORRECTION ANALYSIS

LOG
DEPTH

VERTICAL SCALE 2000 : 1



| DEPTHS: | | DEPTHS: | | DEPTHS: | |
|---------|-------|---------|--------|---------|--------|
| LOG | TRUE | LOG | TRUE | LOG | TRUE |
| 3.00 | 3.00 | 73.00 | 72.83 | 143.00 | 142.25 |
| 4.00 | 4.00 | 74.00 | 73.82 | 144.00 | 143.23 |
| 5.00 | 5.00 | 75.00 | 74.82 | 145.00 | 144.22 |
| 6.00 | 6.00 | 76.00 | 75.81 | 146.00 | 145.21 |
| 7.00 | 7.00 | 77.00 | 76.80 | 147.00 | 146.20 |
| 8.00 | 8.00 | 78.00 | 77.80 | 148.00 | 147.19 |
| 9.00 | 9.00 | 79.00 | 78.79 | 149.00 | 148.18 |
| 10.00 | 10.00 | 80.00 | 79.78 | 150.00 | 149.17 |
| 11.00 | 11.00 | 81.00 | 80.78 | 151.00 | 150.16 |
| 12.00 | 12.00 | 82.00 | 81.77 | 152.00 | 151.15 |
| 13.00 | 13.00 | 83.00 | 82.77 | 153.00 | 152.14 |
| 14.00 | 14.00 | 84.00 | 83.76 | 154.00 | 153.13 |
| 15.00 | 15.00 | 85.00 | 84.75 | 155.00 | 154.12 |
| 16.00 | 16.00 | 86.00 | 85.74 | 156.00 | 155.11 |
| 17.00 | 17.00 | 87.00 | 86.74 | 157.00 | 156.10 |
| 18.00 | 18.00 | 88.00 | 87.73 | 158.00 | 157.09 |
| 19.00 | 19.00 | 89.00 | 88.72 | 159.00 | 158.07 |
| 20.00 | 20.00 | 90.00 | 89.72 | 160.00 | 159.06 |
| 21.00 | 21.00 | 91.00 | 90.71 | 161.00 | 160.05 |
| 22.00 | 22.00 | 92.00 | 91.70 | 162.00 | 161.04 |
| 23.00 | 23.00 | 93.00 | 92.69 | 163.00 | 162.03 |
| 24.00 | 24.00 | 94.00 | 93.69 | 164.00 | 163.02 |
| 25.00 | 25.00 | 95.00 | 94.68 | 165.00 | 164.01 |
| 26.00 | 26.00 | 96.00 | 95.67 | 166.00 | 165.00 |
| 27.00 | 27.00 | 97.00 | 96.66 | 167.00 | 165.99 |
| 28.00 | 28.00 | 98.00 | 97.65 | 168.00 | 166.98 |
| 29.00 | 29.00 | 99.00 | 98.65 | 169.00 | 167.96 |
| 30.00 | 30.00 | 100.00 | 99.64 | 170.00 | 168.95 |
| 31.00 | 30.99 | 101.00 | 100.63 | 171.00 | 169.94 |
| 32.00 | 31.99 | 102.00 | 101.62 | 172.00 | 170.93 |
| 33.00 | 32.99 | 103.00 | 102.62 | 173.00 | 171.92 |
| 34.00 | 33.99 | 104.00 | 103.61 | 174.00 | 172.91 |
| 35.00 | 34.99 | 105.00 | 104.60 | 175.00 | 173.90 |
| 36.00 | 35.98 | 106.00 | 105.59 | 176.00 | 174.89 |
| 37.00 | 36.98 | 107.00 | 106.58 | 177.00 | 175.87 |
| 38.00 | 37.98 | 108.00 | 107.57 | 178.00 | 176.86 |
| 39.00 | 38.98 | 109.00 | 108.57 | 179.00 | 177.85 |
| 40.00 | 39.97 | 110.00 | 109.56 | 180.00 | 178.84 |
| 41.00 | 40.97 | 111.00 | 110.55 | 181.00 | 179.82 |
| 42.00 | 41.97 | 112.00 | 111.54 | 182.00 | 180.81 |
| 43.00 | 42.97 | 113.00 | 112.53 | 183.00 | 181.80 |
| 44.00 | 43.96 | 114.00 | 113.52 | 184.00 | 182.78 |
| 45.00 | 44.96 | 115.00 | 114.51 | 185.00 | 183.77 |
| 46.00 | 45.96 | 116.00 | 115.50 | 186.00 | 184.76 |
| 47.00 | 46.96 | 117.00 | 116.50 | 187.00 | 185.75 |
| 48.00 | 47.95 | 118.00 | 117.49 | | |
| 49.00 | 48.95 | 119.00 | 118.48 | | |
| 50.00 | 49.95 | 120.00 | 119.47 | | |
| 51.00 | 50.94 | 121.00 | 120.46 | | |
| 52.00 | 51.94 | 122.00 | 121.45 | | |
| 53.00 | 52.93 | 123.00 | 122.44 | | |
| 54.00 | 53.93 | 124.00 | 123.43 | | |
| 55.00 | 54.92 | 125.00 | 124.42 | | |
| 56.00 | 55.92 | 126.00 | 125.41 | | |
| 57.00 | 56.92 | 127.00 | 126.40 | | |
| 58.00 | 57.91 | 128.00 | 127.39 | | |
| 59.00 | 58.91 | 129.00 | 128.38 | | |
| 60.00 | 59.90 | 130.00 | 129.37 | | |
| 61.00 | 60.90 | 131.00 | 130.36 | | |
| 62.00 | 61.89 | 132.00 | 131.35 | | |
| 63.00 | 62.88 | 133.00 | 132.34 | | |
| 64.00 | 63.88 | 134.00 | 133.33 | | |
| 65.00 | 64.88 | 135.00 | 134.32 | | |
| 66.00 | 65.87 | 136.00 | 135.31 | | |
| 67.00 | 66.86 | 137.00 | 136.30 | | |
| 68.00 | 67.86 | 138.00 | 137.29 | | |
| 69.00 | 68.85 | 139.00 | 138.28 | | |
| 70.00 | 69.85 | 140.00 | 139.27 | | |
| 71.00 | 70.84 | 141.00 | 140.26 | | |
| 72.00 | 71.83 | 142.00 | 141.25 | | |

BPB VERTICALITY ANALYSIS
INTERPRETATION NOTES

1. All plotted output is automatically scaled to obtain the best visual effect within the physical space available. The maximum scales being 50000:1 (metric) & 48000:1 (imperial), and the minimum 1:1.
2. The analysis is derived by integrating 10 cm./6" sampled data down the borehole. However the listing supplied will contain a maximum of 200 points in multiples of 1,2,5,10,20,25,50, or 100 metres/feet depending upon the total range of the analysis. However the analysis is calculated for the entire range of the borehole, and the final borehole position is included in the listing.
3. Computed verticality may only be fully derived in open sections of the borehole, away from the influence of any magnetic media (as the azimuth calculations are derived from three solid state magnetometers). So the analysis will generally begin at the end of the casing, and all borehole positional information will relate to this depth.
4. Up to ten cross-sections may be requested for any borehole to be displayed at any scale (the default scale is that of the cross-section for the entire hole).

5. Borehole positional error is derived assuming the following parameters:

| | TILT(degrees) | AZIMUTH(degrees) |
|---------------|---------------|------------------|
| Typical Error | +/- 0.33333 | +/- 10.0 |
| Maximum Error | +/- 0.5 | +/- 15.0 |

6. Error analysis may be calculated and plotted from the data listing as follows:

- a) Plot the four coordinates from the error listing (based upon zero azimuth error) on a target plot, origin at the start of the analysis.
- b) Describe arcs of +/- 10 degrees & +/- 15 degrees (centre at the origin), through the inner and outer points respectively.
- c) Connect the respective arcs together with straight lines to give the typical & maximum borehole positional error.

7. Given below is a full description of the parameters displayed on the ensuing listing:

| | |
|---------------------|--|
| LOG DEPTH | the depth recorded on the field logs for the borehole |
| TRUE DEPTH | the true vertical depth corresponding to the above depth, corrected from the start of the analysis |
| HOLE TILT & AZIMUTH | the SAMPLED borehole orientation |
| AXIAL COORDINATES | the coordinates North & East from the target origin |
| POLAR COORDINATES | the polar, or radial, coordinates of the borehole |
| ERROR COORDINATES | the polar coordinates corresponding to the typical and maximum tilt error |

N.B. The reference point for ALL bearing angles on this listing is given at the top of each sheet

| DEPTHS | | BOREHOLE | | AXIAL CO-ORDS. | | POLAR | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | |
|--------|-------|----------|------|----------------|-------|-------|--------|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| log | true | tilt | AZI | North | East | brng | radius | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius |
| 3.00 | 3.00 | 0.7 | 270. | 0.00 | 0.00 | 15. | 0.00 | 4. | 0.01 | 112. | 0.00 | 6. | 0.01 | 58. | 0.00 |
| 4.00 | 4.00 | 1.0 | 3. | 0.01 | 0.00 | 11. | 0.01 | 1. | 0.02 | 78. | 0.00 | 3. | 0.01 | 37. | 0.00 |
| 5.00 | 5.00 | 0.5 | 88. | 0.01 | 0.00 | 359. | 0.01 | 352. | 0.02 | 44. | 0.00 | 354. | 0.01 | 16. | 0.00 |
| 6.00 | 6.00 | 0.2 | 63. | 0.01 | 0.00 | 345. | 0.01 | 347. | 0.02 | 323. | 0.00 | 346. | 0.02 | 340. | 0.00 |
| 7.00 | 7.00 | 0.2 | 79. | 0.01 | 0.00 | 357. | 0.01 | 3. | 0.02 | 265. | 0.00 | 2. | 0.02 | 332. | 0.00 |
| 8.00 | 8.00 | 0.3 | 96. | 0.01 | 0.01 | 22. | 0.01 | 23. | 0.03 | 218. | 0.00 | 23. | 0.02 | 19. | 0.00 |
| 9.00 | 9.00 | 0.6 | 152. | 0.02 | 0.01 | 26. | 0.02 | 26. | 0.04 | 44. | 0.00 | 26. | 0.03 | 29. | 0.01 |
| 10.00 | 10.00 | 1.5 | 35. | 0.03 | 0.02 | 30. | 0.03 | 28. | 0.05 | 42. | 0.01 | 29. | 0.05 | 34. | 0.02 |
| 11.00 | 11.00 | 1.0 | 143. | 0.03 | 0.02 | 37. | 0.03 | 34. | 0.06 | 53. | 0.01 | 35. | 0.05 | 42. | 0.02 |
| 12.00 | 12.00 | 0.6 | 185. | 0.02 | 0.01 | 29. | 0.03 | 28. | 0.05 | 35. | 0.01 | 28. | 0.04 | 31. | 0.01 |
| 13.00 | 13.00 | 0.1 | 132. | 0.04 | 0.01 | 15. | 0.04 | 18. | 0.06 | 358. | 0.01 | 17. | 0.05 | 8. | 0.02 |
| 14.00 | 14.00 | 0.2 | 11. | 0.04 | 0.01 | 13. | 0.04 | 16. | 0.07 | 354. | 0.01 | 16. | 0.06 | 6. | 0.02 |
| 15.00 | 15.00 | 0.6 | 350. | 0.04 | 0.01 | 13. | 0.04 | 17. | 0.07 | 354. | 0.01 | 16. | 0.06 | 6. | 0.02 |
| 16.00 | 16.00 | 0.1 | 142. | 0.04 | 0.01 | 13. | 0.04 | 17. | 0.06 | 357. | 0.02 | 16. | 0.05 | 6. | 0.02 |
| 17.00 | 17.00 | 0.3 | 190. | 0.03 | 0.01 | 15. | 0.03 | 20. | 0.05 | 359. | 0.02 | 19. | 0.05 | 6. | 0.02 |
| 18.00 | 18.00 | 0.3 | 136. | 0.03 | 0.01 | 16. | 0.03 | 26. | 0.04 | 357. | 0.02 | 23. | 0.04 | 5. | 0.02 |
| 19.00 | 19.00 | 0.9 | 171. | 0.02 | 0.01 | 20. | 0.02 | 37. | 0.02 | 357. | 0.02 | 32. | 0.02 | 5. | 0.02 |
| 20.00 | 20.00 | 0.5 | 187. | 0.01 | 0.01 | 49. | 0.01 | 91. | 0.02 | 358. | 0.02 | 81. | 0.01 | 11. | 0.01 |
| 21.00 | 21.00 | 0.9 | 155. | -0.01 | 0.01 | 121. | 0.01 | 138. | 0.03 | 1. | 0.01 | 135. | 0.02 | 36. | 0.01 |
| 22.00 | 22.00 | 0.9 | 179. | -0.02 | 0.01 | 144. | 0.02 | 149. | 0.05 | 17. | 0.01 | 148. | 0.04 | 111. | 0.01 |
| 23.00 | 23.00 | 1.2 | 162. | -0.03 | 0.02 | 152. | 0.04 | 155. | 0.07 | 93. | 0.00 | 154. | 0.06 | 143. | 0.01 |
| 24.00 | 24.00 | 0.8 | 188. | -0.05 | 0.02 | 158. | 0.06 | 158. | 0.10 | 153. | 0.01 | 158. | 0.09 | 156. | 0.03 |
| 25.00 | 25.00 | 1.3 | 158. | -0.07 | 0.03 | 160. | 0.08 | 160. | 0.13 | 158. | 0.02 | 160. | 0.11 | 159. | 0.04 |
| 26.00 | 26.00 | 1.4 | 171. | -0.10 | 0.03 | 164. | 0.10 | 163. | 0.16 | 165. | 0.04 | 163. | 0.14 | 164. | 0.06 |
| 27.00 | 27.00 | 1.3 | 190. | -0.12 | 0.03 | 168. | 0.12 | 167. | 0.19 | 170. | 0.06 | 167. | 0.17 | 169. | 0.08 |
| 28.00 | 28.00 | 2.5 | 197. | -0.15 | 0.02 | 172. | 0.15 | 171. | 0.23 | 176. | 0.08 | 171. | 0.20 | 174. | 0.10 |
| 29.00 | 29.00 | 2.0 | 198. | -0.18 | 0.01 | 177. | 0.18 | 175. | 0.27 | 182. | 0.10 | 176. | 0.24 | 180. | 0.13 |
| 30.00 | 30.00 | 2.7 | 199. | -0.22 | -0.01 | 182. | 0.22 | 179. | 0.32 | 187. | 0.13 | 180. | 0.28 | 184. | 0.16 |
| 31.00 | 30.99 | 3.0 | 206. | -0.27 | -0.03 | 186. | 0.27 | 184. | 0.37 | 192. | 0.17 | 185. | 0.33 | 189. | 0.21 |
| 32.00 | 31.99 | 3.5 | 209. | -0.32 | -0.06 | 191. | 0.32 | 188. | 0.43 | 196. | 0.22 | 189. | 0.39 | 194. | 0.26 |
| 33.00 | 32.99 | 3.8 | 218. | -0.37 | -0.09 | 194. | 0.38 | 192. | 0.49 | 199. | 0.27 | 192. | 0.46 | 197. | 0.31 |
| 34.00 | 33.99 | 3.3 | 221. | -0.42 | -0.13 | 197. | 0.44 | 194. | 0.56 | 202. | 0.32 | 195. | 0.52 | 200. | 0.36 |
| 35.00 | 34.99 | 3.8 | 227. | -0.47 | -0.17 | 200. | 0.50 | 197. | 0.62 | 204. | 0.38 | 198. | 0.58 | 203. | 0.42 |
| 36.00 | 35.98 | 3.6 | 223. | -0.52 | -0.21 | 202. | 0.56 | 200. | 0.69 | 206. | 0.43 | 200. | 0.65 | 205. | 0.47 |
| 37.00 | 36.98 | 3.7 | 209. | -0.57 | -0.25 | 203. | 0.62 | 201. | 0.76 | 207. | 0.48 | 202. | 0.71 | 206. | 0.53 |
| 38.00 | 37.98 | 4.3 | 214. | -0.63 | -0.29 | 205. | 0.69 | 202. | 0.84 | 208. | 0.54 | 203. | 0.79 | 207. | 0.59 |
| 39.00 | 38.98 | 4.4 | 222. | -0.68 | -0.34 | 206. | 0.76 | 204. | 0.92 | 210. | 0.61 | 205. | 0.87 | 208. | 0.66 |
| 40.00 | 39.97 | 3.9 | 217. | -0.74 | -0.39 | 208. | 0.84 | 205. | 1.00 | 211. | 0.68 | 206. | 0.95 | 209. | 0.73 |
| 41.00 | 40.97 | 3.4 | 225. | -0.80 | -0.43 | 208. | 0.91 | 206. | 1.08 | 211. | 0.74 | 207. | 1.02 | 210. | 0.79 |
| 42.00 | 41.97 | 3.6 | 220. | -0.85 | -0.47 | 209. | 0.97 | 207. | 1.15 | 212. | 0.79 | 208. | 1.09 | 211. | 0.85 |
| 43.00 | 42.97 | 3.9 | 217. | -0.90 | -0.51 | 209. | 1.04 | 208. | 1.22 | 212. | 0.85 | 208. | 1.16 | 211. | 0.91 |
| 44.00 | 43.96 | 4.0 | 214. | -0.96 | -0.55 | 210. | 1.11 | 208. | 1.30 | 212. | 0.91 | 209. | 1.24 | 211. | 0.98 |
| 45.00 | 44.96 | 4.6 | 214. | -1.02 | -0.60 | 210. | 1.18 | 209. | 1.38 | 213. | 0.98 | 209. | 1.32 | 212. | 1.05 |
| 46.00 | 45.96 | 4.6 | 216. | -1.08 | -0.64 | 211. | 1.25 | 209. | 1.47 | 213. | 1.04 | 210. | 1.40 | 212. | 1.11 |
| 47.00 | 46.96 | 5.0 | 217. | -1.14 | -0.69 | 211. | 1.33 | 210. | 1.55 | 214. | 1.11 | 210. | 1.48 | 213. | 1.19 |
| 48.00 | 47.95 | 4.8 | 216. | -1.21 | -0.75 | 212. | 1.42 | 210. | 1.65 | 214. | 1.19 | 211. | 1.57 | 213. | 1.27 |
| 49.00 | 48.95 | 4.7 | 210. | -1.27 | -0.80 | 212. | 1.50 | 211. | 1.74 | 214. | 1.26 | 211. | 1.66 | 213. | 1.34 |
| 50.00 | 49.95 | 4.4 | 225. | -1.33 | -0.85 | 213. | 1.58 | 211. | 1.82 | 214. | 1.33 | 212. | 1.74 | 214. | 1.42 |
| 51.00 | 50.94 | 4.9 | 216. | -1.40 | -0.90 | 213. | 1.66 | 211. | 1.92 | 215. | 1.41 | 212. | 1.83 | 214. | 1.49 |
| 52.00 | 51.94 | 5.0 | 219. | -1.47 | -0.95 | 213. | 1.75 | 212. | 2.01 | 215. | 1.49 | 212. | 1.92 | 214. | 1.58 |

All co-ordinates with respect to True North

| DEPTHS | | BOREHOLE | | AXIAL CO-ORDS. | | POLAR | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | |
|--------|--------|----------|------|----------------|-------|-------|--------|--|--------|------|--------|------|--------|------|--------|
| log | true | tilt | AZI | North | East | brng | radius | brng | radius | brng | radius | brng | radius | brng | radius |
| 53.00 | 52.93 | 5.1 | 216. | -1.54 | -1.01 | 213. | 1.84 | 212. | 2.11 | 215. | 1.57 | 212. | 2.02 | 214. | 1.66 |
| 54.00 | 53.93 | 5.7 | 219. | -1.61 | -1.07 | 213. | 1.93 | 212. | 2.21 | 215. | 1.66 | 213. | 2.12 | 214. | 1.75 |
| 55.00 | 54.92 | 5.5 | 220. | -1.69 | -1.13 | 214. | 2.03 | 213. | 2.32 | 215. | 1.75 | 213. | 2.22 | 215. | 1.84 |
| 56.00 | 55.92 | 5.3 | 221. | -1.76 | -1.19 | 214. | 2.12 | 213. | 2.42 | 215. | 1.83 | 213. | 2.32 | 215. | 1.93 |
| 57.00 | 56.92 | 4.8 | 219. | -1.83 | -1.24 | 214. | 2.21 | 213. | 2.51 | 216. | 1.91 | 213. | 2.41 | 215. | 2.01 |
| 58.00 | 57.91 | 6.1 | 215. | -1.91 | -1.30 | 214. | 2.31 | 213. | 2.62 | 216. | 1.99 | 214. | 2.51 | 215. | 2.10 |
| 59.00 | 58.91 | 5.7 | 224. | -1.98 | -1.36 | 214. | 2.40 | 213. | 2.72 | 216. | 2.08 | 214. | 2.62 | 215. | 2.19 |
| 60.00 | 59.90 | 5.8 | 218. | -2.06 | -1.42 | 215. | 2.50 | 214. | 2.83 | 216. | 2.17 | 214. | 2.72 | 215. | 2.28 |
| 61.00 | 60.90 | 6.3 | 216. | -2.15 | -1.48 | 215. | 2.61 | 214. | 2.94 | 216. | 2.27 | 214. | 2.83 | 215. | 2.38 |
| 62.00 | 61.89 | 6.1 | 218. | -2.23 | -1.55 | 215. | 2.71 | 214. | 3.06 | 216. | 2.36 | 214. | 2.94 | 215. | 2.48 |
| 63.00 | 62.89 | 5.8 | 217. | -2.31 | -1.61 | 215. | 2.81 | 214. | 3.17 | 216. | 2.46 | 214. | 3.05 | 216. | 2.58 |
| 64.00 | 63.88 | 6.0 | 216. | -2.39 | -1.67 | 215. | 2.91 | 214. | 3.28 | 216. | 2.55 | 214. | 3.16 | 216. | 2.67 |
| 65.00 | 64.88 | 6.0 | 214. | -2.47 | -1.74 | 215. | 3.02 | 214. | 3.39 | 216. | 2.65 | 215. | 3.27 | 216. | 2.77 |
| 66.00 | 65.87 | 6.3 | 217. | -2.56 | -1.80 | 215. | 3.13 | 214. | 3.51 | 216. | 2.75 | 215. | 3.38 | 216. | 2.87 |
| 67.00 | 66.86 | 6.5 | 220. | -2.64 | -1.87 | 215. | 3.24 | 214. | 3.63 | 216. | 2.85 | 215. | 3.50 | 216. | 2.98 |
| 68.00 | 67.86 | 6.3 | 217. | -2.73 | -1.94 | 215. | 3.35 | 215. | 3.74 | 216. | 2.95 | 215. | 3.61 | 216. | 3.08 |
| 69.00 | 68.85 | 6.1 | 214. | -2.81 | -2.00 | 215. | 3.45 | 215. | 3.86 | 216. | 3.04 | 215. | 3.72 | 216. | 3.18 |
| 70.00 | 69.85 | 6.5 | 213. | -2.90 | -2.06 | 215. | 3.56 | 215. | 3.97 | 216. | 3.14 | 215. | 3.84 | 216. | 3.28 |
| 71.00 | 70.84 | 6.7 | 217. | -2.99 | -2.13 | 216. | 3.67 | 215. | 4.09 | 216. | 3.25 | 215. | 3.95 | 216. | 3.39 |
| 72.00 | 71.83 | 6.2 | 213. | -3.07 | -2.19 | 216. | 3.77 | 215. | 4.21 | 216. | 3.34 | 215. | 4.06 | 216. | 3.49 |
| 73.00 | 72.83 | 6.2 | 218. | -3.16 | -2.26 | 216. | 3.88 | 215. | 4.32 | 216. | 3.44 | 215. | 4.18 | 216. | 3.59 |
| 74.00 | 73.82 | 5.8 | 213. | -3.24 | -2.32 | 216. | 3.99 | 215. | 4.44 | 216. | 3.54 | 215. | 4.29 | 216. | 3.69 |
| 75.00 | 74.82 | 5.5 | 213. | -3.33 | -2.39 | 216. | 4.09 | 215. | 4.55 | 216. | 3.64 | 215. | 4.40 | 216. | 3.79 |
| 76.00 | 75.81 | 6.2 | 217. | -3.41 | -2.45 | 216. | 4.20 | 215. | 4.67 | 216. | 3.73 | 215. | 4.51 | 216. | 3.89 |
| 77.00 | 76.80 | 6.7 | 217. | -3.50 | -2.52 | 216. | 4.31 | 215. | 4.79 | 216. | 3.84 | 215. | 4.63 | 216. | 4.00 |
| 78.00 | 77.80 | 6.9 | 213. | -3.59 | -2.59 | 216. | 4.43 | 215. | 4.91 | 216. | 3.94 | 215. | 4.75 | 216. | 4.10 |
| 79.00 | 78.79 | 6.6 | 216. | -3.69 | -2.65 | 216. | 4.54 | 215. | 5.03 | 216. | 4.05 | 215. | 4.87 | 216. | 4.21 |
| 80.00 | 79.78 | 6.5 | 218. | -3.78 | -2.72 | 216. | 4.66 | 215. | 5.16 | 216. | 4.16 | 215. | 4.99 | 216. | 4.32 |
| 81.00 | 80.78 | 6.7 | 216. | -3.87 | -2.79 | 216. | 4.77 | 215. | 5.28 | 216. | 4.26 | 215. | 5.11 | 216. | 4.43 |
| 82.00 | 81.77 | 6.5 | 213. | -3.96 | -2.85 | 216. | 4.88 | 215. | 5.40 | 216. | 4.37 | 215. | 5.23 | 216. | 4.54 |
| 83.00 | 82.77 | 6.2 | 218. | -4.06 | -2.92 | 216. | 5.00 | 215. | 5.53 | 216. | 4.47 | 215. | 5.35 | 216. | 4.65 |
| 84.00 | 83.76 | 6.7 | 218. | -4.15 | -2.99 | 216. | 5.11 | 215. | 5.65 | 216. | 4.58 | 215. | 5.47 | 216. | 4.76 |
| 85.00 | 84.75 | 7.1 | 212. | -4.25 | -3.06 | 216. | 5.23 | 215. | 5.78 | 216. | 4.69 | 215. | 5.60 | 216. | 4.87 |
| 86.00 | 85.74 | 6.7 | 214. | -4.35 | -3.13 | 216. | 5.35 | 215. | 5.91 | 216. | 4.80 | 215. | 5.72 | 216. | 4.99 |
| 87.00 | 86.74 | 6.2 | 215. | -4.44 | -3.19 | 216. | 5.47 | 215. | 6.03 | 216. | 4.90 | 215. | 5.84 | 216. | 5.09 |
| 88.00 | 87.73 | 6.8 | 217. | -4.53 | -3.26 | 216. | 5.58 | 215. | 6.15 | 216. | 5.01 | 215. | 5.96 | 216. | 5.20 |
| 89.00 | 88.72 | 7.2 | 218. | -4.63 | -3.32 | 216. | 5.70 | 215. | 6.28 | 216. | 5.12 | 215. | 6.09 | 216. | 5.32 |
| 90.00 | 89.72 | 7.0 | 221. | -4.73 | -3.39 | 216. | 5.82 | 215. | 6.41 | 216. | 5.24 | 215. | 6.22 | 216. | 5.43 |
| 91.00 | 90.71 | 6.9 | 219. | -4.83 | -3.46 | 216. | 5.95 | 215. | 6.54 | 216. | 5.35 | 215. | 6.35 | 216. | 5.55 |
| 92.00 | 91.70 | 7.1 | 213. | -4.94 | -3.53 | 216. | 6.07 | 215. | 6.68 | 216. | 5.47 | 215. | 6.47 | 216. | 5.67 |
| 93.00 | 92.69 | 7.4 | 212. | -5.04 | -3.61 | 216. | 6.20 | 215. | 6.81 | 216. | 5.58 | 215. | 6.51 | 216. | 5.79 |
| 94.00 | 93.69 | 7.7 | 217. | -5.14 | -3.68 | 216. | 6.32 | 215. | 6.94 | 216. | 5.70 | 215. | 6.74 | 216. | 5.91 |
| 95.00 | 94.68 | 7.0 | 216. | -5.24 | -3.75 | 216. | 6.44 | 215. | 7.07 | 216. | 5.81 | 215. | 6.86 | 216. | 6.02 |
| 96.00 | 95.67 | 6.8 | 216. | -5.34 | -3.82 | 216. | 6.56 | 215. | 7.20 | 216. | 5.92 | 215. | 6.99 | 216. | 6.14 |
| 97.00 | 96.66 | 7.1 | 215. | -5.44 | -3.89 | 216. | 6.69 | 215. | 7.34 | 216. | 6.04 | 215. | 7.12 | 216. | 6.26 |
| 98.00 | 97.65 | 7.3 | 218. | -5.54 | -3.97 | 216. | 6.82 | 215. | 7.47 | 216. | 6.16 | 215. | 7.26 | 216. | 6.38 |
| 99.00 | 98.65 | 6.8 | 216. | -5.64 | -4.05 | 216. | 6.94 | 215. | 7.61 | 216. | 6.28 | 215. | 7.39 | 216. | 6.50 |
| 100.00 | 99.64 | 7.0 | 212. | -5.74 | -4.11 | 216. | 7.06 | 215. | 7.74 | 216. | 6.39 | 215. | 7.51 | 216. | 6.61 |
| 101.00 | 100.63 | 6.8 | 212. | -5.84 | -4.18 | 216. | 7.18 | 215. | 7.87 | 216. | 6.50 | 215. | 7.64 | 216. | 6.73 |
| 102.00 | 101.62 | 7.5 | 218. | -5.94 | -4.26 | 216. | 7.31 | 215. | 8.00 | 216. | 6.62 | 215. | 7.77 | 216. | 6.85 |

Verticality Data Listing

Date processed: 08-JAN-88

All co-ordinates with respect to True North

| DEPTHS | | BOREHOLE | | AXIAL CO-ORDS. | | POLAR | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | |
|--------|--------|----------|------|----------------|-------|-------|--------|--|--------|------|--------|------|--------|------|--------|
| log | true | tilt | AZI | North | East | brng | radius | brng | radius | brng | radius | brng | radius | brng | radius |
| 103.00 | 102.62 | 7.4 | 217. | -6.04 | -4.34 | 216. | 7.44 | 215. | 8.14 | 216. | 6.74 | 215. | 7.91 | 216. | 6.97 |
| 104.00 | 103.61 | 7.9 | 211. | -6.15 | -4.41 | 216. | 7.57 | 215. | 8.28 | 216. | 6.86 | 215. | 8.04 | 216. | 7.10 |
| 105.00 | 104.60 | 7.6 | 212. | -6.26 | -4.48 | 216. | 7.70 | 215. | 8.41 | 216. | 6.98 | 215. | 8.18 | 216. | 7.22 |
| 106.00 | 105.59 | 7.3 | 214. | -6.36 | -4.55 | 216. | 7.82 | 215. | 8.55 | 216. | 7.10 | 215. | 8.31 | 216. | 7.34 |
| 107.00 | 106.58 | 7.5 | 217. | -6.47 | -4.63 | 216. | 7.95 | 215. | 8.69 | 216. | 7.22 | 215. | 8.44 | 216. | 7.46 |
| 108.00 | 107.57 | 7.4 | 216. | -6.57 | -4.70 | 216. | 8.08 | 215. | 8.82 | 216. | 7.34 | 215. | 8.58 | 216. | 7.58 |
| 109.00 | 108.57 | 7.7 | 218. | -6.68 | -4.78 | 216. | 8.21 | 215. | 8.96 | 216. | 7.46 | 215. | 8.71 | 216. | 7.71 |
| 110.00 | 109.56 | 7.7 | 215. | -6.79 | -4.85 | 216. | 8.34 | 215. | 9.10 | 216. | 7.58 | 215. | 8.85 | 216. | 7.84 |
| 111.00 | 110.55 | 7.7 | 213. | -6.90 | -4.93 | 216. | 8.47 | 215. | 9.24 | 216. | 7.71 | 215. | 8.99 | 216. | 7.96 |
| 112.00 | 111.54 | 7.8 | 214. | -7.00 | -5.00 | 216. | 8.61 | 215. | 9.38 | 216. | 7.83 | 215. | 9.13 | 216. | 8.09 |
| 113.00 | 112.53 | 7.2 | 216. | -7.11 | -5.08 | 216. | 8.74 | 215. | 9.52 | 216. | 7.95 | 215. | 9.26 | 216. | 8.21 |
| 114.00 | 113.52 | 7.1 | 215. | -7.22 | -5.15 | 215. | 8.87 | 215. | 9.66 | 216. | 8.07 | 215. | 9.40 | 216. | 8.34 |
| 115.00 | 114.51 | 7.4 | 219. | -7.32 | -5.22 | 216. | 8.99 | 215. | 9.80 | 216. | 8.19 | 215. | 9.53 | 216. | 8.46 |
| 116.00 | 115.50 | 8.0 | 217. | -7.43 | -5.30 | 216. | 9.13 | 215. | 9.94 | 216. | 8.31 | 215. | 9.67 | 216. | 8.59 |
| 117.00 | 116.50 | 7.5 | 217. | -7.54 | -5.38 | 216. | 9.26 | 215. | 10.08 | 216. | 8.44 | 215. | 9.81 | 216. | 8.71 |
| 118.00 | 117.49 | 7.6 | 212. | -7.64 | -5.46 | 216. | 9.39 | 215. | 10.22 | 216. | 8.56 | 215. | 9.94 | 216. | 8.84 |
| 119.00 | 118.48 | 7.5 | 214. | -7.75 | -5.54 | 216. | 9.52 | 215. | 10.36 | 216. | 8.68 | 215. | 10.08 | 216. | 8.96 |
| 120.00 | 119.47 | 8.0 | 214. | -7.86 | -5.62 | 216. | 9.66 | 215. | 10.51 | 216. | 8.81 | 215. | 10.22 | 216. | 9.09 |
| 121.00 | 120.46 | 7.6 | 214. | -7.97 | -5.70 | 216. | 9.79 | 215. | 10.65 | 216. | 8.94 | 215. | 10.36 | 216. | 9.22 |
| 122.00 | 121.45 | 7.7 | 217. | -8.07 | -5.77 | 216. | 9.92 | 215. | 10.79 | 216. | 9.06 | 215. | 10.50 | 216. | 9.35 |
| 123.00 | 122.44 | 7.8 | 219. | -8.17 | -5.86 | 216. | 10.06 | 215. | 10.93 | 216. | 9.18 | 215. | 10.64 | 216. | 9.47 |
| 124.00 | 123.43 | 7.7 | 217. | -8.28 | -5.94 | 216. | 10.19 | 215. | 11.07 | 216. | 9.31 | 215. | 10.78 | 216. | 9.60 |
| 125.00 | 124.42 | 8.3 | 219. | -8.39 | -6.03 | 216. | 10.33 | 215. | 11.22 | 216. | 9.44 | 216. | 10.93 | 216. | 9.74 |
| 126.00 | 125.41 | 8.3 | 221. | -8.50 | -6.12 | 216. | 10.47 | 215. | 11.37 | 216. | 9.58 | 216. | 11.07 | 216. | 9.88 |
| 127.00 | 126.40 | 7.7 | 216. | -8.62 | -6.20 | 216. | 10.61 | 215. | 11.52 | 216. | 9.71 | 216. | 11.22 | 216. | 10.01 |
| 128.00 | 127.39 | 8.4 | 220. | -8.72 | -6.28 | 216. | 10.75 | 216. | 11.67 | 216. | 9.83 | 216. | 11.36 | 216. | 10.14 |
| 129.00 | 128.38 | 8.4 | 215. | -8.83 | -6.37 | 216. | 10.89 | 216. | 11.82 | 216. | 9.97 | 216. | 11.51 | 216. | 10.27 |
| 130.00 | 129.37 | 7.7 | 215. | -8.95 | -6.46 | 216. | 11.03 | 216. | 11.97 | 216. | 10.10 | 216. | 11.65 | 216. | 10.41 |
| 131.00 | 130.36 | 7.8 | 218. | -9.05 | -6.54 | 216. | 11.17 | 216. | 12.11 | 216. | 10.23 | 216. | 11.80 | 216. | 10.54 |
| 132.00 | 131.35 | 8.3 | 214. | -9.16 | -6.62 | 216. | 11.31 | 216. | 12.26 | 216. | 10.36 | 216. | 11.94 | 216. | 10.67 |
| 133.00 | 132.35 | 7.5 | 218. | -9.27 | -6.71 | 216. | 11.44 | 216. | 12.40 | 216. | 10.48 | 216. | 12.08 | 216. | 10.80 |
| 134.00 | 133.34 | 8.3 | 218. | -9.38 | -6.79 | 216. | 11.58 | 216. | 12.55 | 216. | 10.61 | 216. | 12.23 | 216. | 10.93 |
| 135.00 | 134.33 | 7.9 | 224. | -9.49 | -6.88 | 216. | 11.72 | 216. | 12.70 | 216. | 10.74 | 216. | 12.37 | 216. | 11.07 |
| 136.00 | 135.32 | 7.8 | 217. | -9.60 | -6.97 | 216. | 11.86 | 216. | 12.85 | 216. | 10.88 | 216. | 12.52 | 216. | 11.21 |
| 137.00 | 136.31 | 8.2 | 217. | -9.71 | -7.05 | 216. | 12.00 | 216. | 13.00 | 216. | 11.01 | 216. | 12.66 | 216. | 11.34 |
| 138.00 | 137.30 | 8.0 | 216. | -9.82 | -7.14 | 216. | 12.14 | 216. | 13.14 | 216. | 11.14 | 216. | 12.81 | 216. | 11.47 |
| 139.00 | 138.29 | 8.2 | 216. | -9.93 | -7.22 | 216. | 12.28 | 216. | 13.29 | 216. | 11.27 | 216. | 12.95 | 216. | 11.61 |
| 140.00 | 139.28 | 8.0 | 218. | -10.04 | -7.31 | 216. | 12.42 | 216. | 13.44 | 216. | 11.40 | 216. | 13.10 | 216. | 11.74 |
| 141.00 | 140.27 | 7.9 | 216. | -10.15 | -7.40 | 216. | 12.56 | 216. | 13.59 | 216. | 11.53 | 216. | 13.24 | 216. | 11.87 |
| 142.00 | 141.26 | 8.4 | 215. | -10.26 | -7.48 | 216. | 12.70 | 216. | 13.73 | 216. | 11.66 | 216. | 13.39 | 216. | 12.01 |
| 143.00 | 142.25 | 8.4 | 216. | -10.38 | -7.57 | 216. | 12.84 | 216. | 13.89 | 216. | 11.80 | 216. | 13.54 | 216. | 12.15 |
| 144.00 | 143.23 | 8.9 | 219. | -10.50 | -7.67 | 216. | 13.00 | 216. | 14.05 | 216. | 11.94 | 216. | 13.70 | 216. | 12.29 |
| 145.00 | 144.22 | 8.3 | 215. | -10.61 | -7.76 | 216. | 13.14 | 216. | 14.21 | 216. | 12.08 | 216. | 13.85 | 216. | 12.43 |
| 146.00 | 145.21 | 9.0 | 220. | -10.73 | -7.85 | 216. | 13.29 | 216. | 14.36 | 216. | 12.22 | 216. | 14.01 | 216. | 12.58 |
| 147.00 | 146.20 | 8.8 | 214. | -10.85 | -7.95 | 216. | 13.45 | 216. | 14.53 | 216. | 12.37 | 216. | 14.17 | 216. | 12.73 |
| 148.00 | 147.19 | 8.1 | 220. | -10.96 | -8.04 | 216. | 13.60 | 216. | 14.68 | 216. | 12.51 | 216. | 14.32 | 216. | 12.87 |
| 149.00 | 148.18 | 8.4 | 221. | -11.08 | -8.13 | 216. | 13.74 | 216. | 14.84 | 217. | 12.65 | 216. | 14.47 | 216. | 13.01 |
| 150.00 | 149.17 | 8.2 | 221. | -11.19 | -8.23 | 216. | 13.89 | 216. | 14.99 | 217. | 12.78 | 216. | 14.63 | 216. | 13.15 |
| 151.00 | 150.16 | 8.7 | 220. | -11.31 | -8.32 | 216. | 14.04 | 216. | 15.15 | 217. | 12.92 | 216. | 14.78 | 216. | 13.29 |
| 152.00 | 151.15 | 8.2 | 218. | -11.42 | -8.41 | 216. | 14.18 | 216. | 15.31 | 217. | 13.06 | 216. | 14.93 | 217. | 13.44 |

Verticality Data Listing

All co-ordinates with respect to True North

| DEPTHS | | BOREHOLE | | AXIAL CO-ORDS. | | POLAR | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | |
|--------|--------|----------|------|----------------|--------|-------|--------|--|--------|------|--------|------|--------|------|-------|
| log | true | tilt | AZI | North | East | brng | radius | brng | radius | brng | radius | brng | radius | | |
| 153.00 | 152.14 | 8.1 | 222. | -11.53 | -8.50 | 216. | 14.33 | 216. | 15.46 | 217. | 13.20 | 216. | 15.08 | 217. | 13.58 |
| 154.00 | 153.12 | 8.4 | 221. | -11.65 | -8.59 | 216. | 14.47 | 216. | 15.61 | 217. | 13.33 | 216. | 15.23 | 217. | 13.71 |
| 155.00 | 154.11 | 8.3 | 216. | -11.76 | -8.68 | 216. | 14.62 | 216. | 15.77 | 217. | 13.47 | 216. | 15.38 | 217. | 13.85 |
| 156.00 | 155.10 | 6.3 | 216. | -11.87 | -8.77 | 216. | 14.75 | 216. | 15.91 | 217. | 13.60 | 216. | 15.53 | 217. | 13.98 |
| 157.00 | 156.09 | 8.3 | 220. | -11.97 | -8.87 | 217. | 14.90 | 216. | 16.06 | 217. | 13.73 | 216. | 15.68 | 217. | 14.12 |
| 158.00 | 157.08 | 8.2 | 221. | -12.08 | -8.95 | 217. | 15.04 | 216. | 16.21 | 217. | 13.86 | 216. | 15.82 | 217. | 14.25 |
| 159.00 | 158.07 | 8.7 | 222. | -12.19 | -9.04 | 217. | 15.18 | 216. | 16.36 | 217. | 14.00 | 216. | 15.97 | 217. | 14.39 |
| 160.00 | 159.06 | 8.8 | 221. | -12.31 | -9.14 | 217. | 15.33 | 216. | 16.52 | 217. | 14.14 | 216. | 16.12 | 217. | 14.53 |
| 161.00 | 160.05 | 8.8 | 222. | -12.42 | -9.23 | 217. | 15.48 | 216. | 16.68 | 217. | 14.28 | 216. | 16.28 | 217. | 14.68 |
| 162.00 | 161.04 | 9.0 | 222. | -12.54 | -9.33 | 217. | 15.63 | 216. | 16.84 | 217. | 14.42 | 217. | 16.44 | 217. | 14.82 |
| 163.00 | 162.03 | 8.8 | 218. | -12.66 | -9.43 | 217. | 15.78 | 217. | 17.00 | 217. | 14.57 | 217. | 16.59 | 217. | 14.97 |
| 164.00 | 163.02 | 8.6 | 220. | -12.77 | -9.53 | 217. | 15.93 | 217. | 17.16 | 217. | 14.71 | 217. | 16.75 | 217. | 15.12 |
| 165.00 | 164.01 | 7.4 | 223. | -12.88 | -9.63 | 217. | 16.08 | 217. | 17.31 | 217. | 14.84 | 217. | 16.90 | 217. | 15.26 |
| 166.00 | 165.00 | 8.4 | 220. | -12.98 | -9.71 | 217. | 16.21 | 217. | 17.45 | 217. | 14.97 | 217. | 17.04 | 217. | 15.38 |
| 167.00 | 165.99 | 8.5 | 225. | -13.09 | -9.80 | 217. | 16.35 | 217. | 17.60 | 217. | 15.10 | 217. | 17.19 | 217. | 15.52 |
| 168.00 | 166.98 | 8.4 | 218. | -13.20 | -9.90 | 217. | 16.50 | 217. | 17.76 | 217. | 15.24 | 217. | 17.34 | 217. | 15.66 |
| 169.00 | 167.96 | 8.5 | 219. | -13.31 | -10.00 | 217. | 16.65 | 217. | 17.92 | 217. | 15.38 | 217. | 17.49 | 217. | 15.80 |
| 170.00 | 168.95 | 9.2 | 217. | -13.43 | -10.10 | 217. | 16.80 | 217. | 18.07 | 217. | 15.52 | 217. | 17.65 | 217. | 15.95 |
| 171.00 | 169.94 | 8.2 | 220. | -13.54 | -10.19 | 217. | 16.95 | 217. | 18.23 | 217. | 15.66 | 217. | 17.80 | 217. | 16.09 |
| 172.00 | 170.93 | 8.8 | 222. | -13.66 | -10.28 | 217. | 17.09 | 217. | 18.39 | 217. | 15.80 | 217. | 17.96 | 217. | 16.23 |
| 173.00 | 171.92 | 8.3 | 227. | -13.75 | -10.37 | 217. | 17.22 | 217. | 18.52 | 217. | 15.92 | 217. | 18.09 | 217. | 16.35 |
| 174.00 | 172.91 | 8.6 | 218. | -13.86 | -10.47 | 217. | 17.37 | 217. | 18.68 | 217. | 16.06 | 217. | 18.24 | 217. | 16.50 |
| 175.00 | 173.90 | 9.2 | 220. | -13.98 | -10.57 | 217. | 17.52 | 217. | 18.84 | 217. | 16.20 | 217. | 18.40 | 217. | 16.64 |
| 176.00 | 174.89 | 9.1 | 221. | -14.10 | -10.67 | 217. | 17.68 | 217. | 19.01 | 217. | 16.35 | 217. | 18.57 | 217. | 16.80 |
| 177.00 | 175.87 | 9.4 | 219. | -14.22 | -10.77 | 217. | 17.84 | 217. | 19.18 | 217. | 16.50 | 217. | 18.73 | 217. | 16.95 |
| 178.00 | 176.86 | 9.2 | 221. | -14.34 | -10.88 | 217. | 18.00 | 217. | 19.34 | 217. | 16.65 | 217. | 18.90 | 217. | 17.10 |
| 179.00 | 177.85 | 9.2 | 219. | -14.46 | -10.98 | 217. | 18.16 | 217. | 19.51 | 217. | 16.81 | 217. | 19.06 | 217. | 17.26 |
| 180.00 | 178.84 | 9.4 | 219. | -14.59 | -11.08 | 217. | 18.32 | 217. | 19.68 | 217. | 16.96 | 217. | 19.23 | 217. | 17.41 |
| 181.00 | 179.82 | 9.5 | 221. | -14.71 | -11.18 | 217. | 18.48 | 217. | 19.85 | 217. | 17.10 | 217. | 19.39 | 217. | 17.56 |
| 182.00 | 180.81 | 9.5 | 223. | -14.82 | -11.29 | 217. | 18.63 | 217. | 20.01 | 217. | 17.25 | 217. | 19.55 | 217. | 17.71 |
| 183.00 | 181.80 | 9.7 | 224. | -14.95 | -11.40 | 217. | 18.80 | 217. | 20.19 | 218. | 17.41 | 217. | 19.72 | 217. | 17.87 |
| 184.00 | 182.78 | 8.8 | 221. | -15.07 | -11.51 | 217. | 18.96 | 217. | 20.36 | 218. | 17.57 | 217. | 19.89 | 217. | 18.03 |
| 185.00 | 183.77 | 8.5 | 218. | -15.18 | -11.60 | 217. | 19.10 | 217. | 20.51 | 218. | 17.69 | 217. | 20.04 | 218. | 18.16 |
| 186.00 | 184.76 | 9.5 | 222. | -15.30 | -11.70 | 217. | 19.26 | 217. | 20.67 | 218. | 17.84 | 217. | 20.20 | 218. | 18.31 |
| 186.80 | 185.55 | 9.1 | 223. | -15.39 | -11.79 | 217. | 19.39 | 217. | 20.81 | 218. | 17.97 | 217. | 20.33 | 218. | 18.44 |



COAL

LITHOLOGY

LOG

SONDE TYPE: COAL COMBINATION SONDE
LOG SUITE: GAMMA RAY L.S. DENSITY CALIPER

BOREHOLE: QHR 87-042
CLIENT: OUISTETTE

AREA: TRANSFER
COUNTRY: CANADA
DATE LOGGED: 27 JUN 85

BOREHOLE DATA

| | |
|-------------------|----------------|
| PERMANENT LOG NO. | QHR 87-042 |
| ELEVATION OF P.D. | 829 |
| MEASUREMENTS FROM | 1.1 |
| DEPTH REACHED | 124.7 |
| CASING SHOE | 6.7 |
| BIT SIZES | 1 1/2" TO 1/8" |
| CASING SIZES | 1 1/2" TO 1/8" |

FLUID DATA

| | |
|-----------|-----|
| SG | 1.1 |
| LEVEL | N/A |
| VISCOSITY | N/A |
| PH | N/A |

OPERATION DATA

| | |
|-----------------|--------|
| FIRST READING | 124.7 |
| LAST READING | 124.7 |
| INTERVAL LOGGED | 124.7 |
| UNIT/BUCK NO. | 46-217 |
| ENGINEER | N. GAY |
| WITNESS | |

739

EQUIPMENT AND RECORDING DATA

| LOG | EQUIPMENT | | | TAPING | | | PANEL | | | DEPTHS | | | SEAM LOG RUN | |
|--------------|-------------------|--------|------------|-----------|--------------|------------------|-------|---------|------|-----------|------|----|--------------|----------|
| | SONDE | SOURCE | CALIBRATOR | LOG TAPED | RECORD SPEED | DIRECT or REPLAY | SPEED | TC SECS | NORM | CAL COEFF | FROM | TO | | INTERVAL |
| GAMMA RAY | | | 367 | Y | 5 | D | 9 | 1 | - | 1.44 | 128 | 0 | 128 | Y |
| L.S. DENSITY | 173 | 5852 | 00541 | Y | 9 | D | 6 | 3 | 7.38 | - | 129 | 1 | 128 | Y |
| CALIPER | SIDEWALL POSITION | | | Y | 9 | D | 9 | 3 | - | 1.4 | 129 | 1 | 128 | Y |

| COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log) | | | | | INTERVAL TOTAL | |
|---|------|------|-----|-----|----------------|-----|
| FROM | 124m | 115m | 89m | 64m | | 41m |
| TO | 119m | 105m | 83m | 57m | | 37m |
| INTERVAL | 5m | 14m | 6m | 7m | 4m | |

| ADDITIONAL SONDES RUN | | | | REFER TO ADDITIONAL HEADINGS | REMARKS |
|-----------------------|------|-------------------|------------------|------------------------------|---------|
| SONDE | LOG | GENERAL SCALE LOG | DETAIL SCALE LOG | | |
| 215 | N-N | 1:20" | | | |
| 231 | VFR1 | | | | |
| 204 | DIP | | | | |

BPB COAL LITHOLOGY LOG

CALIBRATION DATA

| | | | | | | | |
|---------------------------------|-----------------|--------------|-----------|-------|-------------------|-----|-----|
| JIG No | VALUE @ 5" DIAM | JIG CAL DATE | JIG VALUE | SDU @ | g/cm ³ | ins | cps |
| JIG MARK SHOWN AT ABOVE VALUE - | | JIG No | SPAN | NORM | SDU @ | ins | cps |

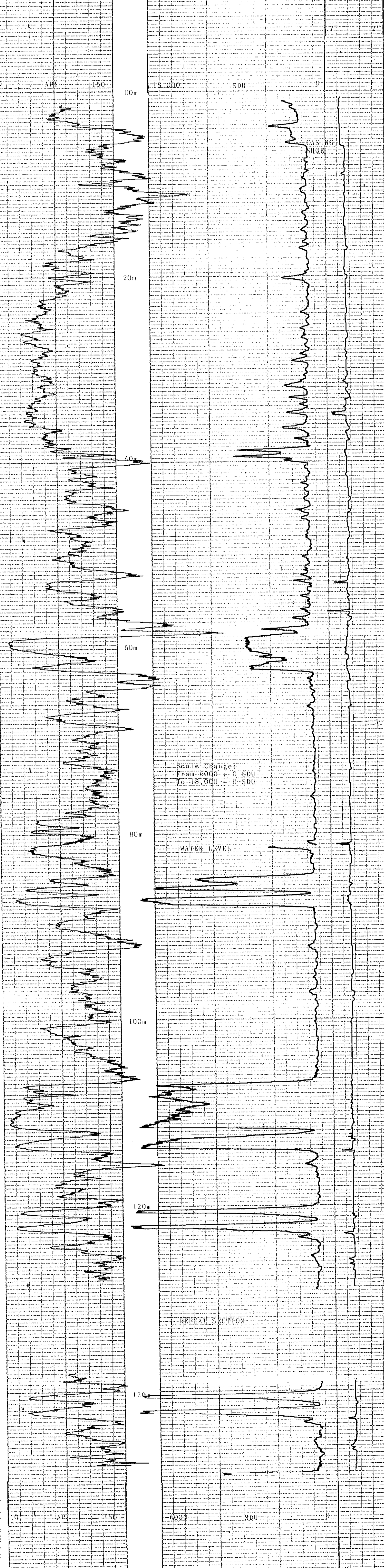
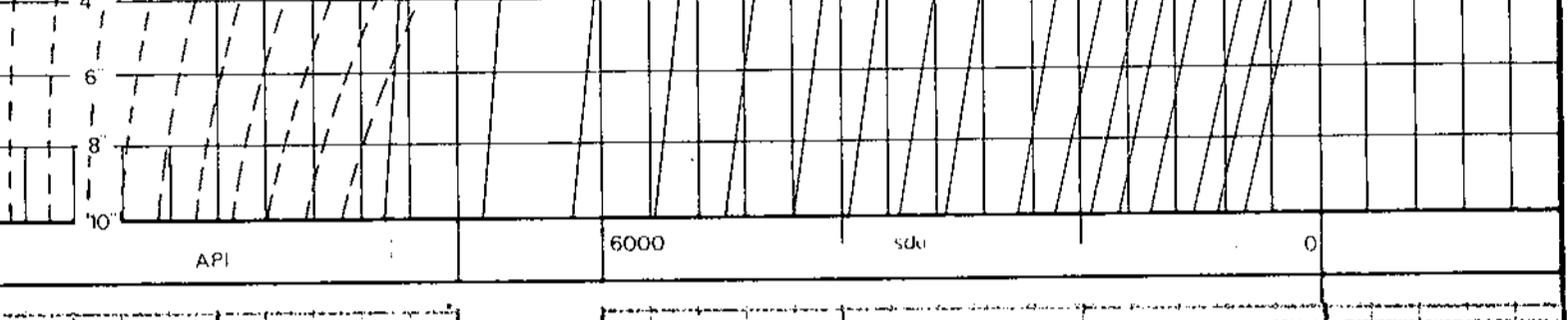
GAMMA RAY

DEPTH

BULK DENSITY g/cm³

CALIPER INCHES

HOLE SIZE CORRECTION DATA



Scale Change:
From 6000 - 0 SDU
To 18,000 - 0 SDU

WATER LEVEL

REPEAT SECTION

GAMMA RAY

DEPTH

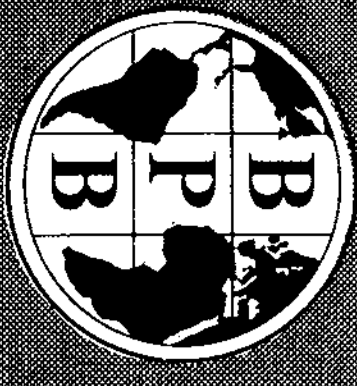
BULK DENSITY g/cm³

CALIPER INCHES



BOREHOLE: QHR 87-042
CLIENT: OUISTETTE
AREA: TRANSFER
COUNTRY: CANADA

COAL LITHOLOGY LOG



NEUTRON-NEUTRON
GAMMA RAY

BOREHOLE QHR 87-042
CLIENT QUINTETTE

AREA TRANSFER
COUNTRY CANADA
DATE LOGGED 87 08 18

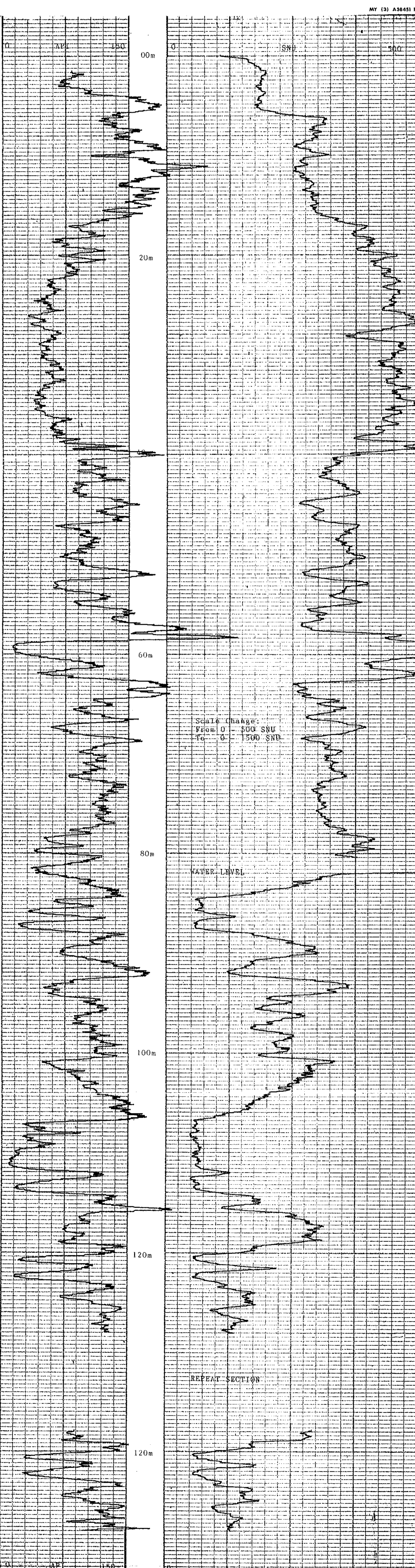
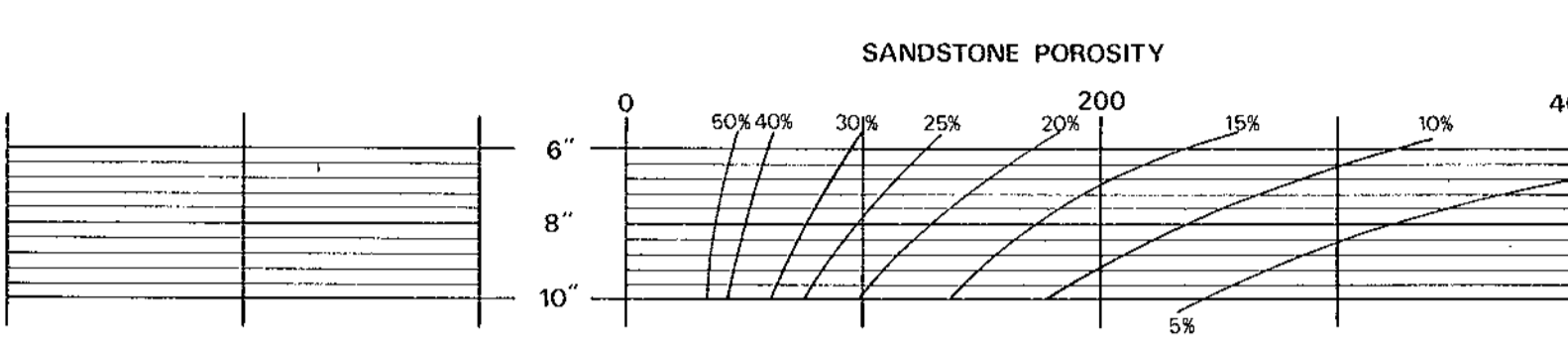
DEPTH SCALE
1:200

BOREHOLE DATA REFER TO LITHOLOGY LOG
OPERATION DATA REFER TO LITHOLOGY LOG
EQUIPMENT AND RECORDING DATA

| LOG | TAPING | PANEL | CAL |
|-------|------------------------------------|-------|-------|
| | LOG RECORD DIRECT SPEED SECS. NORM | | COEFF |
| N-N | 1 9 D 9 1 | 12.4 | - |
| GAMMA | Y 9 R 9 1 | 1.44 | |

REMARKS
739

| | | |
|-----------|-------|-----------------|
| GAMMA RAY | DEPTH | NEUTRON-NEUTRON |
| 0 API 150 | 0 | 0 SNU 500 |



| | | |
|-----------|-------|-----------------|
| GAMMA RAY | DEPTH | NEUTRON-NEUTRON |
| 0 API 150 | 0 | 0 SNU 500 |



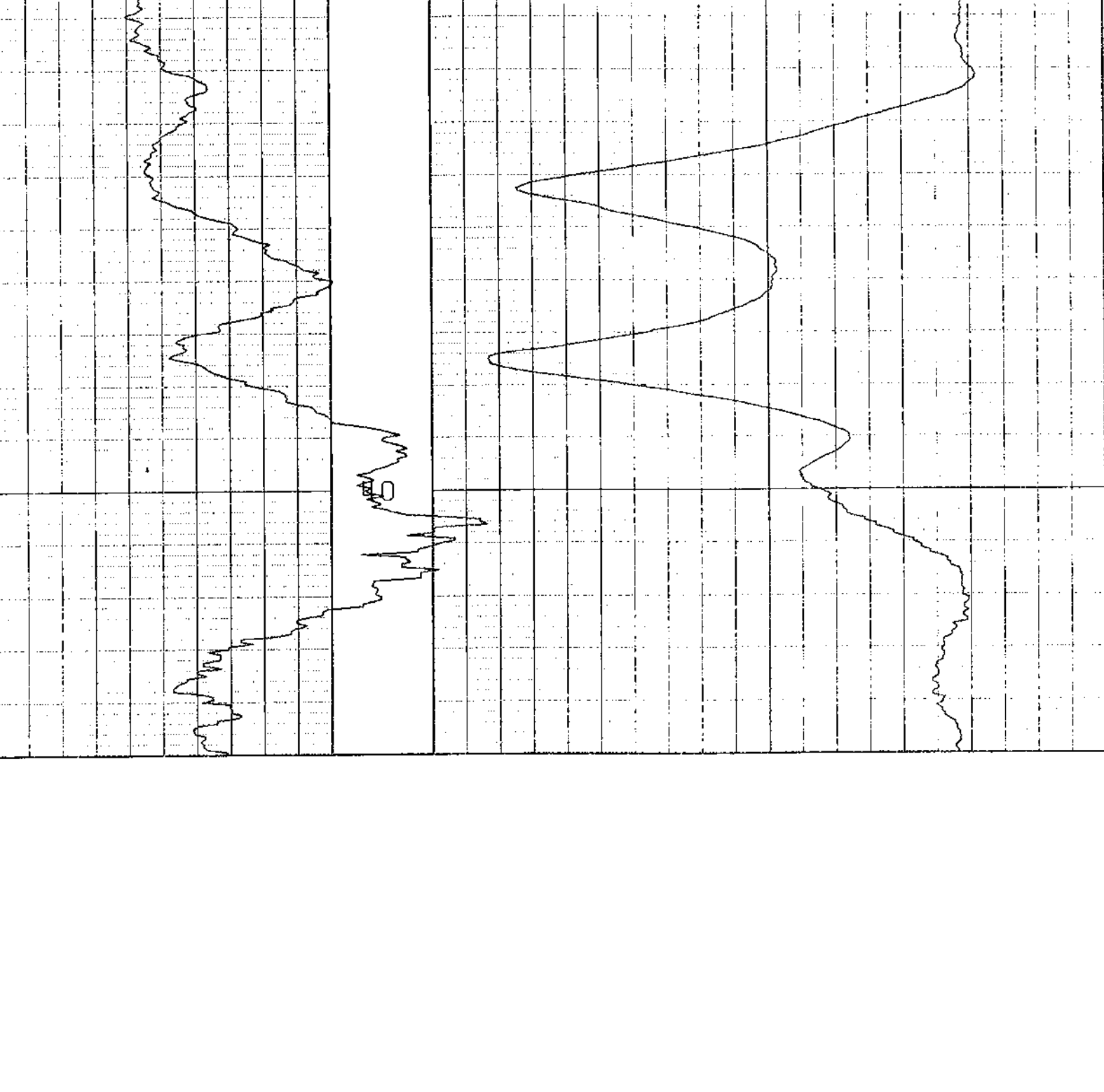
BOREHOLE QHR 87-042
CLIENT QUINTETTE
AREA TRANSFER
COUNTRY CANADA

DETAIL LOGS

739

DEPTH SCALE 10000 L.S.D (CCS) 0
CLIENT: QUINTETTE COAL
WELL NO: QHR 87042
AREA: TRANSFER PIT
CASING: 8.3"
WATER: 82.0M
DEPTH: 37.00-41.00
DATE PROCESSED: 10-SEP-87

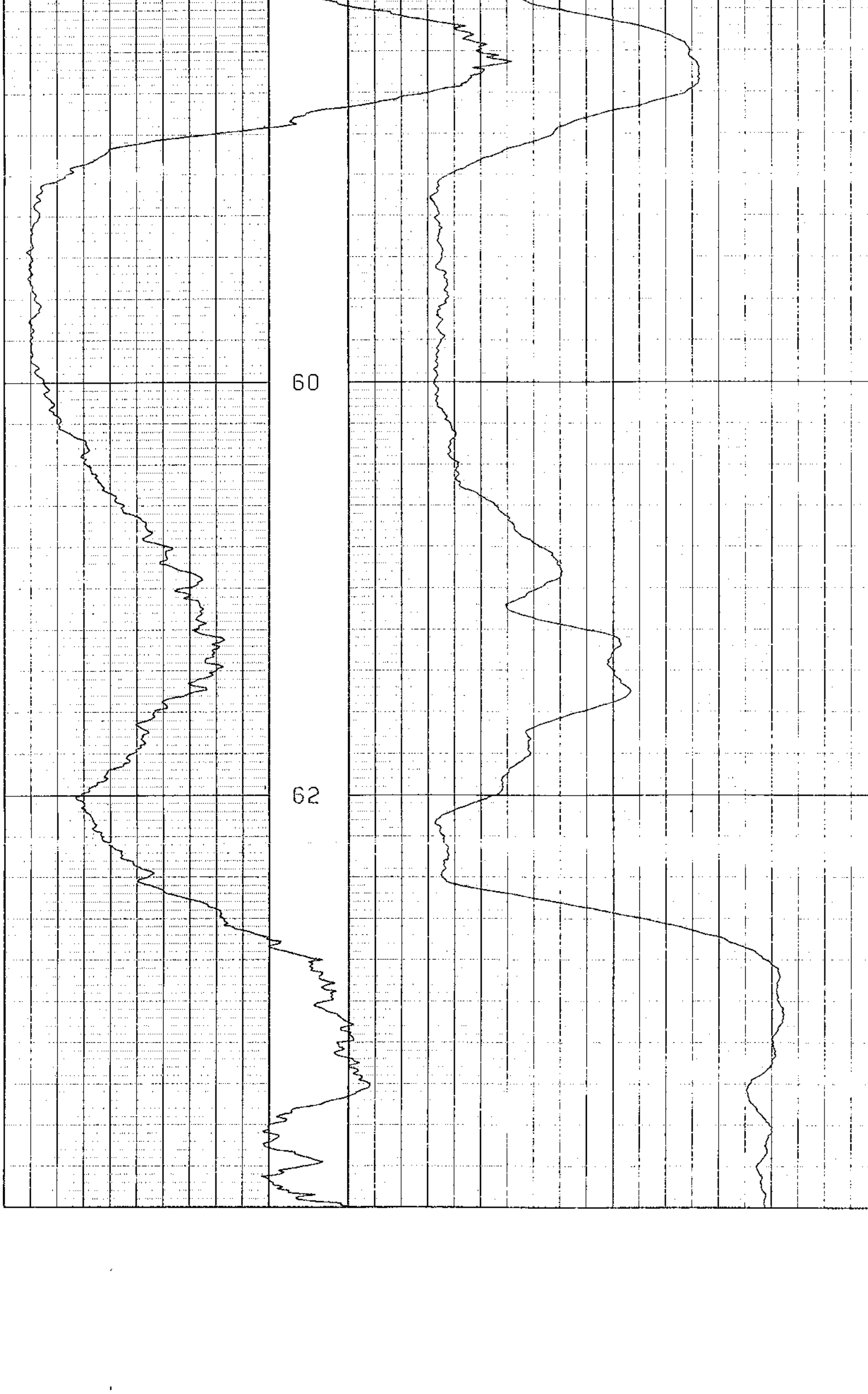
GAMMA RAY 0 150



DETAIL LOGS

DEPTH SCALE 10000 L.S.D (CCS) 0
CLIENT: QHR 87042
WELL NO: QHR 87042
AREA:
CASING:
WATER:
DEPTH: 57.00-64.00
DATE PROCESSED: 10-SEP-87

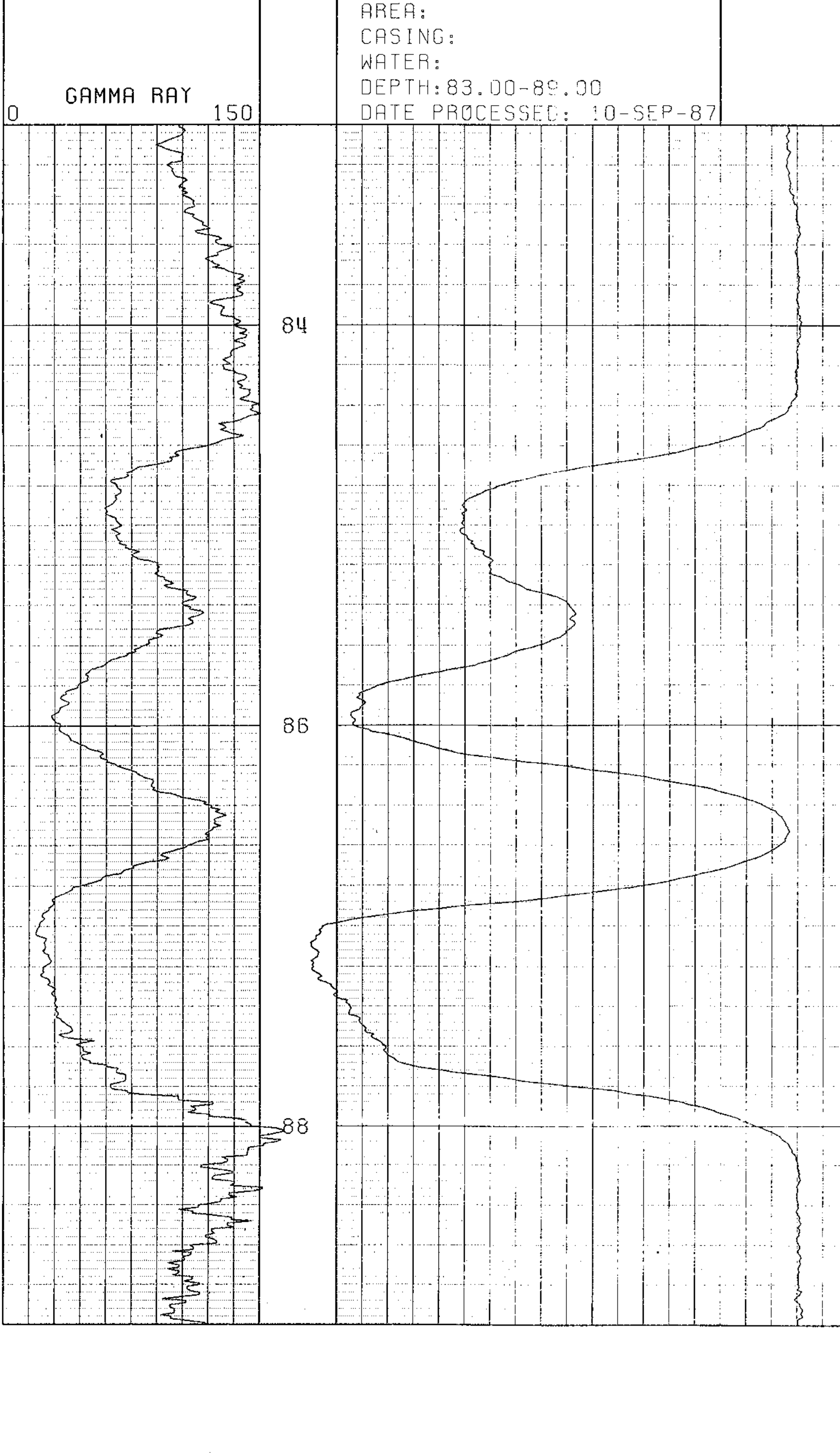
GAMMA RAY 0 150



DETAIL LOGS

DEPTH SCALE 6000 L.S.D (CCS) 0
CLIENT: QHR 87042
WELL NO: QHR 87042
AREA:
CASING:
WATER:
DEPTH: 83.00-89.00
DATE PROCESSED: 10-SEP-87

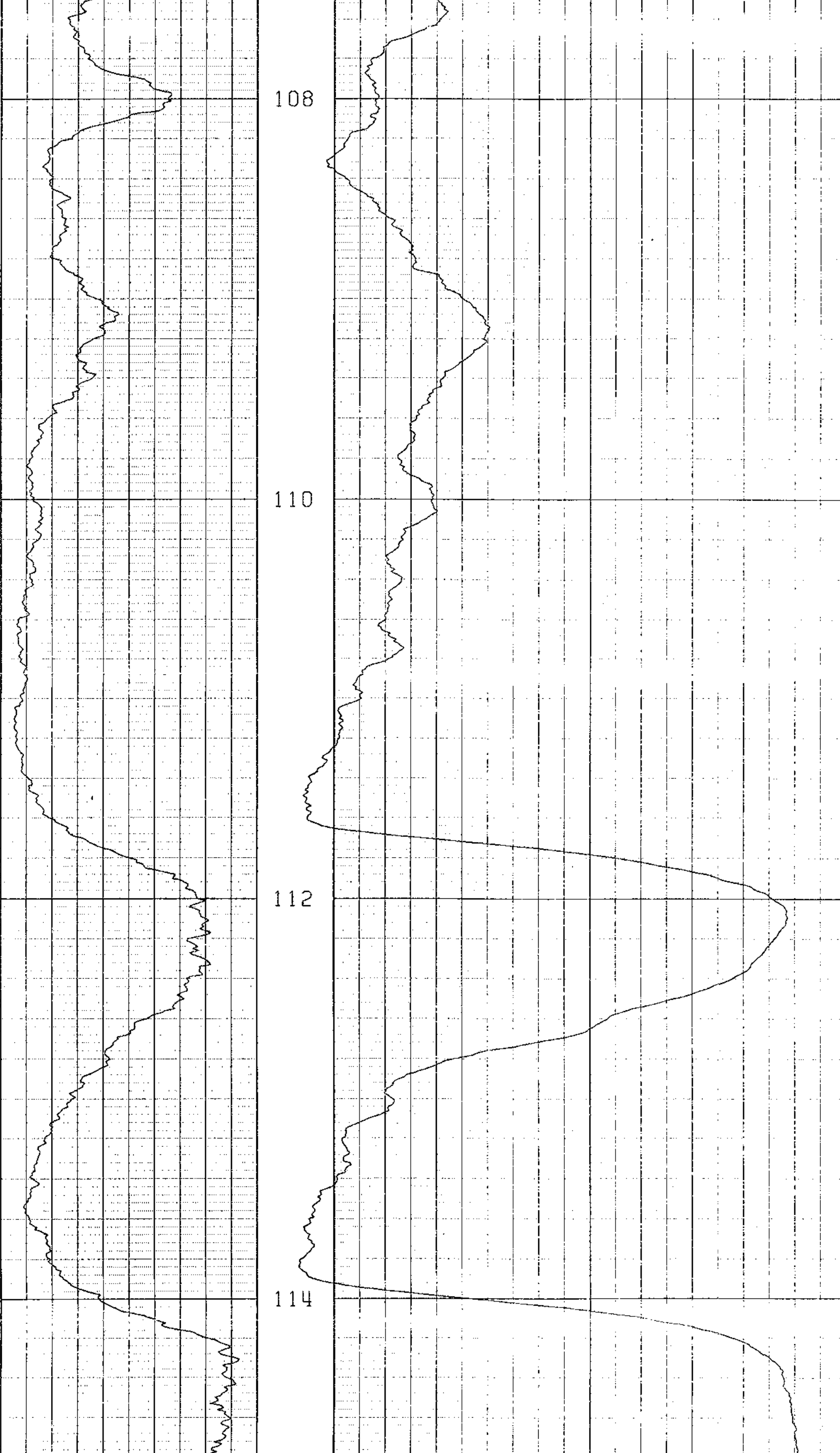
GAMMA RAY 0 150



DETAIL LOGS

DEPTH SCALE 6000 L.S.D (CCS) 0
CLIENT: QHR 87042
WELL NO: QHR 87042
AREA:
CASING:
WATER:
DEPTH: 105.00-115.00
DATE PROCESSED: 10-SEP-87

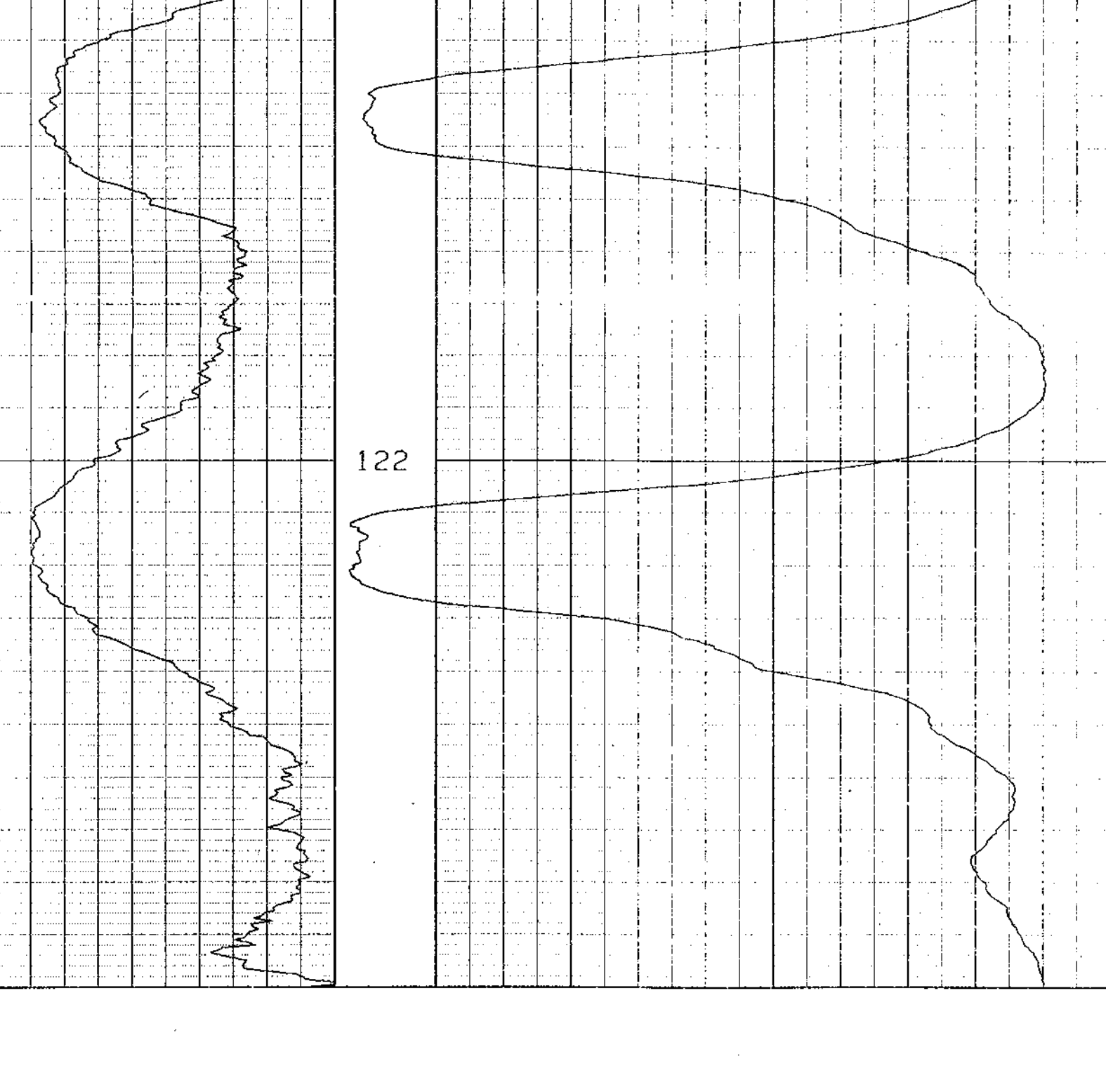
GAMMA RAY 0 150



DETAIL LOGS

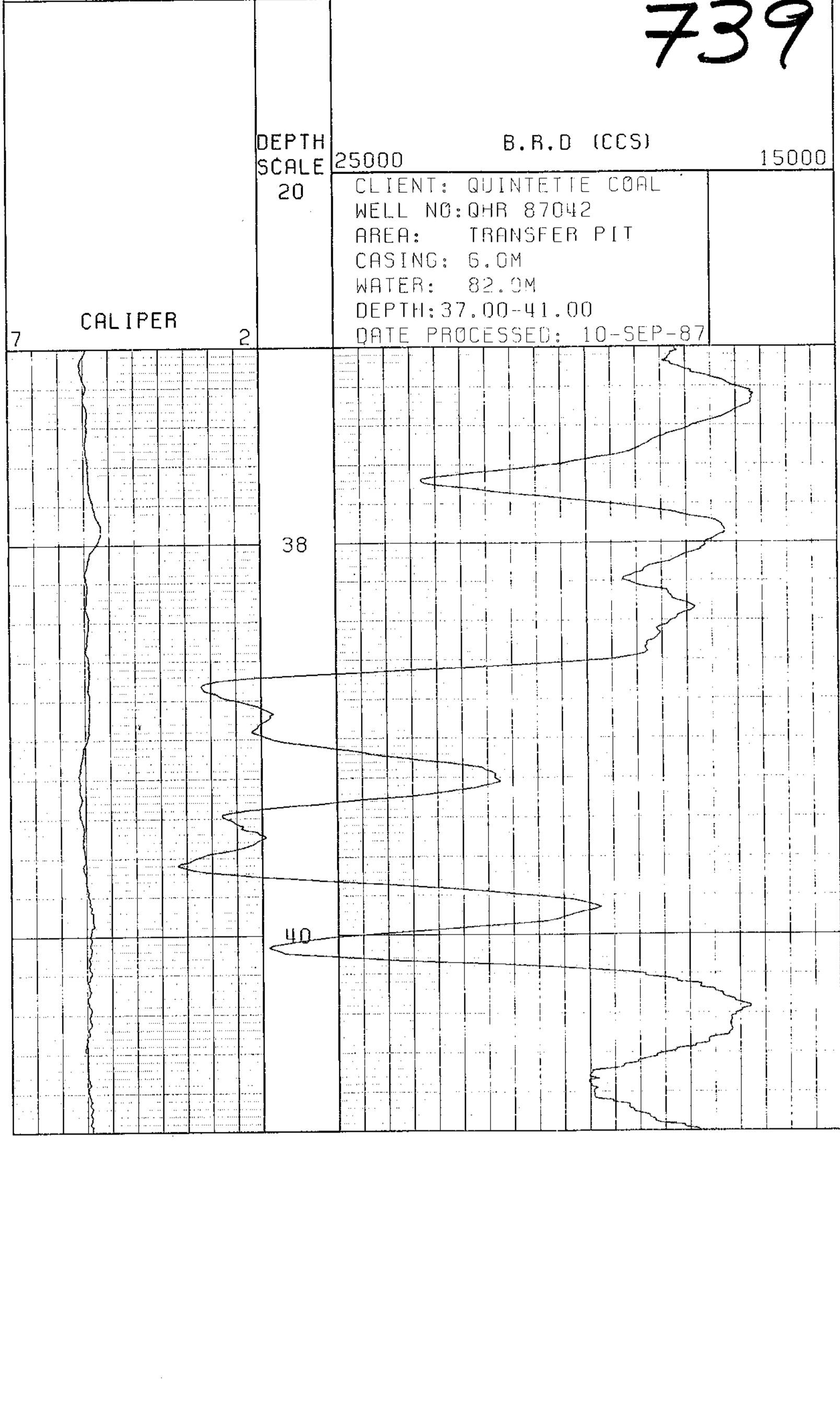
DEPTH SCALE 6000 L.S.D (CCS) 0
CLIENT: QHR 87042
WELL NO: QHR 87042
AREA:
CASING:
WATER:
DEPTH: 119.00-124.00
DATE PROCESSED: 10-SEP-87

GAMMA RAY 0 150

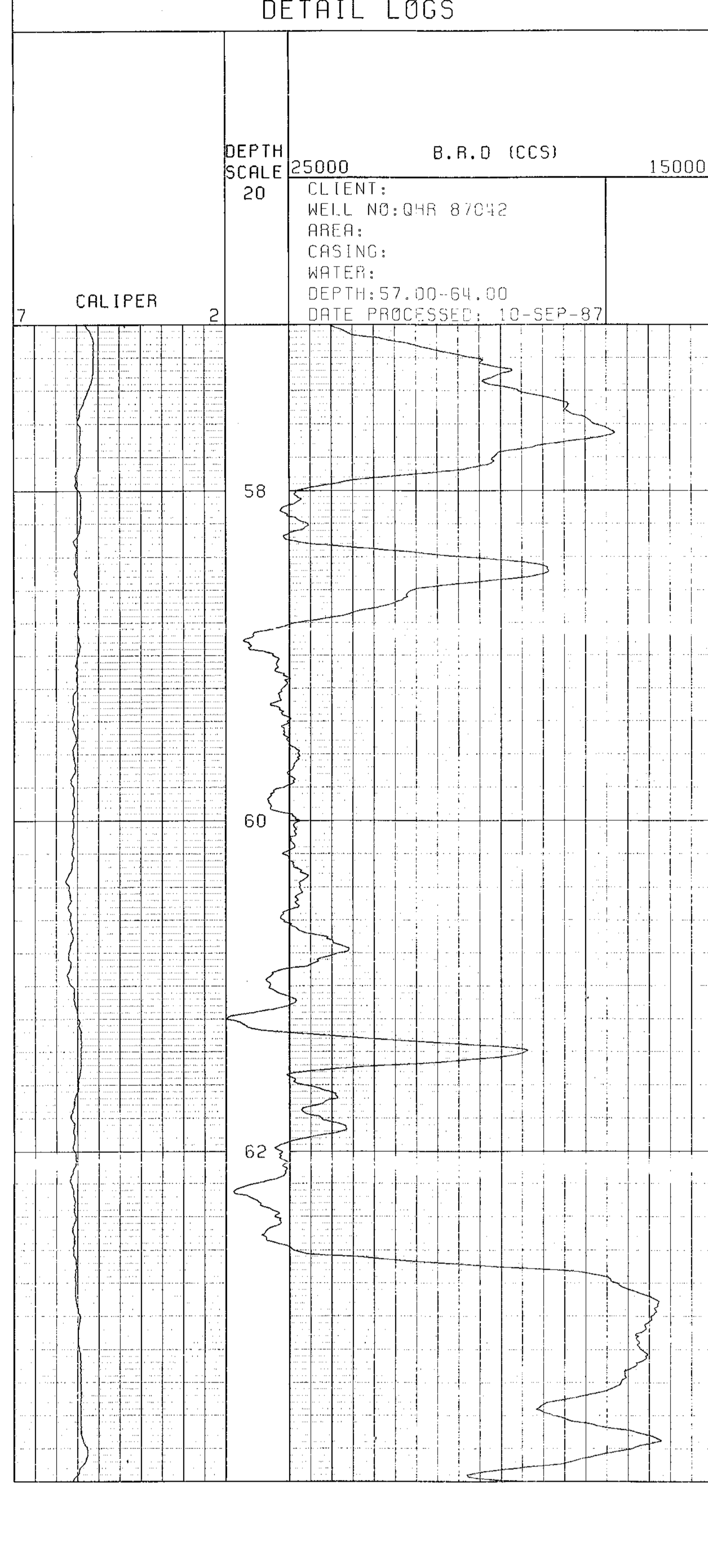


DETAIL LOGS

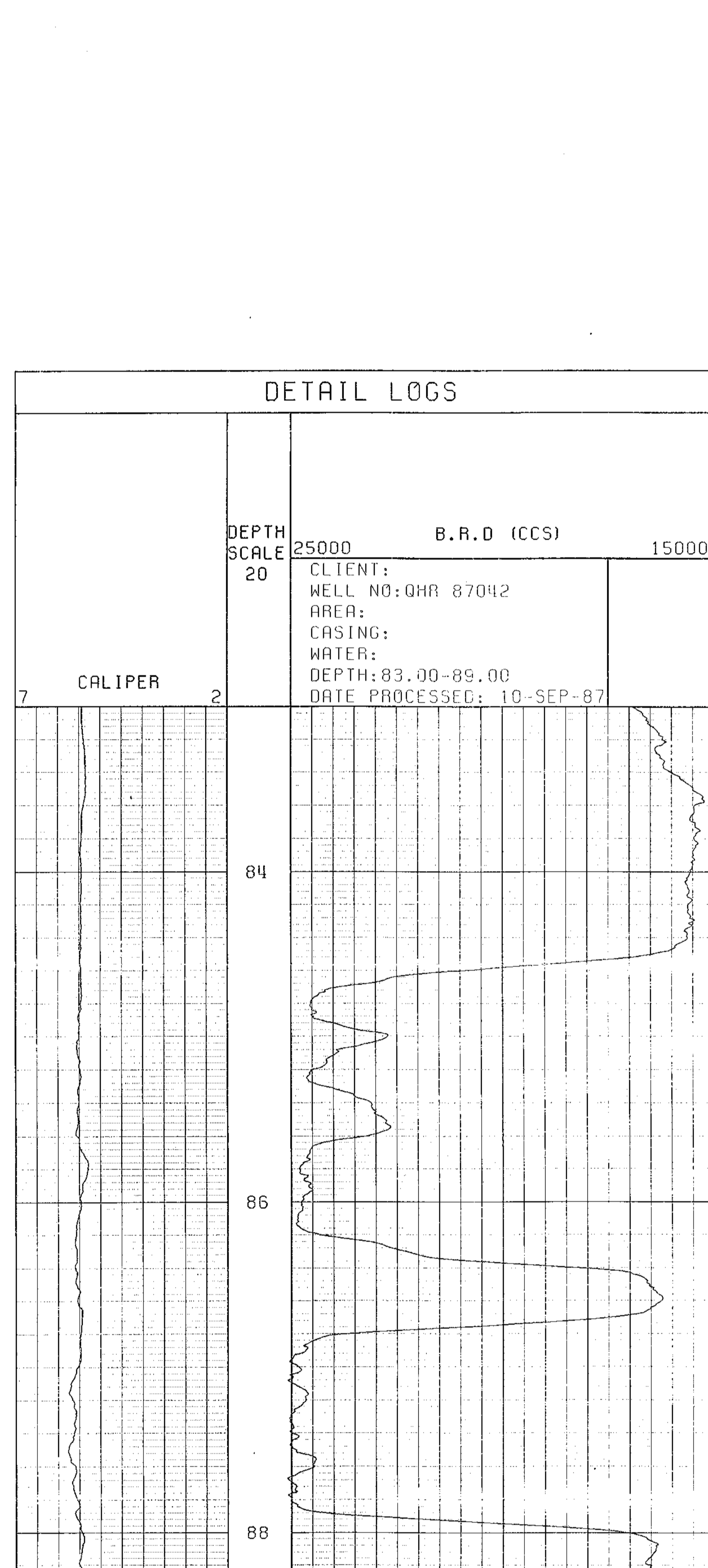
739



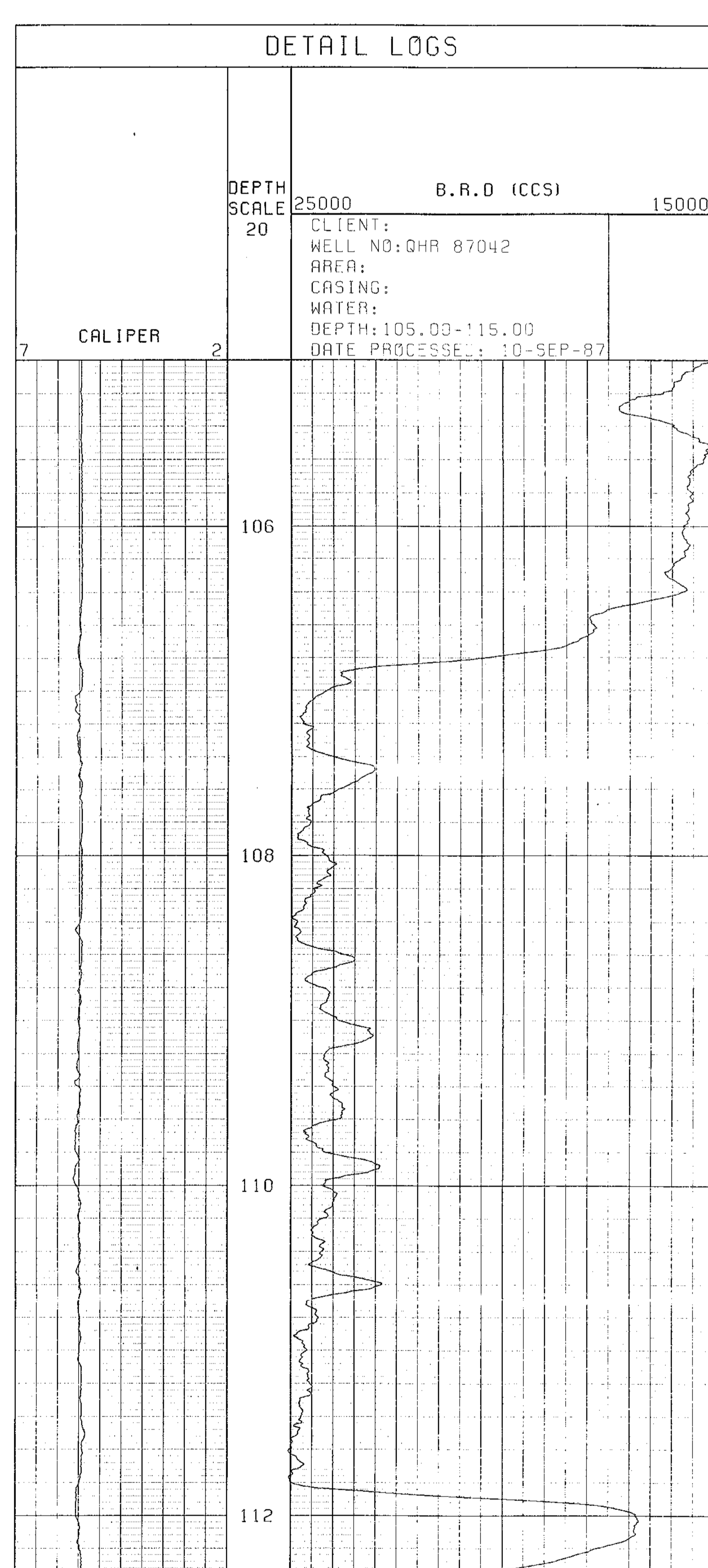
DETAIL LOGS



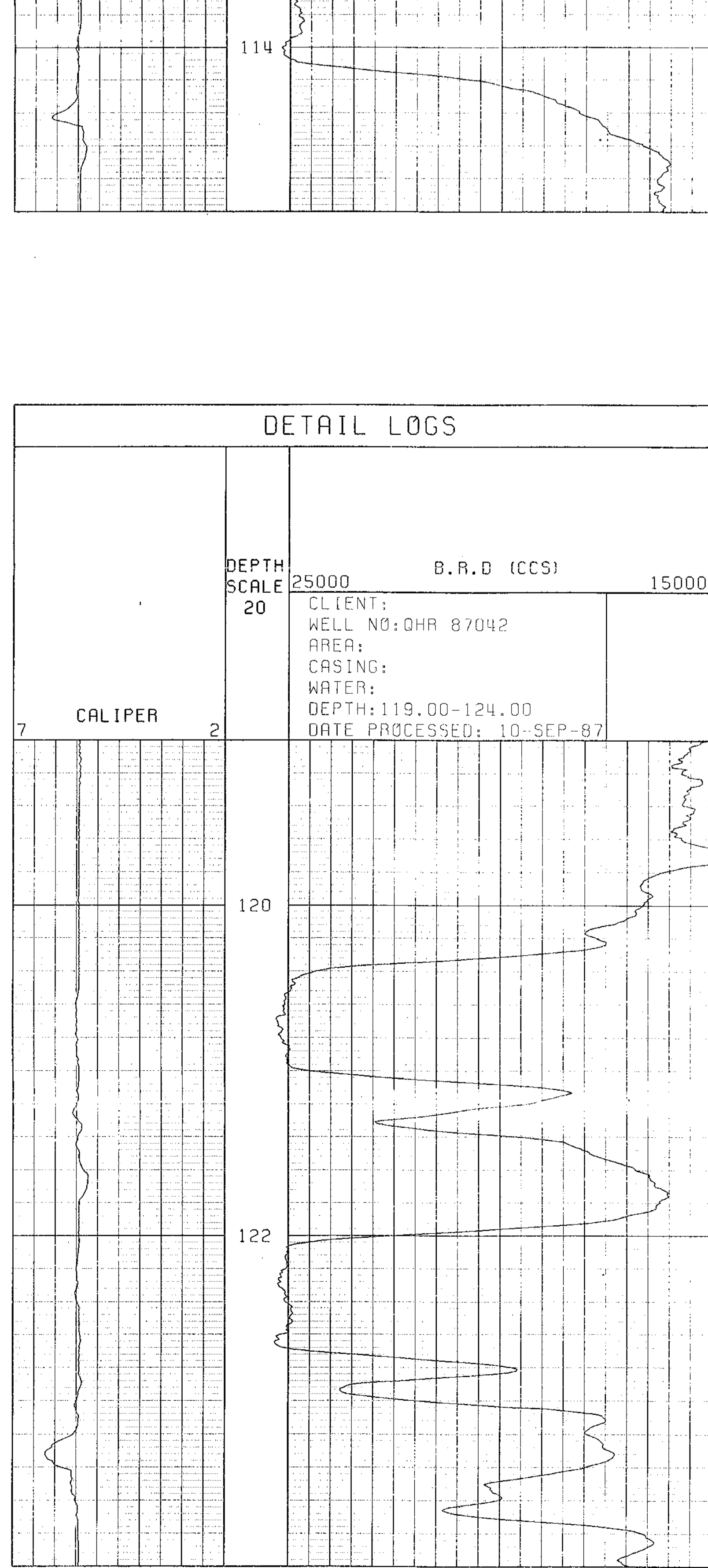
DETAIL LOGS



DETAIL LOGS



DETAIL LOGS



739



CONTINUOUS VERTICALITY ANALYSIS

CLIENT_____

BOREHOLE_____

AREA_____

COUNTRY_____

QUINTETTE

QHR-87-042

TRANSFER

CANADA

DATE LOGGED.....18-AUG-87

DATE PROCESSED..15-DEC-87

UPPER REFERENCE POINT....CASING SHOE

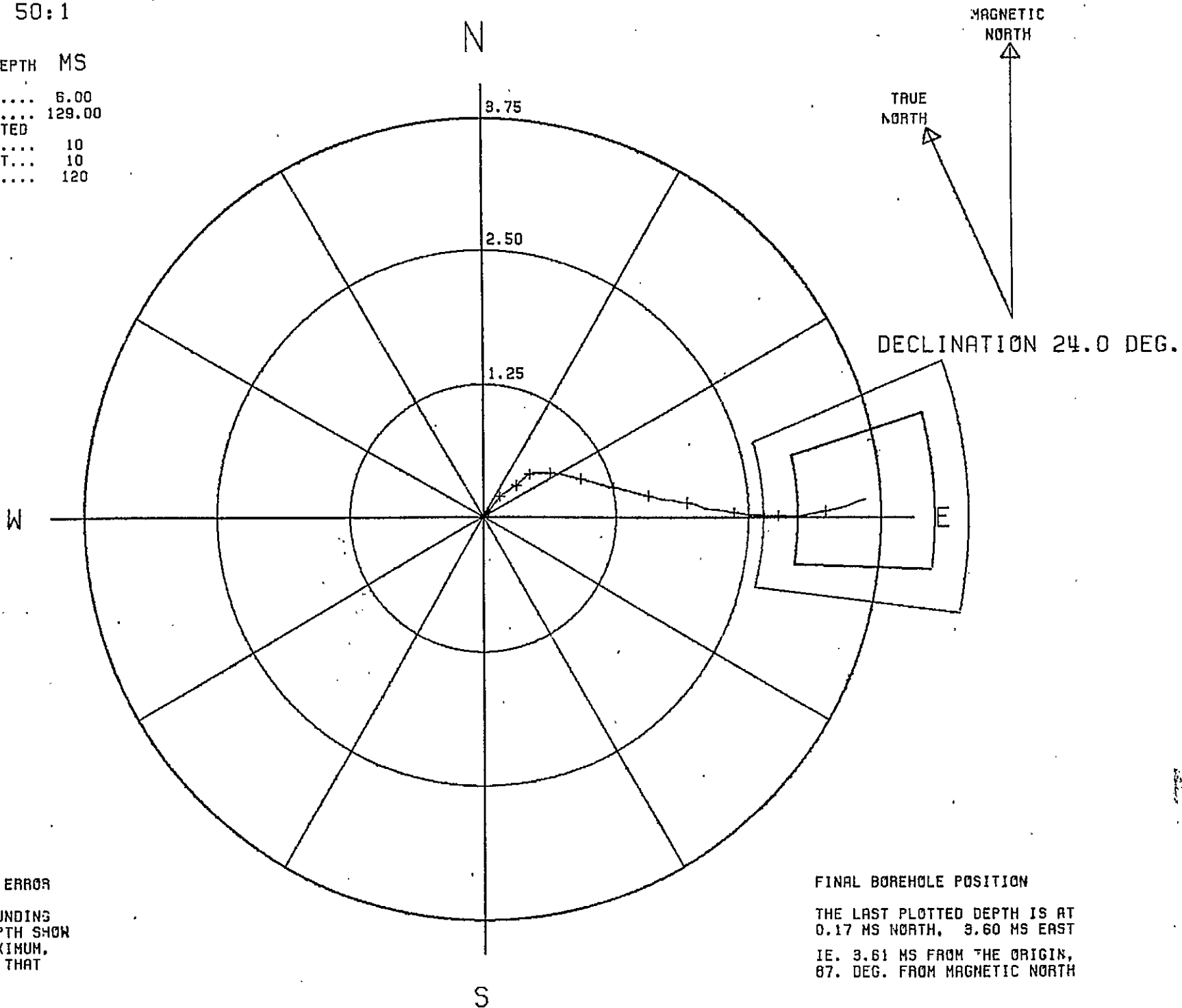
LOWER REFERENCE POINT....T.D.

CROSS-SECTION

SCALE: 50:1

ALL FIGURES IN LOG DEPTH MS

| | |
|---|--------|
| TARGET ORIGIN DEPTH..... | 6.00 |
| LAST PLOTTED DEPTH..... | 129.00 |
| DEPTH MARKERS ANNOTATED IN MULTIPLES OF..... | 10 |
| FIRST DEPTH MARKER AT... | 10 |
| LAST DEPTH MARKER AT.... | 120 |



BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT 0.17 MS NORTH, 3.60 MS EAST
IE. 3.61 MS FROM THE ORIGIN,
87. DEG. FROM MAGNETIC NORTH

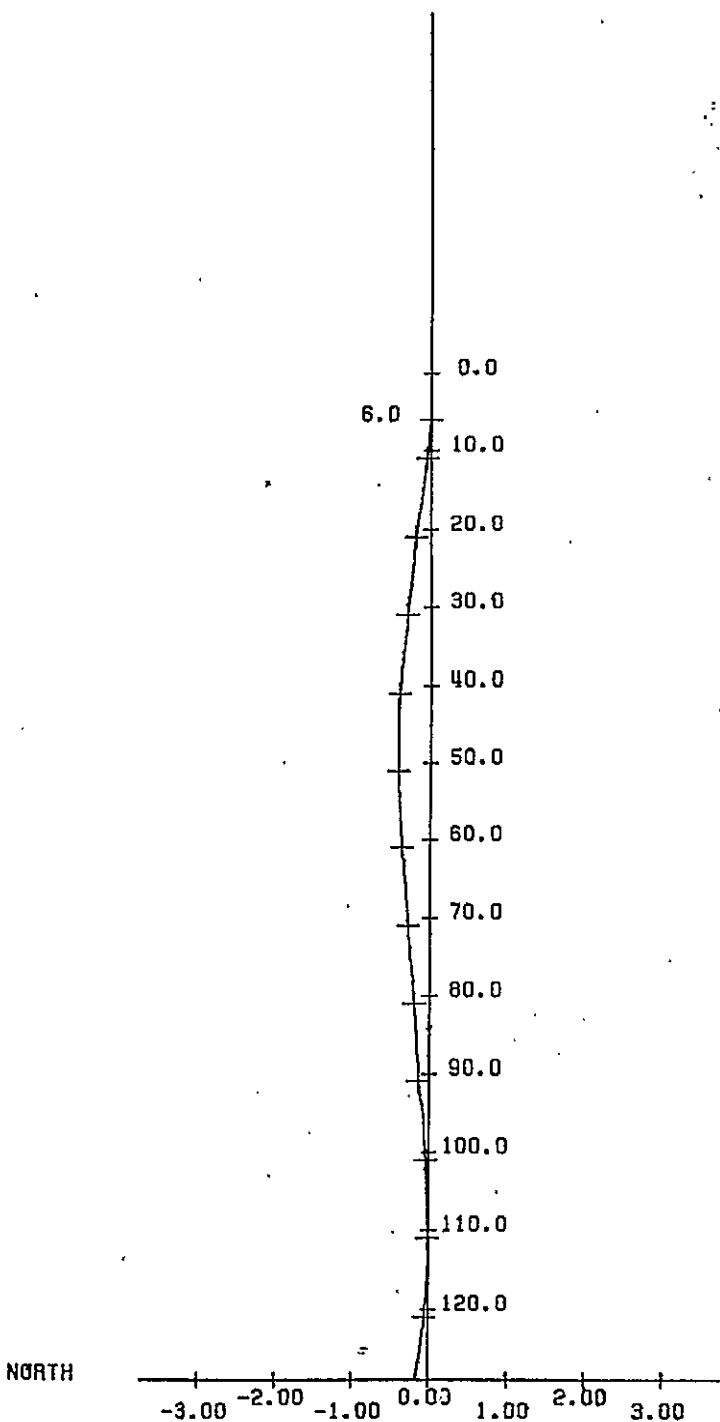
VERTICAL SECTIONS
(TRUE DEPTH VS. DISPLACEMENT)

N-S SECTION

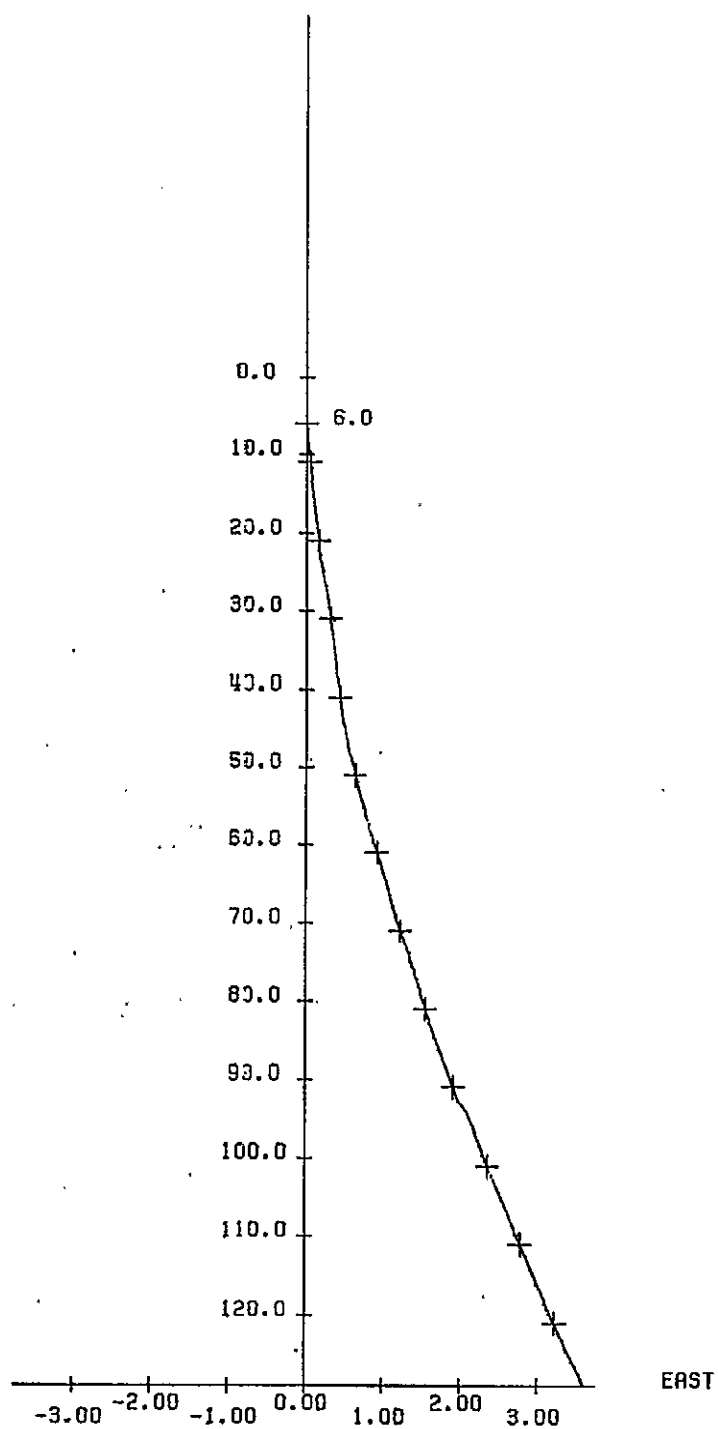
W-E SECTION

VERTICAL SCALE 1000 : 1

MARKERS ANNOTATED
AS ABOVE



SOUTH



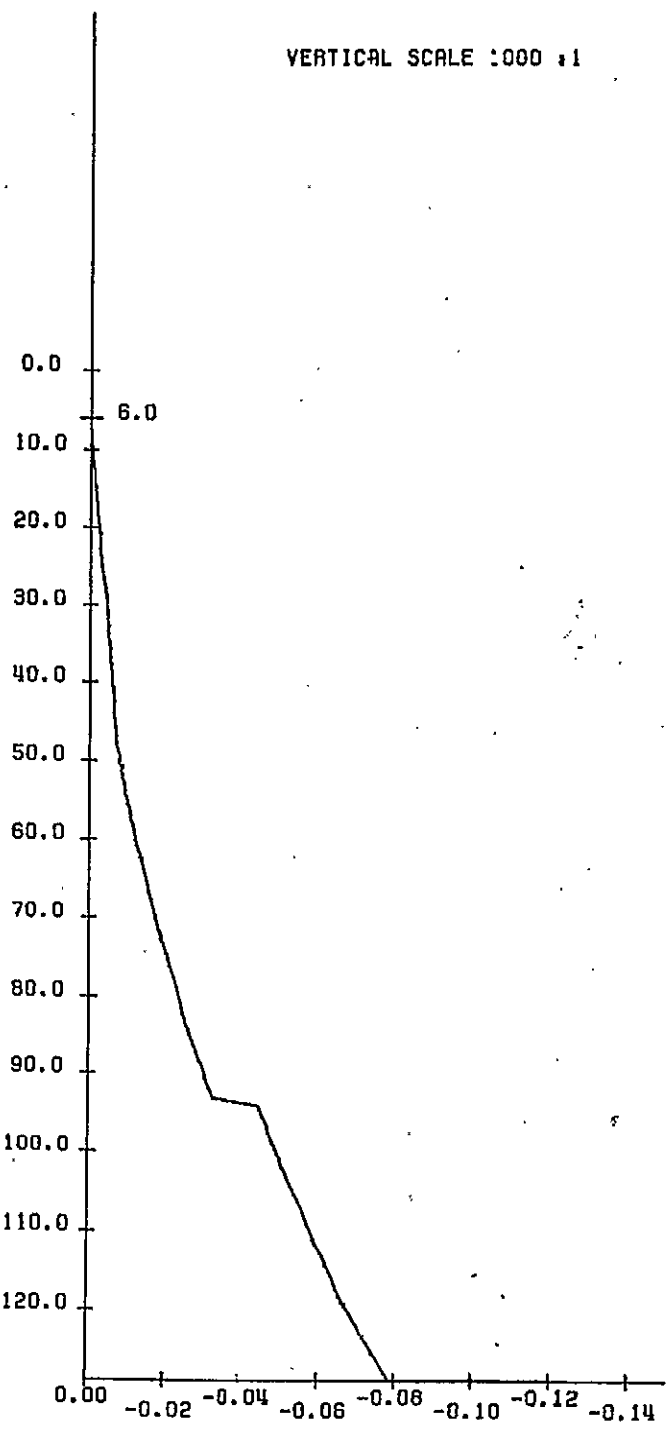
WEST

EAST

DEPTH CORRECTION ANALYSIS

LOG
DEPTH

VERTICAL SCALE :000 :1



CORRECTION FOR TRUE DEPTH
SCALE 2 :1

| DEPTHS: | | DEPTHS: | |
|---------|-------|---------|--------|
| LOG | TRUE | LOG | TRUE |
| 7.00 | 7.00 | 77.00 | 76.98 |
| 8.00 | 8.00 | 78.00 | 77.98 |
| 9.00 | 9.00 | 79.00 | 78.98 |
| 10.00 | 10.00 | 80.00 | 79.98 |
| 11.00 | 11.00 | 81.00 | 80.98 |
| 12.00 | 12.00 | 82.00 | 81.98 |
| 13.00 | 13.00 | 83.00 | 82.98 |
| 14.00 | 14.00 | 84.00 | 83.97 |
| 15.00 | 15.00 | 85.00 | 84.97 |
| 16.00 | 16.00 | 86.00 | 85.97 |
| 17.00 | 17.00 | 87.00 | 86.97 |
| 18.00 | 18.00 | 88.00 | 87.97 |
| 19.00 | 19.00 | 89.00 | 88.97 |
| 20.00 | 20.00 | 90.00 | 89.97 |
| 21.00 | 21.00 | 91.00 | 90.97 |
| 22.00 | 22.00 | 92.00 | 91.97 |
| 23.00 | 23.00 | 93.00 | 92.97 |
| 24.00 | 24.00 | 94.00 | 93.96 |
| 25.00 | 25.00 | 95.00 | 94.96 |
| 26.00 | 26.00 | 96.00 | 95.95 |
| 27.00 | 27.00 | 97.00 | 96.95 |
| 28.00 | 28.00 | 98.00 | 97.95 |
| 29.00 | 29.00 | 99.00 | 98.95 |
| 30.00 | 30.00 | 100.00 | 99.95 |
| 31.00 | 31.00 | 101.00 | 100.95 |
| 32.00 | 32.00 | 102.00 | 101.95 |
| 33.00 | 33.00 | 103.00 | 102.95 |
| 34.00 | 34.00 | 104.00 | 103.95 |
| 35.00 | 34.99 | 105.00 | 104.95 |
| 36.00 | 35.99 | 106.00 | 105.95 |
| 37.00 | 36.99 | 107.00 | 106.94 |
| 38.00 | 37.99 | 108.00 | 107.94 |
| 39.00 | 38.99 | 109.00 | 108.94 |
| 40.00 | 39.99 | 110.00 | 109.94 |
| 41.00 | 40.99 | 111.00 | 110.94 |
| 42.00 | 41.99 | 112.00 | 111.94 |
| 43.00 | 42.99 | 113.00 | 112.94 |
| 44.00 | 43.99 | 114.00 | 113.94 |
| 45.00 | 44.99 | 115.00 | 114.94 |
| 46.00 | 45.99 | 116.00 | 115.94 |
| 47.00 | 46.99 | 117.00 | 116.94 |
| 48.00 | 47.99 | 118.00 | 117.93 |
| 49.00 | 48.99 | 119.00 | 118.93 |
| 50.00 | 49.99 | 120.00 | 119.93 |
| 51.00 | 50.99 | 121.00 | 120.93 |
| 52.00 | 51.99 | 122.00 | 121.93 |
| 53.00 | 52.99 | 123.00 | 122.93 |
| 54.00 | 53.99 | 124.00 | 123.93 |
| 55.00 | 54.99 | 125.00 | 124.93 |
| 56.00 | 55.99 | 126.00 | 125.93 |
| 57.00 | 56.99 | 127.00 | 126.92 |
| 58.00 | 57.99 | 128.00 | 127.92 |
| 59.00 | 58.99 | 129.00 | 128.92 |
| 60.00 | 59.99 | | |
| 61.00 | 60.99 | | |
| 62.00 | 61.99 | | |
| 63.00 | 62.99 | | |
| 64.00 | 63.99 | | |
| 65.00 | 64.99 | | |
| 66.00 | 65.98 | | |
| 67.00 | 66.98 | | |
| 68.00 | 67.98 | | |
| 69.00 | 68.98 | | |
| 70.00 | 69.98 | | |
| 71.00 | 70.98 | | |
| 72.00 | 71.98 | | |
| 73.00 | 72.98 | | |
| 74.00 | 73.98 | | |
| 75.00 | 74.98 | | |
| 76.00 | 75.98 | | |

OHR 87 042

BPB VERTICALITY ANALYSIS
INTERPRETATION NOTES

1. All plotted output is automatically scaled to obtain the best visual effect within the physical space available. The maximum scales being 50000:1 (metric) & 48000:1 (imperial), and the minimum 1:1.
 2. The analysis is derived by integrating 10 cm./6" sampled data down the borehole. However the listing supplied will contain a maximum of 200 points in multiples of 1,2,5,10,20,25,50, or 100 metres/feet depending upon the total range of the analysis. However the analysis is calculated for the entire range of the borehole, and the final borehole position is included in the listing.
 3. Computed verticality may only be fully derived in open sections of the borehole, away from the influence of any magnetic media (as the azimuth calculations are derived from three solid state magnetometers). So the analysis will generally begin at the end of the casing, and all borehole positional information will relate to this depth.
 4. Up to ten cross-sections may be requested for any borehole to be displayed at any scale (the default scale is that of the cross-section for the entire hole).
 5. Borehole positional error is derived assuming the following parameters:

| | | |
|---------------|---------------|------------------|
| | TILT(degrees) | AZIMUTH(degrees) |
| Typical Error | +/- 0.33333 | +/- 10.0 |
| Maximum Error | +/- 0.5 | +/- 15.0 |
 6. Error analysis may be calculated and plotted from the data listing as follows:
 - a) Plot the four coordinates from the error listing (based upon zero azimuth error) on a target plot, origin at the start of the analysis.
 - b) Describe arcs of +/- 10 degrees & +/- 15 degrees (centre at the origin) through the inner and outer points respectively.
 - c) Connect the respective arcs together with straight lines to give the typical & maximum borehole positional error.
 7. Given below is a full description of the parameters displayed on the ensuing listing:

| | |
|---------------------|--|
| LOG DEPTH | the depth recorded on the field logs for the borehole |
| TRUE DEPTH | the true vertical depth corresponding to the above depth, corrected from the start of the analysis |
| HOLE TILT & AZIMUTH | the SAMPLED borehole orientation |
| AXIAL COORDINATES | the coordinates North & East from the target origin |
| POLAR COORDINATES | the polar, or radial, coordinates of the borehole |
| ERROR COORDINATES | the polar coordinates corresponding to the typical and maximum tilt error |
- N.B. The reference point for ALL bearing angles on this listing is given at the top of each sheet

Verticality Data Listing

Date processed: 15-DEC-87

All co-ordinates with respect to True North

| DEPTHS | | BOREHOLE tilt | AZI | AXIAL CO-ORDS. | | POLAR | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | |
|--------|-------|------------------|------|----------------|------|-------|--------|--|--------|------|--------|------|--------|-----|------|
| log | true | | | North | East | brng | radius | brng | radius | brng | radius | brng | radius | | |
| 7.00 | 7.00 | 0.4 | 76. | 0.00 | 0.01 | 69. | 0.01 | 69. | 0.02 | 73. | 0.00 | 69. | 0.02 | 70. | 0.01 |
| 8.00 | 8.00 | 0.8 | 53. | 0.01 | 0.02 | 68. | 0.03 | 67. | 0.04 | 69. | 0.01 | 67. | 0.04 | 68. | 0.02 |
| 9.00 | 9.00 | 0.7 | 87. | 0.02 | 0.04 | 67. | 0.04 | 68. | 0.07 | 66. | 0.02 | 67. | 0.06 | 67. | 0.02 |
| 10.00 | 10.00 | 0.4 | 51. | 0.02 | 0.05 | 65. | 0.05 | 65. | 0.09 | 63. | 0.02 | 65. | 0.08 | 64. | 0.03 |
| 11.00 | 11.00 | 1.0 | 87. | 0.03 | 0.06 | 69. | 0.07 | 69. | 0.11 | 67. | 0.03 | 69. | 0.10 | 68. | 0.04 |
| 12.00 | 12.00 | 0.3 | 73. | 0.03 | 0.08 | 68. | 0.08 | 68. | 0.13 | 67. | 0.03 | 68. | 0.12 | 68. | 0.05 |
| 13.00 | 13.00 | 1.0 | 68. | 0.04 | 0.09 | 67. | 0.10 | 67. | 0.16 | 65. | 0.04 | 67. | 0.14 | 66. | 0.06 |
| 14.00 | 14.00 | 0.9 | 54. | 0.05 | 0.11 | 66. | 0.12 | 67. | 0.18 | 65. | 0.05 | 67. | 0.16 | 66. | 0.07 |
| 15.00 | 15.00 | 0.8 | 57. | 0.06 | 0.12 | 65. | 0.14 | 65. | 0.21 | 63. | 0.06 | 65. | 0.19 | 64. | 0.09 |
| 16.00 | 16.00 | 1.3 | 81. | 0.07 | 0.14 | 65. | 0.16 | 65. | 0.24 | 63. | 0.07 | 65. | 0.21 | 64. | 0.10 |
| 17.00 | 17.00 | 1.2 | 49. | 0.07 | 0.16 | 65. | 0.17 | 65. | 0.26 | 64. | 0.08 | 65. | 0.23 | 64. | 0.11 |
| 18.00 | 18.00 | 1.0 | 69. | 0.08 | 0.17 | 64. | 0.19 | 65. | 0.29 | 63. | 0.09 | 65. | 0.26 | 64. | 0.13 |
| 19.00 | 19.00 | 1.5 | 52. | 0.09 | 0.19 | 64. | 0.21 | 64. | 0.32 | 63. | 0.10 | 64. | 0.28 | 63. | 0.14 |
| 20.00 | 20.00 | 1.2 | 67. | 0.10 | 0.21 | 64. | 0.23 | 64. | 0.35 | 62. | 0.11 | 64. | 0.31 | 63. | 0.15 |
| 21.00 | 21.00 | 1.1 | 59. | 0.11 | 0.22 | 64. | 0.25 | 64. | 0.37 | 62. | 0.12 | 64. | 0.33 | 63. | 0.16 |
| 22.00 | 22.00 | 0.2 | 53. | 0.11 | 0.23 | 64. | 0.26 | 64. | 0.39 | 63. | 0.12 | 64. | 0.35 | 63. | 0.17 |
| 23.00 | 23.00 | 0.7 | 64. | 0.12 | 0.25 | 65. | 0.27 | 65. | 0.41 | 63. | 0.13 | 65. | 0.37 | 64. | 0.18 |
| 24.00 | 24.00 | 1.3 | 75. | 0.12 | 0.26 | 66. | 0.29 | 66. | 0.44 | 65. | 0.14 | 66. | 0.39 | 65. | 0.19 |
| 25.00 | 25.00 | 1.0 | 70. | 0.12 | 0.29 | 67. | 0.31 | 67. | 0.47 | 67. | 0.15 | 67. | 0.42 | 67. | 0.21 |
| 26.00 | 26.00 | 1.3 | 74. | 0.13 | 0.31 | 68. | 0.33 | 68. | 0.50 | 68. | 0.17 | 68. | 0.44 | 68. | 0.22 |
| 27.00 | 27.00 | 1.5 | 77. | 0.13 | 0.33 | 69. | 0.36 | 69. | 0.53 | 68. | 0.18 | 69. | 0.47 | 68. | 0.24 |
| 28.00 | 28.00 | 1.5 | 92. | 0.14 | 0.36 | 69. | 0.38 | 69. | 0.57 | 69. | 0.20 | 69. | 0.50 | 69. | 0.26 |
| 29.00 | 29.00 | 1.0 | 80. | 0.14 | 0.38 | 70. | 0.40 | 70. | 0.60 | 70. | 0.21 | 70. | 0.53 | 70. | 0.28 |
| 30.00 | 30.00 | 0.8 | 67. | 0.14 | 0.40 | 70. | 0.42 | 70. | 0.62 | 70. | 0.22 | 70. | 0.55 | 70. | 0.29 |
| 31.00 | 31.00 | 0.8 | 47. | 0.14 | 0.41 | 71. | 0.43 | 71. | 0.64 | 71. | 0.22 | 71. | 0.57 | 71. | 0.29 |
| 32.00 | 32.00 | 0.8 | 92. | 0.15 | 0.42 | 71. | 0.44 | 71. | 0.66 | 71. | 0.23 | 71. | 0.59 | 71. | 0.30 |
| 33.00 | 33.00 | 0.5 | 52. | 0.15 | 0.43 | 71. | 0.46 | 71. | 0.68 | 71. | 0.23 | 71. | 0.61 | 71. | 0.31 |
| 34.00 | 34.00 | 1.6 | 68. | 0.16 | 0.45 | 71. | 0.48 | 71. | 0.71 | 71. | 0.24 | 71. | 0.63 | 71. | 0.32 |
| 35.00 | 34.99 | 1.0 | 68. | 0.16 | 0.47 | 71. | 0.50 | 71. | 0.74 | 70. | 0.25 | 71. | 0.66 | 71. | 0.33 |
| 36.00 | 35.99 | 1.0 | 63. | 0.17 | 0.48 | 71. | 0.51 | 71. | 0.76 | 71. | 0.26 | 71. | 0.68 | 71. | 0.35 |
| 37.00 | 36.99 | 0.7 | 88. | 0.17 | 0.50 | 71. | 0.53 | 71. | 0.78 | 71. | 0.27 | 71. | 0.70 | 71. | 0.35 |
| 38.00 | 37.99 | 1.2 | 95. | 0.18 | 0.51 | 71. | 0.54 | 71. | 0.81 | 71. | 0.27 | 71. | 0.72 | 71. | 0.36 |
| 39.00 | 38.99 | 1.0 | 96. | 0.18 | 0.53 | 71. | 0.56 | 71. | 0.83 | 71. | 0.28 | 71. | 0.74 | 71. | 0.37 |
| 40.00 | 39.99 | 0.6 | 71. | 0.18 | 0.54 | 71. | 0.57 | 71. | 0.86 | 71. | 0.29 | 71. | 0.76 | 71. | 0.38 |
| 41.00 | 40.99 | 1.5 | 96. | 0.19 | 0.56 | 72. | 0.59 | 72. | 0.89 | 72. | 0.30 | 72. | 0.79 | 72. | 0.40 |
| 42.00 | 41.99 | 1.0 | 73. | 0.19 | 0.58 | 72. | 0.61 | 72. | 0.91 | 72. | 0.31 | 72. | 0.81 | 72. | 0.41 |
| 43.00 | 42.99 | 0.6 | 94. | 0.19 | 0.60 | 73. | 0.62 | 73. | 0.93 | 73. | 0.31 | 73. | 0.83 | 73. | 0.42 |
| 44.00 | 43.99 | 0.8 | 130. | 0.18 | 0.61 | 73. | 0.63 | 73. | 0.95 | 73. | 0.32 | 73. | 0.84 | 73. | 0.42 |
| 45.00 | 44.99 | 0.9 | 111. | 0.18 | 0.62 | 74. | 0.65 | 74. | 0.97 | 74. | 0.32 | 74. | 0.86 | 74. | 0.43 |
| 46.00 | 45.99 | 1.3 | 123. | 0.17 | 0.64 | 75. | 0.66 | 75. | 0.99 | 75. | 0.33 | 75. | 0.88 | 75. | 0.44 |
| 47.00 | 46.99 | 1.1 | 108. | 0.16 | 0.65 | 76. | 0.67 | 76. | 1.01 | 76. | 0.34 | 76. | 0.90 | 76. | 0.45 |
| 48.00 | 47.99 | 1.0 | 111. | 0.15 | 0.67 | 77. | 0.69 | 77. | 1.03 | 77. | 0.35 | 77. | 0.92 | 77. | 0.46 |
| 49.00 | 48.99 | 1.5 | 125. | 0.14 | 0.70 | 79. | 0.71 | 78. | 1.06 | 79. | 0.36 | 79. | 0.95 | 79. | 0.48 |
| 50.00 | 49.99 | 1.6 | 120. | 0.13 | 0.72 | 80. | 0.74 | 80. | 1.09 | 81. | 0.38 | 80. | 0.97 | 80. | 0.50 |
| 51.00 | 50.99 | 1.9 | 123. | 0.12 | 0.75 | 81. | 0.76 | 81. | 1.12 | 82. | 0.39 | 81. | 1.00 | 81. | 0.51 |
| 52.00 | 51.99 | 1.5 | 114. | 0.11 | 0.77 | 82. | 0.78 | 81. | 1.15 | 83. | 0.41 | 82. | 1.02 | 83. | 0.53 |
| 53.00 | 52.99 | 1.3 | 130. | 0.09 | 0.79 | 83. | 0.80 | 83. | 1.17 | 85. | 0.42 | 83. | 1.05 | 84. | 0.55 |
| 54.00 | 53.99 | 1.7 | 125. | 0.08 | 0.82 | 85. | 0.82 | 84. | 1.20 | 86. | 0.44 | 84. | 1.08 | 85. | 0.56 |
| 55.00 | 54.99 | 1.9 | 135. | 0.06 | 0.84 | 86. | 0.84 | 85. | 1.23 | 88. | 0.45 | 85. | 1.10 | 87. | 0.58 |
| 56.00 | 55.99 | 1.8 | 137. | 0.04 | 0.86 | 87. | 0.87 | 86. | 1.26 | 90. | 0.47 | 86. | 1.13 | 88. | 0.60 |

| DEPTHS | | BOREHOLE | | AXIAL CO-ORDS. | | POLAR | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | |
|--------|--------|----------|------|----------------|------|-------|--------|--|-------------|-------------|-------------|-------------|------|------|------|
| log | true | tilt | AZI | North | East | brng | radius | brng radius | brng radius | brng radius | brng radius | brng radius | | | |
| 57.00 | 56.99 | 2.0 | 129. | 0.03 | 0.89 | 88. | 0.89 | 87. | 1.29 | 91. | 0.49 | 88. | 1.16 | 90. | 0.62 |
| 58.00 | 57.99 | 1.7 | 137. | 0.01 | 0.91 | 89. | 0.91 | 88. | 1.32 | 92. | 0.50 | 89. | 1.18 | 91. | 0.64 |
| 59.00 | 58.99 | 1.9 | 139. | -0.01 | 0.94 | 91. | 0.94 | 89. | 1.35 | 94. | 0.52 | 90. | 1.21 | 92. | 0.66 |
| 60.00 | 59.99 | 1.9 | 132. | -0.03 | 0.96 | 92. | 0.96 | 90. | 1.38 | 95. | 0.54 | 91. | 1.24 | 93. | 0.68 |
| 61.00 | 60.99 | 2.1 | 132. | -0.05 | 0.99 | 93. | 0.99 | 91. | 1.41 | 96. | 0.55 | 92. | 1.27 | 95. | 0.70 |
| 62.00 | 61.99 | 1.9 | 137. | -0.07 | 1.01 | 94. | 1.01 | 92. | 1.45 | 98. | 0.58 | 93. | 1.30 | 96. | 0.72 |
| 63.00 | 62.99 | 1.8 | 134. | -0.09 | 1.03 | 95. | 1.04 | 93. | 1.48 | 99. | 0.60 | 94. | 1.33 | 97. | 0.75 |
| 64.00 | 63.99 | 1.9 | 129. | -0.11 | 1.06 | 96. | 1.06 | 94. | 1.51 | 100. | 0.62 | 95. | 1.36 | 98. | 0.77 |
| 65.00 | 64.99 | 1.7 | 125. | -0.13 | 1.09 | 97. | 1.10 | 95. | 1.55 | 101. | 0.64 | 96. | 1.40 | 99. | 0.79 |
| 66.00 | 65.98 | 1.8 | 119. | -0.15 | 1.11 | 98. | 1.12 | 96. | 1.58 | 102. | 0.66 | 96. | 1.43 | 100. | 0.82 |
| 67.00 | 66.98 | 1.7 | 135. | -0.17 | 1.13 | 98. | 1.14 | 97. | 1.61 | 103. | 0.68 | 97. | 1.46 | 101. | 0.83 |
| 68.00 | 67.98 | 2.0 | 118. | -0.19 | 1.16 | 99. | 1.17 | 97. | 1.65 | 103. | 0.70 | 98. | 1.49 | 102. | 0.86 |
| 69.00 | 68.98 | 1.6 | 133. | -0.21 | 1.18 | 100. | 1.20 | 98. | 1.68 | 104. | 0.72 | 99. | 1.52 | 102. | 0.88 |
| 70.00 | 69.98 | 2.0 | 124. | -0.23 | 1.20 | 101. | 1.23 | 99. | 1.71 | 105. | 0.74 | 99. | 1.55 | 103. | 0.90 |
| 71.00 | 70.98 | 1.8 | 126. | -0.25 | 1.23 | 101. | 1.26 | 99. | 1.75 | 106. | 0.76 | 100. | 1.59 | 104. | 0.93 |
| 72.00 | 71.98 | 2.1 | 121. | -0.27 | 1.26 | 102. | 1.29 | 100. | 1.79 | 106. | 0.79 | 100. | 1.62 | 104. | 0.95 |
| 73.00 | 72.98 | 1.9 | 127. | -0.29 | 1.29 | 103. | 1.32 | 101. | 1.83 | 107. | 0.81 | 101. | 1.66 | 105. | 0.98 |
| 74.00 | 73.98 | 2.2 | 127. | -0.31 | 1.32 | 103. | 1.36 | 101. | 1.87 | 108. | 0.84 | 102. | 1.70 | 106. | 1.01 |
| 75.00 | 74.98 | 2.1 | 130. | -0.33 | 1.35 | 104. | 1.39 | 102. | 1.91 | 108. | 0.87 | 102. | 1.74 | 106. | 1.04 |
| 76.00 | 75.98 | 1.8 | 132. | -0.35 | 1.37 | 104. | 1.42 | 102. | 1.95 | 109. | 0.89 | 103. | 1.77 | 107. | 1.06 |
| 77.00 | 76.98 | 1.8 | 131. | -0.37 | 1.40 | 105. | 1.45 | 103. | 1.99 | 109. | 0.91 | 104. | 1.81 | 107. | 1.09 |
| 78.00 | 77.98 | 1.9 | 143. | -0.40 | 1.42 | 105. | 1.48 | 103. | 2.02 | 110. | 0.94 | 104. | 1.84 | 108. | 1.12 |
| 79.00 | 78.98 | 1.6 | 133. | -0.41 | 1.45 | 106. | 1.51 | 104. | 2.06 | 110. | 0.96 | 104. | 1.88 | 108. | 1.14 |
| 80.00 | 79.98 | 1.9 | 139. | -0.44 | 1.47 | 106. | 1.54 | 104. | 2.10 | 111. | 0.98 | 105. | 1.91 | 109. | 1.16 |
| 81.00 | 80.98 | 1.9 | 116. | -0.45 | 1.50 | 107. | 1.57 | 105. | 2.14 | 111. | 1.00 | 105. | 1.95 | 109. | 1.19 |
| 82.00 | 81.98 | 1.9 | 131. | -0.47 | 1.53 | 107. | 1.60 | 105. | 2.17 | 111. | 1.03 | 106. | 1.98 | 110. | 1.22 |
| 83.00 | 82.98 | 1.9 | 126. | -0.49 | 1.55 | 108. | 1.63 | 106. | 2.21 | 112. | 1.05 | 106. | 2.02 | 110. | 1.24 |
| 84.00 | 83.97 | 1.9 | 120. | -0.51 | 1.58 | 108. | 1.66 | 106. | 2.25 | 112. | 1.07 | 107. | 2.05 | 110. | 1.27 |
| 85.00 | 84.97 | 2.5 | 124. | -0.53 | 1.61 | 108. | 1.70 | 106. | 2.30 | 112. | 1.10 | 107. | 2.10 | 111. | 1.30 |
| 86.00 | 85.97 | 2.2 | 116. | -0.55 | 1.64 | 109. | 1.73 | 107. | 2.34 | 113. | 1.13 | 107. | 2.14 | 111. | 1.33 |
| 87.00 | 86.97 | 2.2 | 110. | -0.57 | 1.68 | 109. | 1.77 | 107. | 2.39 | 113. | 1.16 | 107. | 2.18 | 111. | 1.36 |
| 88.00 | 87.97 | 2.3 | 133. | -0.60 | 1.71 | 109. | 1.81 | 107. | 2.43 | 113. | 1.19 | 108. | 2.22 | 112. | 1.39 |
| 89.00 | 88.97 | 2.5 | 127. | -0.62 | 1.74 | 110. | 1.85 | 108. | 2.48 | 114. | 1.22 | 108. | 2.27 | 112. | 1.43 |
| 90.00 | 89.97 | 1.9 | 107. | -0.64 | 1.77 | 110. | 1.89 | 108. | 2.52 | 114. | 1.25 | 108. | 2.31 | 112. | 1.46 |
| 91.00 | 90.97 | 2.0 | 112. | -0.66 | 1.80 | 110. | 1.92 | 108. | 2.57 | 114. | 1.28 | 109. | 2.35 | 112. | 1.49 |
| 92.00 | 91.97 | 2.5 | 125. | -0.68 | 1.84 | 110. | 1.96 | 108. | 2.62 | 114. | 1.31 | 109. | 2.40 | 112. | 1.52 |
| 93.00 | 92.97 | 2.3 | 125. | -0.70 | 1.87 | 111. | 2.00 | 109. | 2.67 | 114. | 1.34 | 109. | 2.44 | 113. | 1.56 |
| 94.00 | 93.96 | 2.3 | 124. | -0.78 | 1.94 | 112. | 2.09 | 110. | 2.76 | 116. | 1.43 | 110. | 2.54 | 114. | 1.65 |
| 95.00 | 94.96 | 2.6 | 129. | -0.80 | 1.97 | 112. | 2.13 | 110. | 2.81 | 116. | 1.46 | 111. | 2.58 | 114. | 1.68 |
| 96.00 | 95.95 | 2.4 | 118. | -0.82 | 2.01 | 112. | 2.17 | 110. | 2.86 | 116. | 1.49 | 111. | 2.63 | 114. | 1.72 |
| 97.00 | 96.95 | 2.1 | 109. | -0.84 | 2.04 | 112. | 2.21 | 110. | 2.90 | 116. | 1.52 | 111. | 2.67 | 115. | 1.75 |
| 98.00 | 97.95 | 2.3 | 121. | -0.86 | 2.07 | 113. | 2.24 | 111. | 2.95 | 116. | 1.55 | 111. | 2.71 | 115. | 1.78 |
| 99.00 | 98.95 | 2.2 | 121. | -0.88 | 2.11 | 113. | 2.28 | 111. | 2.99 | 116. | 1.58 | 111. | 2.76 | 115. | 1.81 |
| 100.00 | 99.95 | 2.5 | 121. | -0.90 | 2.14 | 113. | 2.32 | 111. | 3.04 | 117. | 1.61 | 111. | 2.80 | 115. | 1.85 |
| 101.00 | 100.95 | 2.1 | 117. | -0.93 | 2.17 | 113. | 2.36 | 111. | 3.09 | 117. | 1.64 | 112. | 2.85 | 115. | 1.88 |
| 102.00 | 101.95 | 2.3 | 112. | -0.95 | 2.21 | 113. | 2.40 | 111. | 3.14 | 117. | 1.67 | 112. | 2.89 | 115. | 1.92 |
| 103.00 | 102.95 | 2.7 | 119. | -0.97 | 2.25 | 113. | 2.45 | 111. | 3.19 | 117. | 1.71 | 112. | 2.94 | 115. | 1.95 |
| 104.00 | 103.95 | 2.6 | 118. | -0.99 | 2.28 | 113. | 2.49 | 112. | 3.24 | 117. | 1.74 | 112. | 2.99 | 115. | 1.99 |
| 105.00 | 104.95 | 2.8 | 122. | -1.01 | 2.32 | 114. | 2.53 | 112. | 3.29 | 117. | 1.78 | 112. | 3.04 | 116. | 2.03 |
| 106.00 | 105.95 | 2.5 | 115. | -1.03 | 2.36 | 114. | 2.58 | 112. | 3.35 | 117. | 1.81 | 112. | 3.09 | 116. | 2.07 |

| DEPTHS | | BOREHOLE | | AXIAL CO-ORDS. | | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | | |
|--------|--------|----------|------|----------------|------|-------------|--|-------------|-------------|-------------|-------------|-------------|-------------|------|------|
| log | true | tilt | AZI | North | East | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius | | |
| 107.00 | 106.94 | 2.6 | 125. | -1.05 | 2.40 | 114. | 2.62 | 112. | 3.40 | 117. | 1.85 | 112. | 3.14 | 116. | 2.11 |
| 108.00 | 107.94 | 2.3 | 117. | -1.07 | 2.44 | 114. | 2.66 | 112. | 3.45 | 117. | 1.88 | 112. | 3.19 | 116. | 2.14 |
| 109.00 | 108.94 | 2.2 | 109. | -1.09 | 2.47 | 114. | 2.70 | 112. | 3.50 | 117. | 1.91 | 113. | 3.23 | 116. | 2.17 |
| 110.00 | 109.94 | 2.5 | 119. | -1.11 | 2.51 | 114. | 2.74 | 112. | 3.55 | 117. | 1.94 | 113. | 3.28 | 116. | 2.21 |
| 111.00 | 110.94 | 2.4 | 115. | -1.12 | 2.55 | 114. | 2.78 | 112. | 3.60 | 117. | 1.98 | 113. | 3.33 | 116. | 2.24 |
| 112.00 | 111.94 | 2.5 | 119. | -1.14 | 2.59 | 114. | 2.83 | 112. | 3.65 | 117. | 2.01 | 113. | 3.37 | 116. | 2.28 |
| 113.00 | 112.94 | 2.6 | 120. | -1.16 | 2.63 | 114. | 2.87 | 112. | 3.70 | 117. | 2.05 | 113. | 3.43 | 116. | 2.32 |
| 114.00 | 113.94 | 2.7 | 118. | -1.18 | 2.67 | 114. | 2.92 | 112. | 3.76 | 117. | 2.08 | 113. | 3.48 | 116. | 2.36 |
| 115.00 | 114.94 | 2.5 | 106. | -1.19 | 2.71 | 114. | 2.96 | 112. | 3.81 | 117. | 2.12 | 113. | 3.53 | 115. | 2.40 |
| 116.00 | 115.94 | 2.3 | 102. | -1.21 | 2.75 | 114. | 3.00 | 112. | 3.86 | 117. | 2.15 | 113. | 3.57 | 115. | 2.44 |
| 117.00 | 116.94 | 2.3 | 105. | -1.22 | 2.79 | 114. | 3.04 | 112. | 3.91 | 116. | 2.18 | 113. | 3.62 | 115. | 2.47 |
| 118.00 | 117.93 | 2.2 | 103. | -1.23 | 2.83 | 113. | 3.08 | 112. | 3.96 | 116. | 2.22 | 112. | 3.67 | 115. | 2.50 |
| 119.00 | 118.93 | 2.6 | 102. | -1.24 | 2.87 | 113. | 3.13 | 112. | 4.01 | 116. | 2.25 | 112. | 3.72 | 115. | 2.54 |
| 120.00 | 119.93 | 2.7 | 99. | -1.25 | 2.92 | 113. | 3.18 | 112. | 4.07 | 116. | 2.29 | 112. | 3.77 | 115. | 2.59 |
| 121.00 | 120.93 | 2.3 | 108. | -1.26 | 2.97 | 113. | 3.23 | 112. | 4.13 | 116. | 2.33 | 112. | 3.83 | 115. | 2.63 |
| 122.00 | 121.93 | 2.8 | 102. | -1.27 | 3.02 | 113. | 3.28 | 111. | 4.18 | 115. | 2.37 | 112. | 3.88 | 114. | 2.67 |
| 123.00 | 122.93 | 2.7 | 106. | -1.28 | 3.06 | 113. | 3.32 | 111. | 4.24 | 115. | 2.41 | 112. | 3.93 | 114. | 2.71 |
| 124.00 | 123.93 | 2.8 | 104. | -1.29 | 3.11 | 113. | 3.37 | 111. | 4.29 | 115. | 2.45 | 112. | 3.99 | 114. | 2.75 |
| 125.00 | 124.93 | 2.8 | 98. | -1.30 | 3.16 | 112. | 3.42 | 111. | 4.35 | 115. | 2.48 | 111. | 4.04 | 114. | 2.79 |
| 126.00 | 125.93 | 2.9 | 90. | -1.30 | 3.21 | 112. | 3.46 | 111. | 4.41 | 114. | 2.52 | 111. | 4.09 | 113. | 2.84 |
| 127.00 | 126.92 | 2.8 | 98. | -1.31 | 3.26 | 112. | 3.51 | 111. | 4.46 | 114. | 2.56 | 111. | 4.15 | 113. | 2.88 |
| 128.00 | 127.92 | 2.9 | 96. | -1.31 | 3.31 | 112. | 3.56 | 110. | 4.52 | 114. | 2.60 | 111. | 4.20 | 113. | 2.92 |
| 129.00 | 128.92 | 2.8 | 101. | -1.31 | 3.36 | 111. | 3.61 | 110. | 4.58 | 113. | 2.64 | 111. | 4.25 | 113. | 2.96 |



DIPMETER ANALYSIS

739

CLIENT _____
BOREHOLE _____
AREA _____
COUNTRY _____

QUINTETTE COAL LTD.
QHR 87042
TRANSFER PIT
CANADA

DATE LOGGED.....18-AUG-87
DATE PROCESSED..03-SEP-87

16
016



COMMENTS.....

WATER LEVEL @ 82.0M
XXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXX

INTERPRETATION PARAMETERS

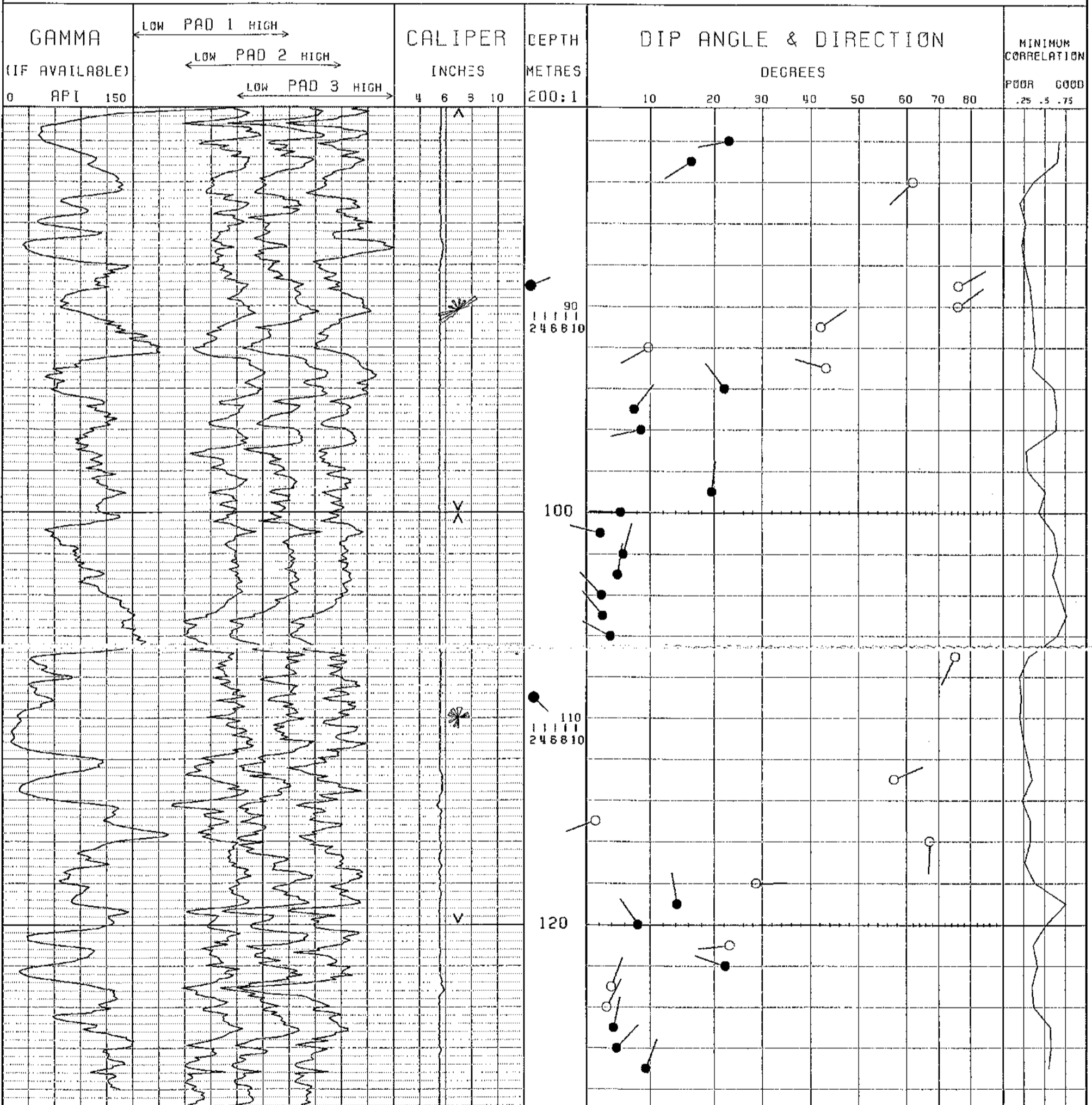
STEP 1.00M. DECLINATION 24.0 EAST
INTERVAL 2.00M. DEPTH RANGE 80.36 - 128.93M.
SEARCH ANGLE 80. DATE PROCESSED 03-SEP-87

AVERAGE BOREHOLE DEVIATION & DIRECTION
ANNOTATED EVERY 20.0M.

ROSE DIAGRAMS SEGMENTED EVERY TEN DEGREES.
.1" RADIUS PER DIP MARKER DISPLAYED

LEGEND:

● GOOD (>0.40)
○ FAIR (>0.30)



007

008

BPB DIPMETER ANALYSIS
INTERPRETATION NOTES

1. All plots are correct to the resolution of the plotter used, i.e. one hundredth of an inch. Vertical resolution may vary by up to one percent but each plot is correct within itself, the plotted data being dynamically merged with its gridded background. Plots exceeding eight metres in length will be split into multiples thereof, however there is no data loss associated with this subdivision.
2. Rose diagrams are plotted between every major division and are delimited by two bold arrows. For certain replay scales it may be desirable to plot these less frequently; this option is available on request.
3. The borehole tilt and azimuth displayed on the plot are the average values over the whole major division.
4. The replay scale for pads 1, 2 & 3 are designed to give the maximum visual effect over the plotted interval. Replaying shorter sections of the curve will enhance this display.
5. The grid over which the computed dip information is displayed is locally linear. That is to say it is linear between 0 & 10, degrees, 10 & 20, 20 & 30 etc.
6. The correlation value will vary depending upon the interval size selected. Generally speaking the larger the correlation interval, the lower the value becomes. For this reason a direct comparison of this value for differing correlation intervals is meaningless, quality control being exercised with an appreciation of this effect.
7. For customised control of computed dipmeter analysis the following parameters must be specified:
 correlation step and interval(s)
 magnetic declination (i.e. the difference between true and magnetic North)
 search angle(s)
 depth range(s)
 replay scale(s)
 the frequency for rose diagrams
 (quality control is exercised in accordance with the correlation interval used, alternatively all correlations may be displayed on request)

The following information is a listing of ALL the output from BPB's dipmeter analysis. The data is subdivided into three consecutive sets of data readings, being read from left to right. Below is a full description of each data item:

| | |
|--------------|---|
| DEPTH | the depth corresponding to the centre of the correlation interval |
| CALIPER | the average borehole caliper recorded over the correlation interval |
| HOLE DRIFT | the average borehole deviation from vertical over the correlation interval |
| HOLE AZIMUTH | the average borehole azimuth over the correlation interval in degrees East of true North |
| DIP ANGLE | the computed formation dip in degrees, from the horizontal plane |
| DIP AZIMUTH | the formation azimuth in degrees East from true North |
| CORRELATION | a measure of the reliability of the computed result. This parameter is also used in the visual display to determine the quality of result |

Further recorrelations over any step & interval size are available on any scale over any section of the log. Alternative methods of presentation, or analysis may be made available on request.

7.39

500

| QHR 87042 ***** | | | | | | | | | | | | | | | Magnetic declination 24.00 degrees East of North | | | | | | | | | | | | | | | 03-SEP-87 | | |
|--------------------|------|----------|-----------|------|------|-------|--------|----------|-----------|------|------|-------|------|----------|---|------|------|-------|------|----------|-----------|------|--|--|--|--|--|--|--|-----------|--|--|
| | | | | | | | | | | | | | | | Correlation step 1.00 metres , interval 2.00 metres | | | | | | | | | | | | | | | PAGE 1 | | |
| | | | | | | | | | | | | | | | Search angle 80. degrees | | | | | | | | | | | | | | | | | |
| DEPTH | CAL. | BOREHOLE | FORMATION | MIN. | | DEPTH | CAL. | BOREHOLE | FORMATION | MIN. | | DEPTH | CAL. | BOREHOLE | FORMATION | MIN. | | DEPTH | CAL. | BOREHOLE | FORMATION | MIN. | | | | | | | | | | |
| metres | ins. | TILT | AZI | DIP | AZI | COR. | metres | ins. | TILT | AZI | DIP | AZI | COR. | metres | ins. | TILT | AZI | DIP | AZI | DIP | AZI | COR. | | | | | | | | | | |
| 82.00 | 5.6 | 2.5 | 131. | 23.3 | 259. | 0.67 | 83.00 | 5.5 | 2.6 | 131. | 16.3 | 237. | 0.65 | 84.00 | 5.5 | 2.6 | 131. | 61.7 | 226. | | 0.36 | | | | | | | | | | | |
| 85.00 | 5.5 | 2.7 | 130. | 67.1 | 77. | 0.20 | 86.00 | 5.6 | 2.7 | 130. | 63.2 | 86. | 0.27 | 87.00 | 5.6 | 2.8 | 129. | 45.0 | 44. | | 0.29 | | | | | | | | | | | |
| 88.00 | 5.6 | 2.7 | 129. | 34.1 | 241. | 0.26 | 89.00 | 5.5 | 2.7 | 131. | 76.1 | 60. | 0.32 | 90.00 | 5.5 | 2.8 | 131. | 76.9 | 53. | | 0.35 | | | | | | | | | | | |
| 91.00 | 5.5 | 2.8 | 129. | 42.3 | 55. | 0.37 | 92.00 | 5.5 | 2.8 | 128. | 9.6 | 239. | 0.39 | 93.00 | 5.5 | 2.8 | 128. | 43.5 | 207. | | 0.36 | | | | | | | | | | | |
| 94.00 | 5.5 | 2.8 | 129. | 22.3 | 323. | 0.61 | 95.00 | 5.5 | 2.9 | 129. | 7.5 | 38. | 0.64 | 96.00 | 5.5 | 2.9 | 130. | 8.6 | 250. | | 0.64 | | | | | | | | | | | |
| 97.00 | 5.5 | 2.9 | 130. | 71.0 | 234. | 0.28 | 98.00 | 5.5 | 2.9 | 129. | 77.0 | 251. | 0.30 | 99.00 | 5.5 | 2.9 | 127. | 19.6 | 5. | | 0.51 | | | | | | | | | | | |
| 100.00 | 5.5 | 2.9 | 128. | 5.4 | 272. | 0.43 | 101.00 | 5.5 | 3.0 | 128. | 2.2 | 284. | 0.61 | 102.00 | 5.5 | 3.1 | 127. | 5.8 | 16. | | 0.66 | | | | | | | | | | | |
| 103.00 | 5.5 | 3.1 | 127. | 4.9 | 9. | 0.60 | 104.00 | 5.5 | 3.1 | 126. | 2.3 | 317. | 0.68 | 105.00 | 5.5 | 3.1 | 125. | 2.5 | 322. | | 0.76 | | | | | | | | | | | |
| 106.00 | 5.5 | 3.1 | 125. | 3.7 | 299. | 0.65 | 107.00 | 5.6 | 3.2 | 123. | 75.0 | 206. | 0.31 | 108.00 | 5.6 | 3.1 | 122. | 77.5 | 74. | | 0.20 | | | | | | | | | | | |
| 109.00 | 5.6 | 3.1 | 121. | 80.4 | 45. | 0.22 | 110.00 | 5.5 | 3.1 | 119. | 55.9 | 311. | 0.20 | 111.00 | 5.6 | 3.1 | 118. | 60.3 | 73. | | 0.24 | | | | | | | | | | | |
| 112.00 | 5.6 | 3.2 | 118. | 57.2 | 69. | 0.30 | 113.00 | 5.6 | 3.2 | 117. | 58.3 | 66. | 0.35 | 114.00 | 5.6 | 3.2 | 116. | 79.0 | 22. | | 0.23 | | | | | | | | | | | |
| 115.00 | 5.5 | 3.2 | 114. | 1.5 | 249. | 0.33 | 116.00 | 5.6 | 3.1 | 110. | 67.1 | 182. | 0.33 | 117.00 | 5.6 | 3.1 | 108. | 70.2 | 69. | | 0.26 | | | | | | | | | | | |
| 118.00 | 5.6 | 3.0 | 107. | 29.7 | 89. | 0.38 | 119.00 | 5.5 | 3.1 | 107. | 14.2 | 350. | 0.75 | 120.00 | 5.5 | 3.3 | 108. | 9.1 | 325. | | 0.02 | | | | | | | | | | | |
| 121.00 | 5.5 | 3.4 | 107. | 23.6 | 263. | 0.36 | 122.00 | 5.6 | 3.5 | 106. | 22.5 | 289. | 0.42 | 123.00 | 5.6 | 3.5 | 106. | 3.9 | 21. | | 0.30 | | | | | | | | | | | |
| 124.00 | 5.6 | 3.6 | 104. | 3.2 | 26. | 0.37 | 125.00 | 5.5 | 3.5 | 103. | 4.3 | 11. | 0.57 | 126.00 | 5.5 | 3.5 | 102. | 4.7 | 43. | | 0.57 | | | | | | | | | | | |

070

QHR87043

TRANSFER

LOG DEPTH 0110.00
TRUE DEPTH 0108.88
TILT 16.68 DG
BEARING -248.51 DG
NORTHING -004.28
EASTING -011.05

LOG DEPTH 0100.00
TRUE DEPTH 0099.30
TILT 14.04 DG
BEARING 247.79 DG
NORTHING -003.23
EASTING -008.38

LOG DEPTH 0090.00
TRUE DEPTH 0089.60
TILT 9.91 DG
BEARING 246.20 DG
NORTHING -002.31
EASTING -006.14

LOG DEPTH 0080.00
TRUE DEPTH 0079.75
TILT 8.24 DG
BEARING 247.92 DG
NORTHING -001.62
EASTING -004.56

LOG DEPTH 0070.00
TRUE DEPTH 0069.85
TILT 7.16 DG
BEARING 251.44 DG
NORTHING -001.08
EASTING -003.23

LOG DEPTH 0060.00
TRUE DEPTH 0059.93
TILT 4.97 DG
BEARING 258.20 DG
NORTHING -000.68
EASTING -002.05

LOG DEPTH 0050.00
TRUE DEPTH 0049.97
TILT 3.03 DG
BEARING 228.65 DG
NORTHING -000.50
EASTING -001.20

LOG DEPTH 0040.00
TRUE DEPTH 0039.98
TILT 1.93 DG
BEARING 197.89 DG
NORTHING -000.15
EASTING -000.80

LOG DEPTH 0030.00
TRUE DEPTH 0029.99
TILT 1.73 DG
BEARING 280.73 DG
NORTHING +000.16
EASTING -000.70

LOG DEPTH 0020.00
TRUE DEPTH 0019.99
TILT 1.85 DG
BEARING 285.89 DG
NORTHING +000.10
EASTING -000.40

LOG DEPTH 0010.00
TRUE DEPTH 0010.00
TILT 1.12 DG
BEARING 281.18 DG
NORTHING +000.01
EASTING -000.09

LOG DEPTH 0005.00
TRUE DEPTH 0005.00
TILT .21 DG
BEARING 350.65 DG
NORTHING +000.00
EASTING +000.00

739

DEPTH = 0010.00
TILT = 2.04 DG
BEARING = 211.71 DG

DEPTH = 0020.00
TILT = 1.67 DG
BEARING = 207.00 DG

DEPTH = 0030.00
TILT = 1.79 DG
BEARING = 201.38 DG

DEPTH = 0040.00
TILT = 2.08 DG
BEARING = 194.39 DG

DEPTH = 0050.00
TILT = 3.99 DG
BEARING = 262.91 DG

DEPTH = 0060.00
TILT = 5.94 DG
BEARING = 253.49 DG

DEPTH = 0070.00
TILT = 8.38 DG
BEARING = 249.39 DG

DEPTH = 0080.00
TILT = 8.09 DG
BEARING = 246.45 DG

DEPTH = 0090.00
TILT = 11.73 DG
BEARING = 245.96 DG

DEPTH = 0100.00
TILT = 16.34 DG
BEARING = 249.61 DG

DEPTH = 0110.00
TILT = 17.02 DG
BEARING = 247.42 DG

DATE = 870820

JOB NUMBER = 0043

LOG LABEL = 026.1

MAG 1 MAX = 206

MAG 1 MIN = 150

MAG 2 MAX = 204

MAG 2 MIN = 156

MAG 3 MAX = 206

MAG 3 MIN = 156

L. CELL 1 TILT 1 = 6

L. CELL 1 CPS 1 = 250

L. CELL 1 TILT 2 = -6

L. CELL 1 CPS 2 = 192

L. CELL 2 TILT 1 = 6

L. CELL 2 CPS 1 = 249

L. CELL 2 TILT 2 = -6

L. CELL 2 CPS 2 = 192

MAG 1 CENTRE = 178

MAG 2 CENTRE = 180

MAG 3 CENTRE = 180

L. CELL 1 CENTRE = 223

L. CELL 2 CENTRE = 220

MAG DECL = 024

STOP DEPTH = 005

QHR 87043
TRANSFER



COAL LITHOLOGY LOG

LOG SUITE:
GAMMA RAY
L.S DENSITY
CALIPER

SONDE TYPE
COAL COMBINATION
SONDE

FLUID DATA

PERMANENT DAUM: GROUND LEVEL
ELEVATION OF B.D.: 878
MEASUREMENTS FROM: C.I.
DEPTH REACHED: 116.40m
CASING SHOULDER: 117.00m
CASING SIZE: 2.00m
BIT SIZES: 3 TO 2.00, 4 TO 1.7m
CASING SIZES: 1.63 TO 2.00, 2 TO

BOREHOLE: QIR 87-043
CLIENT: QUINETTE
AREA: TRANSFER
COUNTRY: CANADA
DATE LOGGED: 87-08-20
DEPTH SCALE: 1:200
LOGS: 1 OF 5 LOGS

SONDE TYPE: WATER
SG: 1.018 / cc
LEVEL: 25.60m
VISCOSITY: N/A
BHT: N/A
OPERATION DATA:
FIRST READING: 11.4 (40m)
LAST READING: 11.2m
INTERVAL LOGGED: 11.2m
UNIT-TRUCK No: 46 V 217
ENGINEER: M. COX
WITNESS:

EQUIPMENT AND RECORDING DATA

| COAL COMBINATION SONDE | | | | | | | | | | | | | | |
|------------------------|-------------------|--------|------------|-----------|--------------|---------------|-------|-----------|--------|------|-----|--------------|-----|---|
| LOG | EQUIPMENT | | TAPING | | | PANEL | | CAL COEFF | DEPTHS | | | SEAM LOG RUN | | |
| | SONDE | SOURCE | CALIBRATOR | LOG TAPED | RECORD SPEED | DIRECT REPLAY | SPEED | TC SECS | NORM | FROM | TO | INTERVAL | | |
| GAMMA RAY | | | | Y | 9 | D | 9 | 1 | - | 1.44 | 114 | 0 | 114 | Y |
| L.S DENSITY | 153 | | 0041 | Y | 9 | D | 9 | 3 | 7.38 | - | 115 | 1 | 114 | Y |
| CALIPER | SIDEWALL POSITION | | | Y | 9 | D | 9 | 3 | - | 1.0 | 115 | 1 | 114 | Y |

| COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log) | | | | | INTERVAL TOTAL |
|---|------|------|------|--|----------------|
| FROM | 9.3m | 8.2m | 4.3m | | |
| TO | 89m | 70m | 35m | | |
| INTERVAL | 4m | 12m | 8m | | 24m |

| ADDITIONAL SONDES RUN | | | | REFER TO ADDITIONAL HEADINGS | REMARKS |
|-----------------------|------|-------------------|------------------|------------------------------|---------|
| SONDE | LOG | GENERAL SCALE LOG | DETAIL SCALE LOG | | |
| 215 | N-N | 1:200 | | | |
| 213 | VERT | | | | |
| 204 | DLP | | | | |

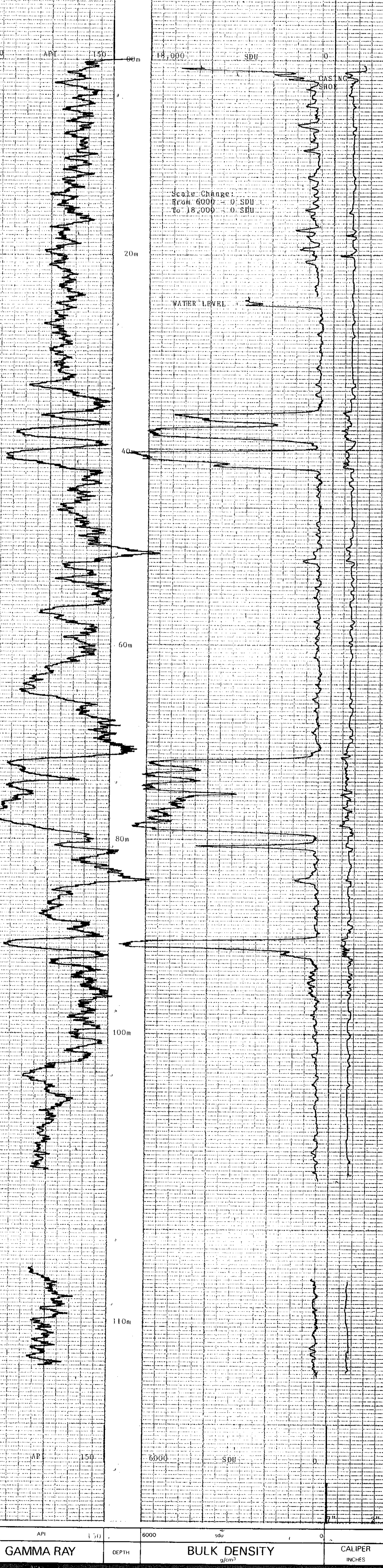
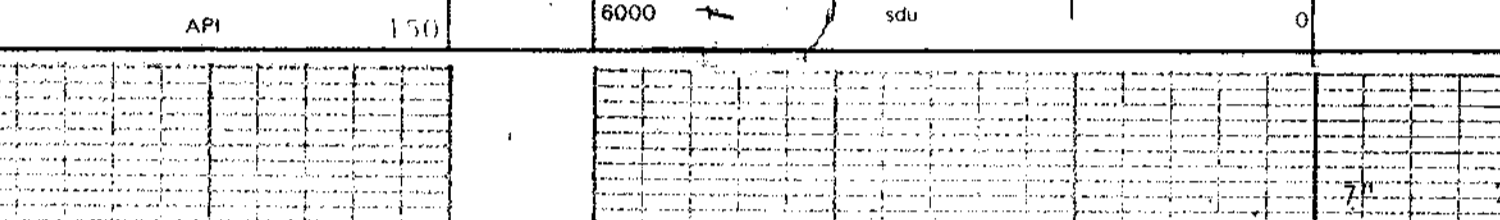
BPB COAL LITHOLOGY LOG

CALIBRATION DATA

| JIG No | VALUE @ 5" DIAM | JIG CAL DATE | JIG VALUE | SOU @ | g/cm ³ | ins | cps |
|---------------------------------|-----------------|--------------|-----------|-------|-------------------|-----|-----|
| JIG MARK SHOWN AT ABOVE VALUE - | | JIG No | SPAN | NORM | SOU CPS | ins | cps |

| GAMMA RAY | DEPTH | BULK DENSITY g/cm ³ | CALIPER INCHES |
|-----------|-------|--------------------------------|----------------|
|-----------|-------|--------------------------------|----------------|

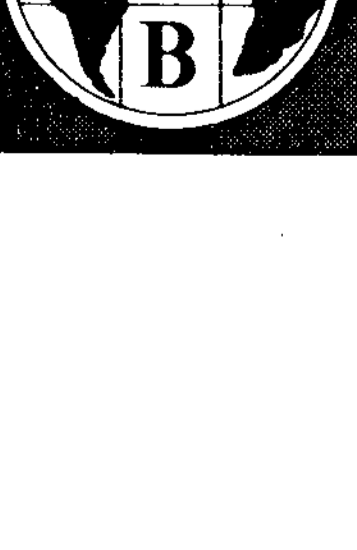
HOLE SIZE CORRECTION DATA



| GAMMA RAY | DEPTH | BULK DENSITY g/cm ³ | CALIPER INCHES |
|-----------|-------|--------------------------------|----------------|
|-----------|-------|--------------------------------|----------------|

BOREHOLE: QIR 87-043
CLIENT: QUINETTE
AREA: TRANSFER
COUNTRY: CANADA

COAL LITHOLOGY LOG





NEUTRON-NEUTRON
GAMMA RAY

BOREHOLE QHR 87-043
CLIENT QUINTETTE

AREA TRANSFER
COUNTRY CANADA
DATE LOGGED 87 08 20

DEPTH SCALE
1:200

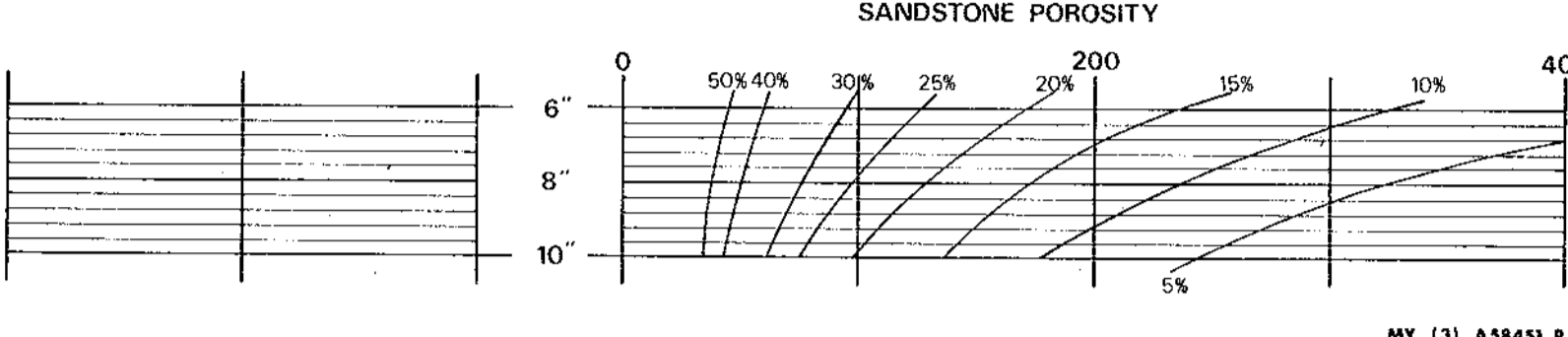
2 OF 5 LOGS

BOREHOLE DATA REFER TO LITHOLOGY LOG
OPERATION DATA REFER TO LITHOLOGY LOG
EQUIPMENT AND RECORDING DATA

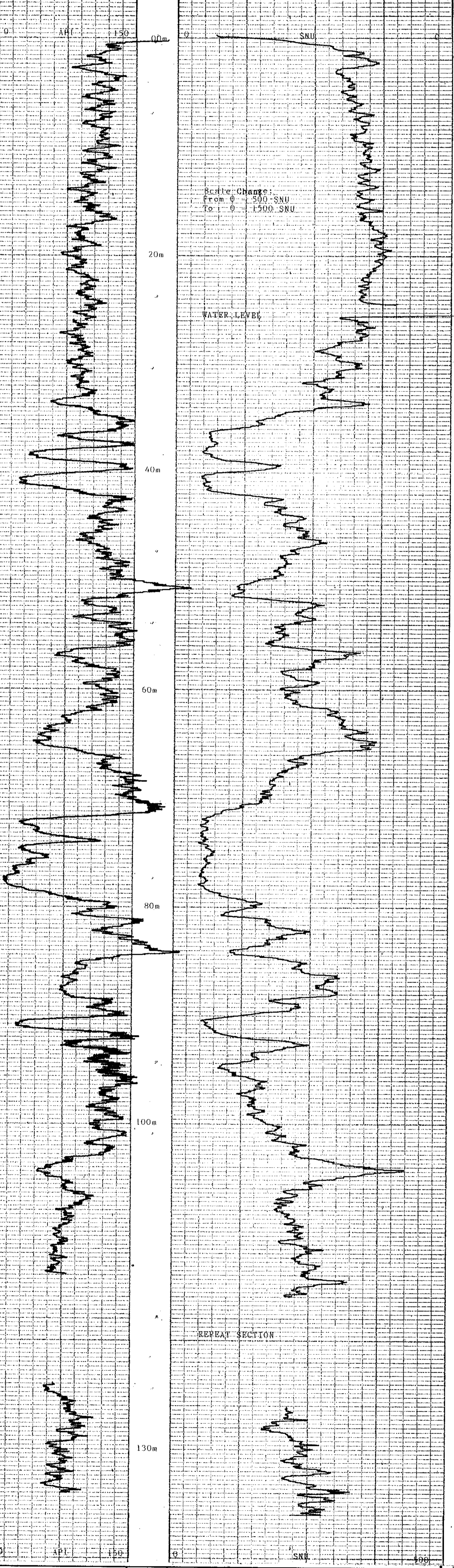
| LOG | TAPPING | PANEL | CAL |
|-------|-----------|-------|------|
| N-N | LOG SPEED | 9 | 11.6 |
| GAMMA | LOG SPEED | 9 | 1.44 |
| | LOG SPEED | 9 | 1.44 |

REMARKS
739

| | | |
|-----------|-------|-----------------|
| GAMMA RAY | DEPTH | NEUTRON-NEUTRON |
| 0 150 | 0 | 0 500 |
| API | | SNU |



MY (3) A58451 R



| | | |
|-----------|-------|-----------------|
| GAMMA RAY | DEPTH | NEUTRON-NEUTRON |
| 0 150 | 0 | 0 500 |
| API | | SNU |

BOREHOLE QHR 87-043 AREA TRANSFER
CLIENT QUINTETTE COUNTRY CANADA



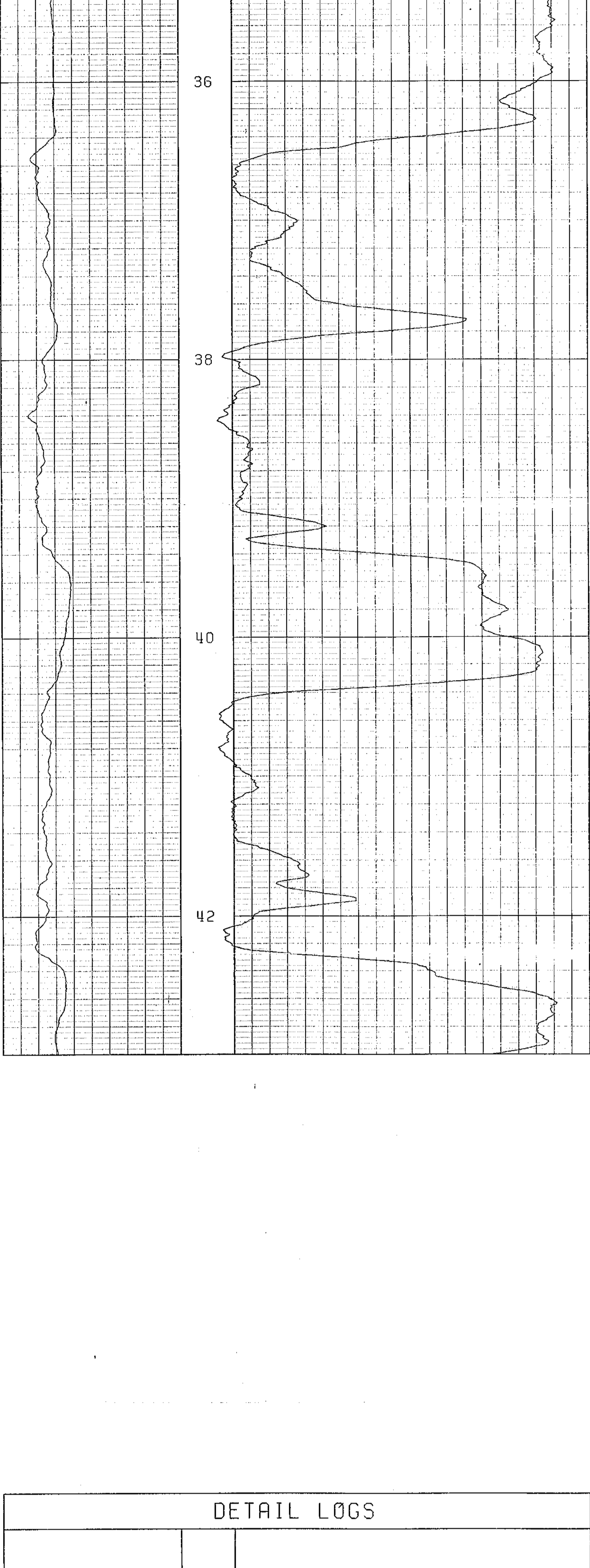
DETAIL LOGS

739

DEPTH SCALE 25000 B.R.D (CCS) 15000

CLIENT: QUINTETTE COAL
 WELL NO: QHR 87043
 AREA: TRANSFER PIT
 CASING: 2.0M
 WATER: 25.6M
 DEPTH: 35.00-43.00
 DATE PROCESSED: 10-SEP-87

7 CALIPER 2



36

38

40

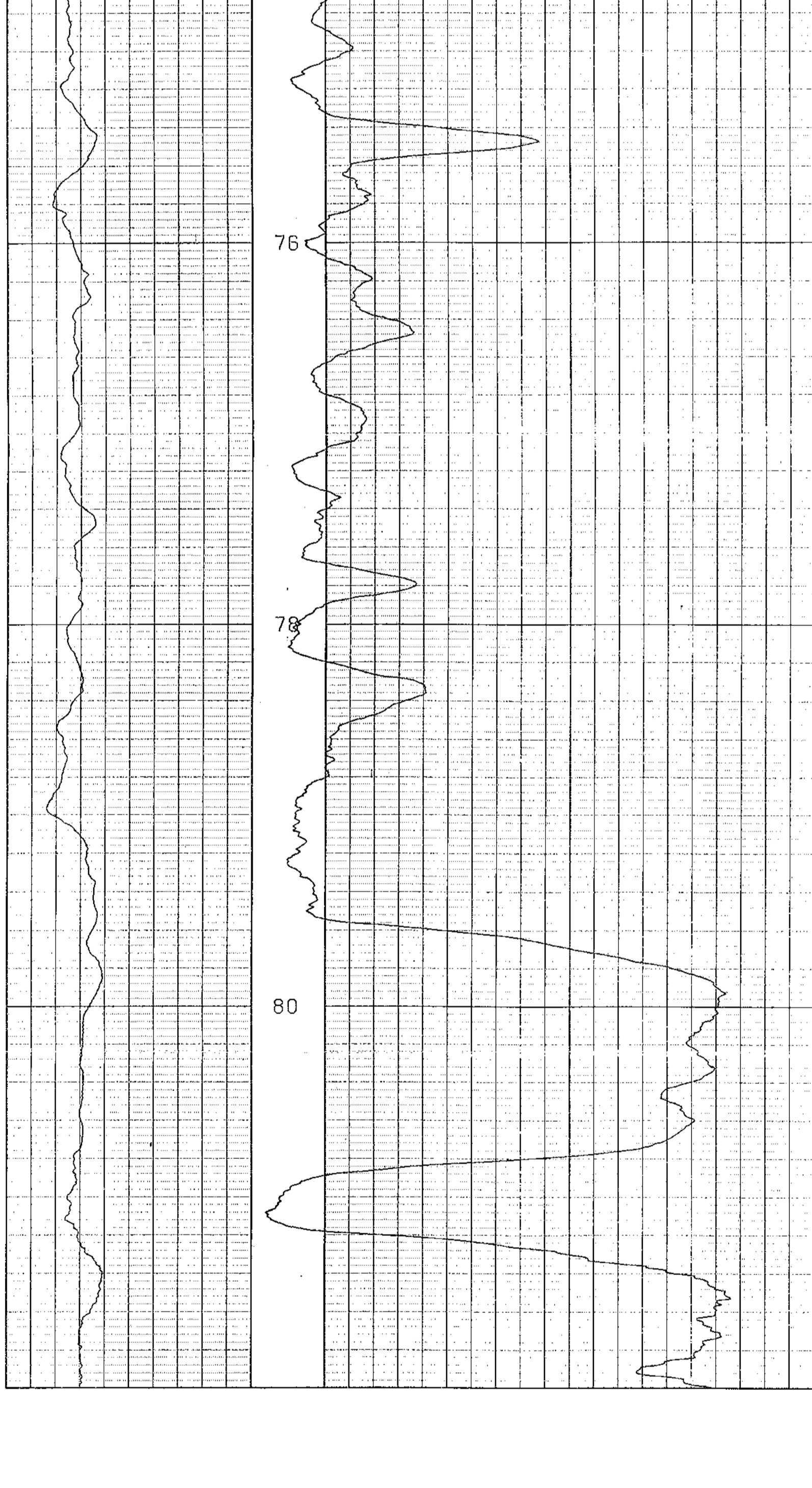
42

DETAIL LOGS

DEPTH SCALE 25000 B.R.D (CCS) 15000

CLIENT:
 WELL NO: QHR 87043
 AREA:
 CASING:
 WATER:
 DEPTH: 70.00-82.00
 DATE PROCESSED: 10-SEP-87

7 CALIPER 2



72

74

76

78

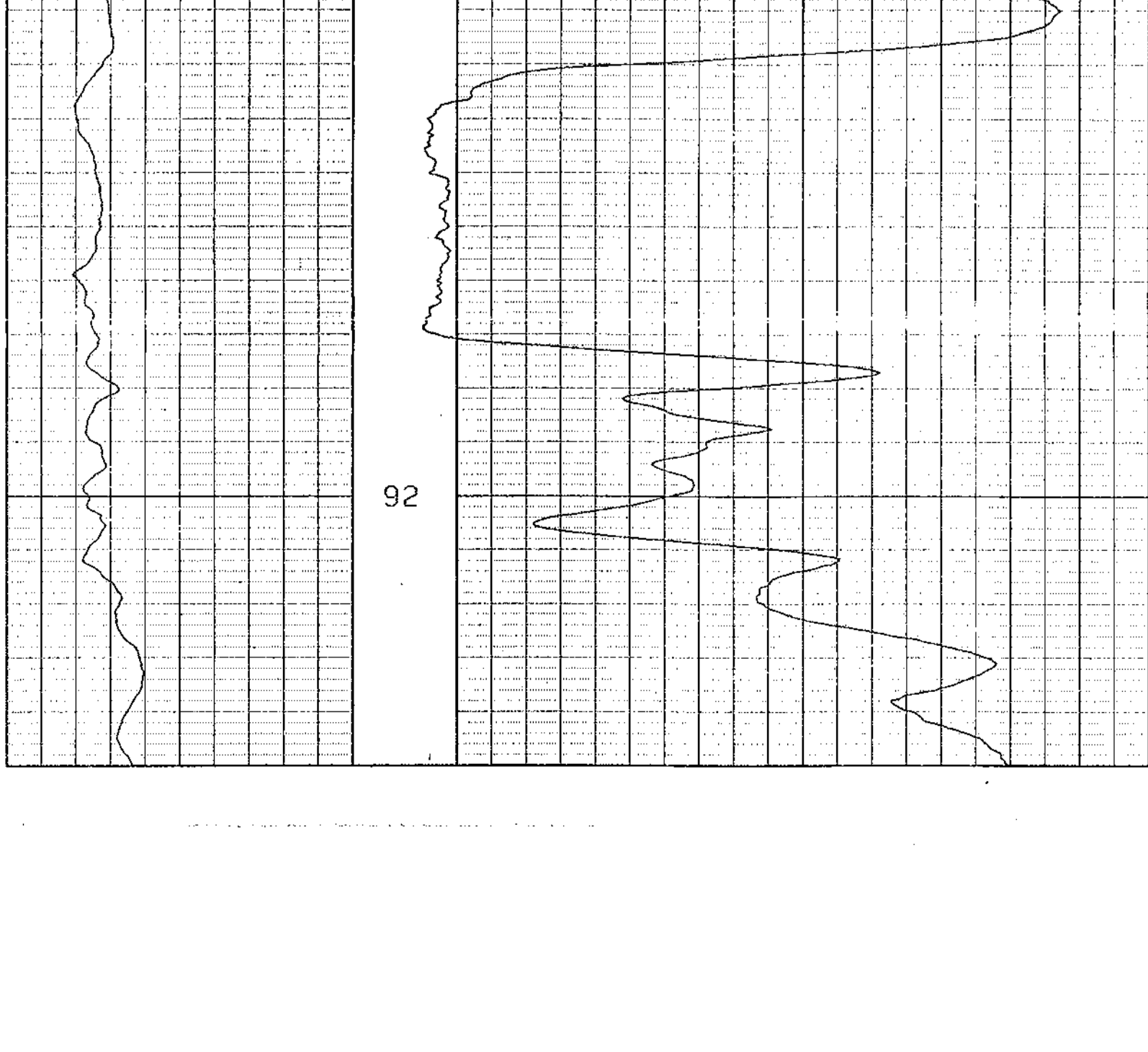
80

DETAIL LOGS

DEPTH SCALE 25000 B.R.D (CCS) 15000

CLIENT:
 WELL NO: QHR 87043
 AREA:
 CASING:
 WATER:
 DEPTH: 89.00-93.00
 DATE PROCESSED: 10-SEP-87

7 CALIPER 2



90

92

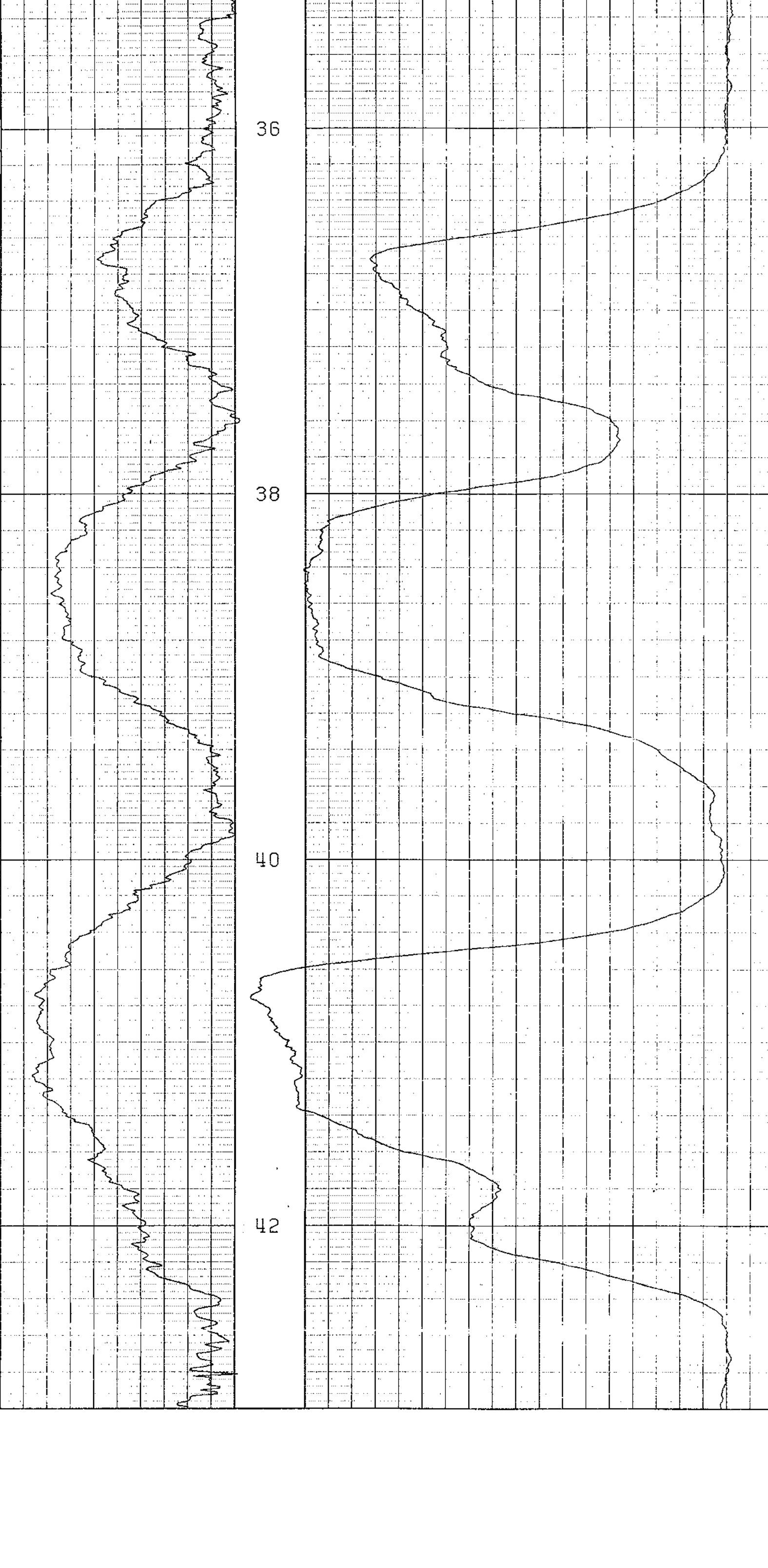
DETAIL LOGS

739

DEPTH SCALE 6000 L.S.D (CCS) 0

CLIENT: QUINTETTE COAL
WELL NO: QHR 87043
AREA: TRANSFER PIT
CASING: 2.0M
WATER: 25.0M
DEPTH: 35.00-43.00
DATE PROCESSED: 10-SEP-87

GAMMA RAY 0 150

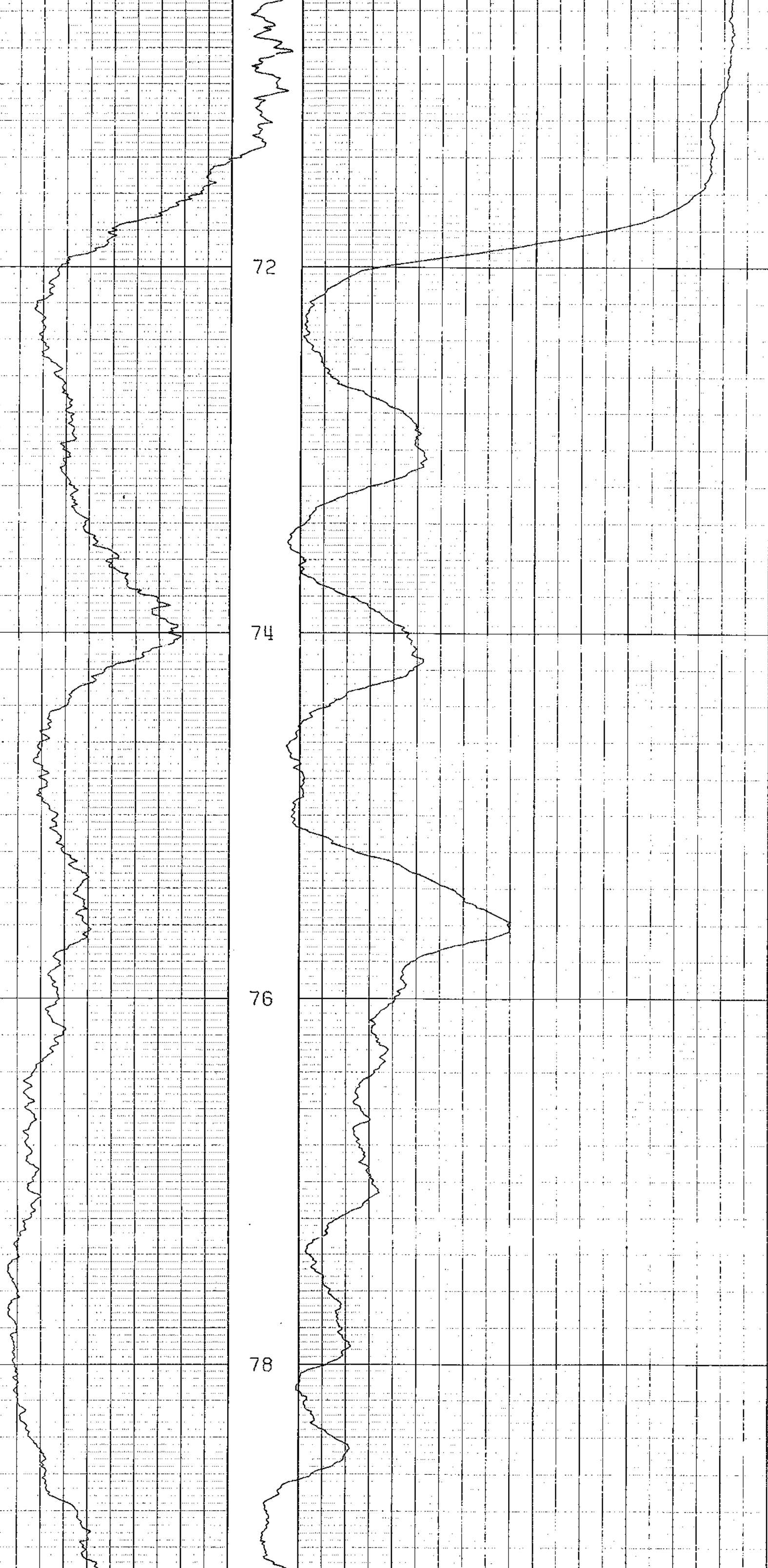


DETAIL LOGS

DEPTH SCALE 6000 L.S.D (CCS) 0

CLIENT: QHR 87043
AREA:
CASING:
WATER:
DEPTH: 70.00-82.00
DATE PROCESSED: 10-SEP-87

GAMMA RAY 0 150

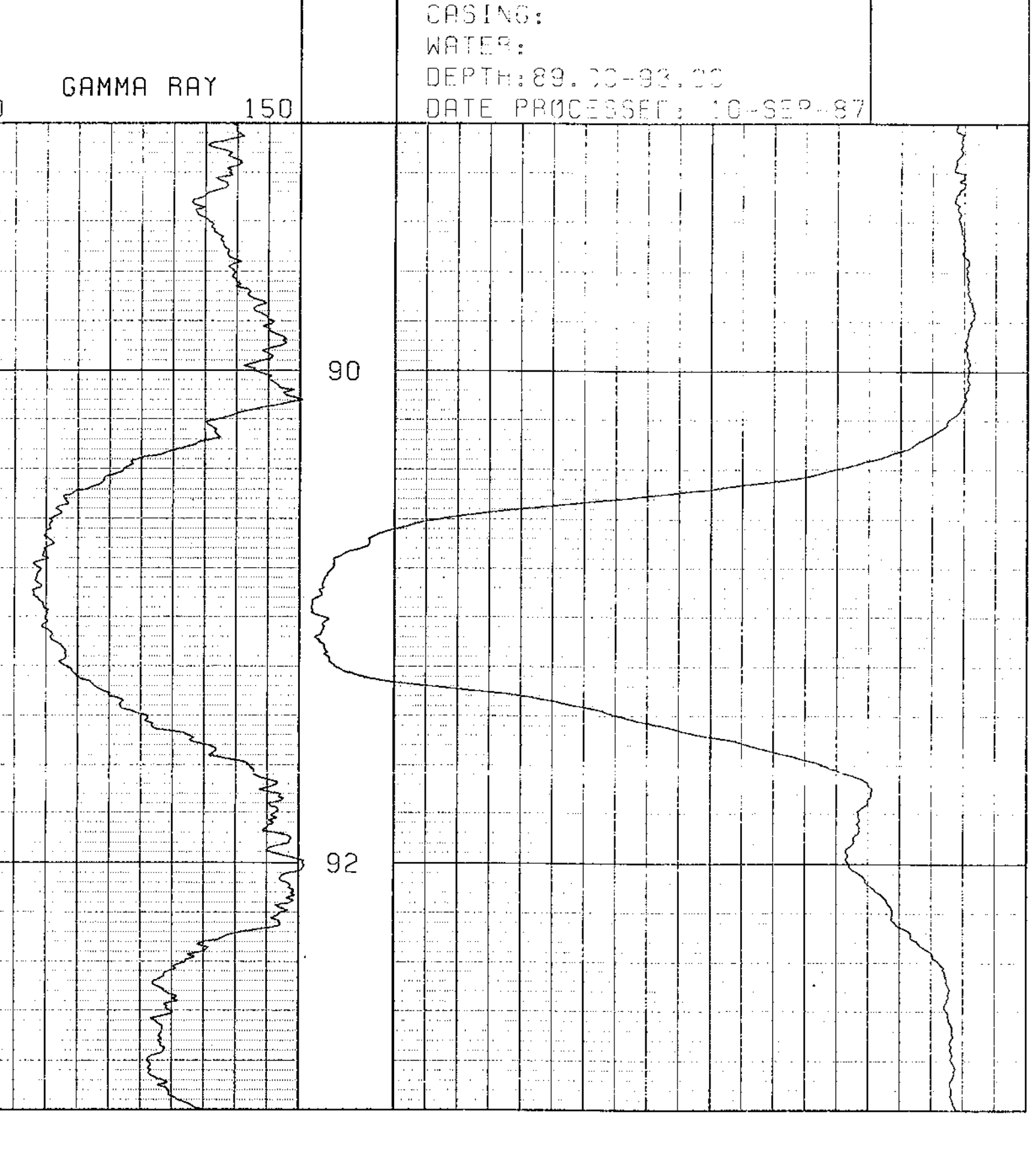


DETAIL LOGS

DEPTH SCALE 6000 L.S.D (CCS) 0

CLIENT: QHR 87012
AREA:
CASING:
WATER:
DEPTH: 89.00-93.00
DATE PROCESSED: 10-SEP-87

GAMMA RAY 0 150





DIPMETER ANALYSIS

739

CLIENT _____
BOREHOLE _____
AREA _____
COUNTRY _____

QUINTETTE COAL LTD.
QHR 87043
TRANSFER PIT
CANADA

DATE LOGGED.....20-AUG-87
DATE PROCESSED..03-SEP-87

929



COMMENTS.....

WATER LEVEL 24.5M

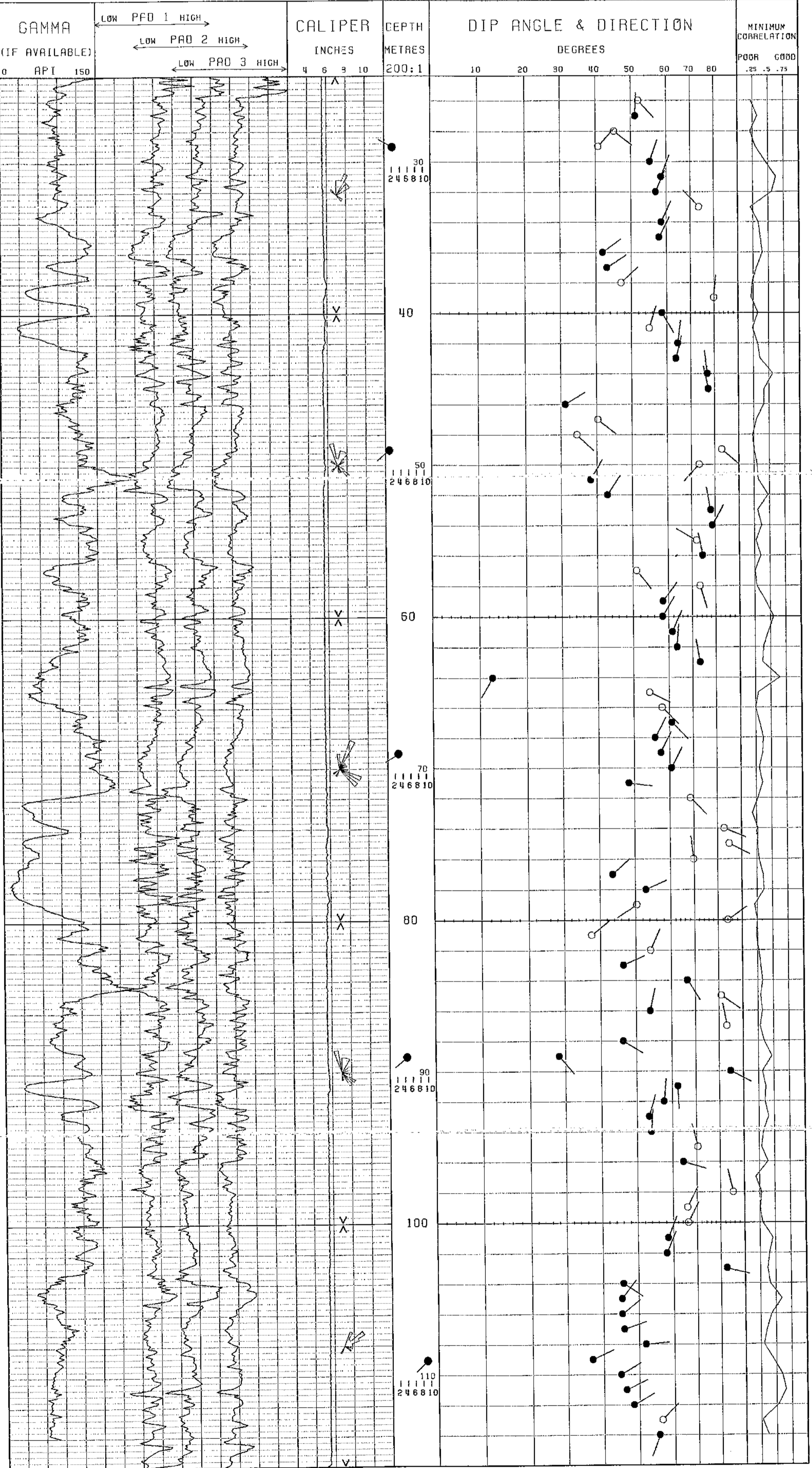
INTERPRETATION PARAMETERS

STEP 1.00M. DECLINATION 24.0 EAST
INTERVAL 2.00M. DEPTH RANGE 24.36 - 116.03M.
SEARCH ANGLE 80. DATE PROCESSED 03-SEP-87

AVERAGE BOREHOLE DEVIATION & DIRECTION
ANNOTATED EVERY 20.0M.
ROSE DIAGRAMS SEGMENTED EVERY TEN DEGREES,
.1" RADIUS PER DIP MARKER DISPLAYED

LEGEND:

● GOOD (>0.30)
○ FAIR (>0.20)



930

931

932

BPB DIPMETER ANALYSIS
INTERPRETATION NOTES

1. All plots are correct to the resolution of the plotter used, ie. one hundredth of an inch. Vertical resolution may vary by up to one percent but each plot is correct within itself, the plotted data being dynamically merged with its gridded background. Plots exceeding eight metres in length will be split into multiples thereof, however there is no data loss associated with this subdivision.
2. Rose diagrams are plotted between every major division and are delimited by two bold arrows. For certain replay scales it may be desirable to plot these less frequently; this option is available on request.
3. The borehole tilt and azimuth displayed on the plot are the average values over the whole major division.
4. The replay scale for pads 1, 2 & 3 are designed to give the maximum visual effect over the plotted interval. Replaying shorter sections of the curve will enhance this display.
5. The grid over which the computed dip information is displayed is locally linear. That is to say it is linear between 0 & 10, degrees, 10 & 20, 20 & 30 etc.
6. The correlation value will vary depending upon the interval size selected. Generally speaking the larger the correlation interval, the lower the value becomes. For this reason a direct comparison of this value for differing correlation intervals is meaningless, quality control being exercised with an appreciation of this effect.
7. For customised control of computed dipmeter analysis the following parameters must be specified:
 correlation step and interval(s)
 magnetic declination (ie. the difference between true and magnetic North)
 search angle(s)
 depth range(s)
 replay scale(s)
 the frequency for rose diagrams
 (quality control is exercised in accordance with the correlation interval used, alternatively all correlations may be displayed on request)

The following information is a listing of ALL the output from BPB's dipmeter analysis. The data is subdivided into three consecutive sets of data readings, being read from left to right. Below is a full description of each data item:

| | |
|--------------|---|
| DEPTH | the depth corresponding to the centre of the correlation interval |
| CALIPER | the average borehole caliper recorded over the correlation interval |
| HOLE DRIFT | the average borehole deviation from vertical over the correlation interval |
| HOLE AZIMUTH | the average borehole azimuth over the correlation interval in degrees East of true North |
| DIP ANGLE | the computed formation dip in degrees, from the horizontal plane |
| DIP AZIMUTH | the formation azimuth in degrees East from true North |
| CORRELATION | a measure of the reliability of the computed result. This parameter is also used in the visual display to determine the quality of result |

Further recorrelations over any step & interval size are available on any scale over any section of the log. Alternative methods of presentation, or analysis may be made available on request.

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| | | | | | | | | | | | | | | | |
|--|------|----------|-----------|------|-------|------|----------|-----------|------|-------|------|----------|-----------|--------|-----------|
| Magnetic declination 24.00 degrees East of North | | | | | | | | | | | | | | | 03-SEP-87 |
| Correlation step 1.00 metres, interval 2.00 metres | | | | | | | | | | | | | | | PAGE 1 |
| Search angle 80, degrees | | | | | | | | | | | | | | | |
| DEPTH | CAL. | BOREHOLE | FORMATION | MIN. | DEPTH | CAL. | BOREHOLE | FORMATION | MIN. | DEPTH | CAL. | BOREHOLE | FORMATION | MIN. | |
| metres | ins. | TILT | AZI | DIP | AZI | COR. | metres | ins. | TILT | AZI | DIP | AZI | COR. | metres | |
| 26.00 | 5.5 | 1.9 | 239. | 52.3 | 138. | 0.22 | 27.00 | 5.5 | 2.0 | 238. | 51.3 | 2. | 0.33 | 28.00 | |
| 29.00 | 5.5 | 2.2 | 240. | 40.9 | 41. | 0.30 | 30.00 | 5.5 | 2.2 | 241. | 55.9 | 18. | 0.45 | 31.00 | |
| 32.00 | 5.6 | 2.3 | 240. | 57.8 | 23. | 0.56 | 33.00 | 5.6 | 2.4 | 240. | 73.6 | 316. | 0.21 | 34.00 | |
| 35.00 | 5.6 | 2.4 | 241. | 58.8 | 27. | 0.37 | 36.00 | 5.7 | 2.6 | 243. | 42.1 | 54. | 0.40 | 37.00 | |
| 38.00 | 5.8 | 2.8 | 244. | 48.0 | 46. | 0.23 | 39.00 | 5.7 | 2.8 | 242. | 79.7 | 5. | 0.22 | 40.00 | |
| 41.00 | 5.7 | 2.9 | 240. | 55.6 | 17. | 0.23 | 42.00 | 5.7 | 2.9 | 239. | 64.5 | 7. | 0.32 | 43.00 | |
| 44.00 | 5.5 | 2.9 | 234. | 76.9 | 353. | 0.56 | 45.00 | 5.5 | 2.8 | 231. | 77.2 | 349. | 0.42 | 46.00 | |
| 47.00 | 5.6 | 2.7 | 228. | 40.4 | 128. | 0.29 | 48.00 | 5.6 | 2.9 | 228. | 34.9 | 133. | 0.23 | 49.00 | |
| 50.00 | 5.6 | 3.2 | 229. | 73.3 | 223. | 0.30 | 51.00 | 5.6 | 3.3 | 227. | 39.2 | 30. | 0.32 | 52.00 | |
| 53.00 | 5.5 | 3.5 | 227. | 77.9 | 350. | 0.31 | 54.00 | 5.5 | 3.6 | 228. | 78.6 | 30. | 0.37 | 55.00 | |
| 56.00 | 5.5 | 4.1 | 230. | 74.4 | 350. | 0.35 | 57.00 | 5.5 | 4.3 | 230. | 51.1 | 142. | 0.26 | 58.00 | |
| 59.00 | 5.5 | 4.8 | 229. | 59.4 | 36. | 0.43 | 60.00 | 5.5 | 5.1 | 228. | 59.2 | 30. | 0.55 | 61.00 | |
| 62.00 | 5.5 | 5.0 | 226. | 63.3 | 4. | 0.38 | 63.00 | 5.5 | 5.9 | 225. | 73.0 | 350. | 0.37 | 64.00 | |
| 65.00 | 5.5 | 6.5 | 225. | 54.9 | 116. | 0.29 | 66.00 | 5.5 | 6.8 | 225. | 58.9 | 136. | 0.25 | 67.00 | |
| 68.00 | 5.5 | 7.5 | 225. | 56.6 | 28. | 0.37 | 69.00 | 5.6 | 7.8 | 225. | 58.4 | 26. | 0.36 | 70.00 | |
| 71.00 | 5.6 | 8.6 | 225. | 49.4 | 98. | 0.35 | 72.00 | 5.6 | 8.9 | 224. | 68.5 | 136. | 0.28 | 73.00 | |
| 74.00 | 5.6 | 9.0 | 222. | 82.8 | 113. | 0.27 | 75.00 | 5.6 | 9.0 | 222. | 84.8 | 118. | 0.27 | 76.00 | |
| 77.00 | 5.6 | 9.1 | 223. | 44.1 | 47. | 0.35 | 78.00 | 5.6 | 9.0 | 224. | 53.2 | 65. | 0.36 | 79.00 | |
| 80.00 | 5.6 | 8.8 | 225. | 84.0 | 55. | 0.25 | 81.00 | 5.5 | 8.8 | 224. | 38.4 | 51. | 0.23 | 82.00 | |
| 83.00 | 5.5 | 9.1 | 224. | 47.2 | 65. | 0.30 | 84.00 | 5.5 | 9.4 | 223. | 66.7 | 148. | 0.32 | 85.00 | |
| 86.00 | 5.5 | 10.0 | 222. | 54.3 | 12. | 0.32 | 87.00 | 5.5 | 10.2 | 222. | 83.2 | 350. | 0.28 | 88.00 | |
| 89.00 | 5.5 | 10.4 | 221. | 29.1 | 140. | 0.47 | 90.00 | 5.6 | 10.7 | 220. | 84.6 | 118. | 0.31 | 91.00 | |
| 92.00 | 5.5 | 11.1 | 220. | 58.5 | 5. | 0.35 | 93.00 | 5.5 | 11.2 | 219. | 53.8 | 15. | 0.40 | 94.00 | |
| 95.00 | 5.5 | 11.6 | 219. | 70.5 | 346. | 0.29 | 96.00 | 5.5 | 12.1 | 219. | 64.4 | 107. | 0.39 | 97.00 | |
| 98.00 | 5.5 | 13.1 | 219. | 85.2 | 346. | 0.28 | 99.00 | 5.5 | 13.8 | 219. | 65.9 | 26. | 0.26 | 100.00 | |
| 101.00 | 5.5 | 15.2 | 219. | 59.5 | 21. | 0.46 | 102.00 | 5.5 | 15.8 | 219. | 59.0 | 23. | 0.40 | 103.00 | |
| 104.00 | 5.5 | 16.6 | 218. | 46.4 | 124. | 0.40 | 105.00 | 5.5 | 16.7 | 218. | 45.9 | 36. | 0.60 | 106.00 | |
| 107.00 | 5.5 | 16.6 | 219. | 46.5 | 71. | 0.35 | 108.00 | 5.5 | 16.5 | 219. | 52.1 | 85. | 0.30 | 109.00 | |
| 110.00 | 5.6 | 16.2 | 220. | 45.4 | 58. | 0.59 | 111.00 | 5.5 | 16.1 | 220. | 47.1 | 64. | 0.65 | 112.00 | |
| 113.00 | 5.5 | 15.0 | 221. | 57.2 | 43. | 0.27 | 114.00 | 5.5 | 15.8 | 221. | 56.3 | 200. | 0.36 | | |

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CONTINUOUS VERTICALITY ANALYSIS

CLIENT_____

QUINTETTE COAL

BOREHOLE_____

QHR-87-043

AREA_____

TRANSFER

COUNTRY_____

CANADA

DATE LOGGED.....20-AUG-87

DATE PROCESSED..11-JAN-88

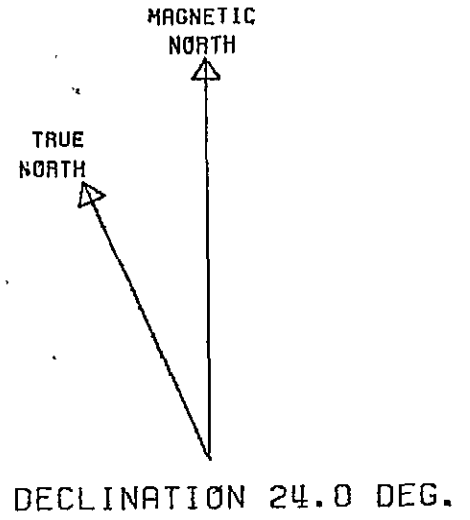
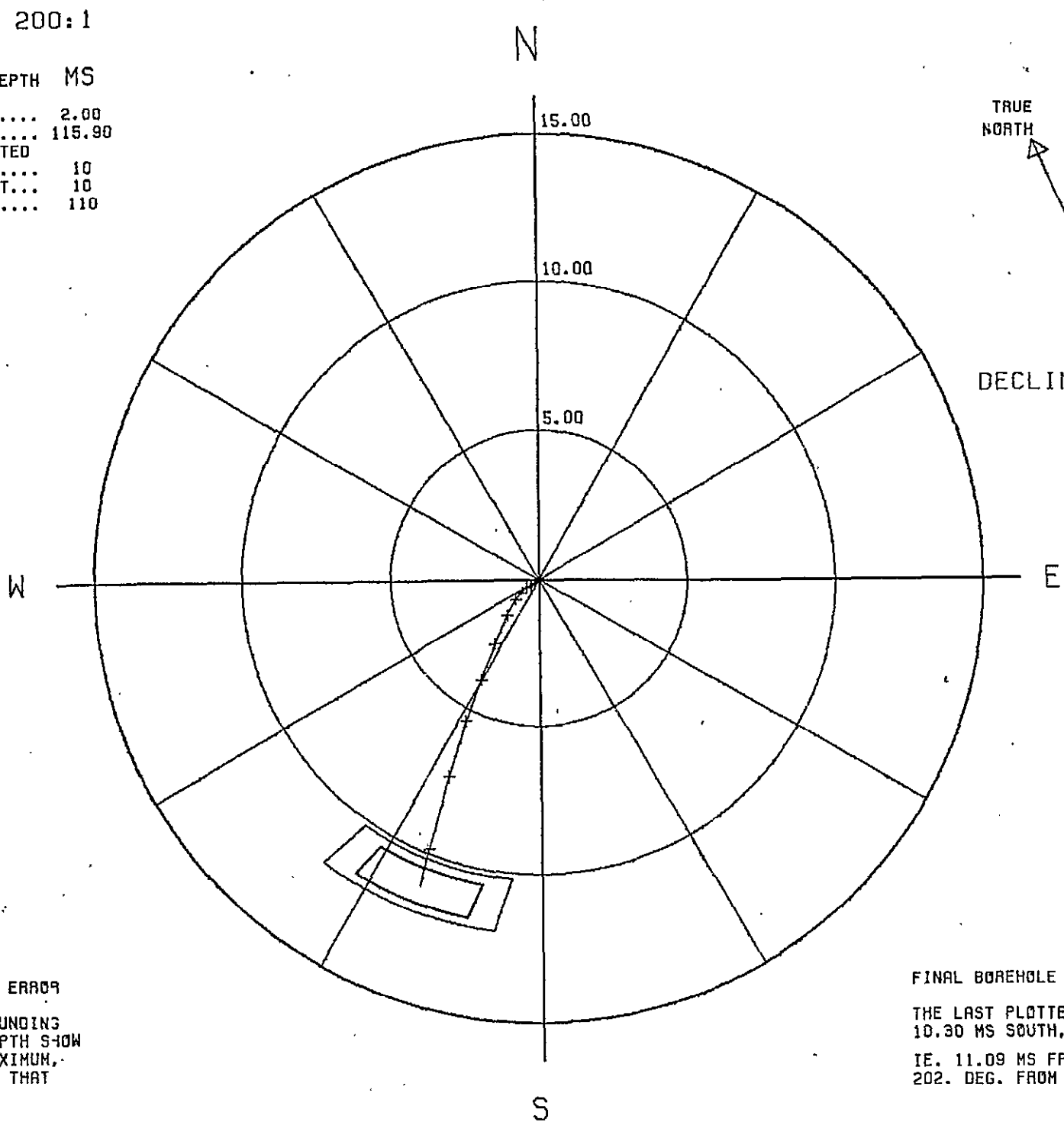
UPPER REFERENCE POINT....

LOWER REFERENCE POINT....T.D.

CROSS-SECTION

SCALE: 200:1

ALL FIGURES IN LOG DEPTH MS
 TARGET ORIGIN DEPTH..... 2.00
 LAST PLOTTED DEPTH..... 115.90
 DEPTH MARKERS ANNOTATED
 IN MULTIPLES OF..... 10
 FIRST DEPTH MARKER AT... 10
 LAST DEPTH MARKER AT.... 110



BOREHOLE POSITIONAL ERROR
 THE TWO BOXES SURROUNDING
 THE LAST PLOTTED DEPTH SHOW
 THE TYPICAL, AND MAXIMUM,
 POSITIONAL ERROR AT THAT
 DEPTH.

FINAL BOREHOLE POSITION
 THE LAST PLOTTED DEPTH IS AT
 10.30 MS SOUTH, 4.12 MS WEST
 IE. 11.09 MS FROM THE ORIGIN,
 202. DEG. FROM MAGNETIC NORTH

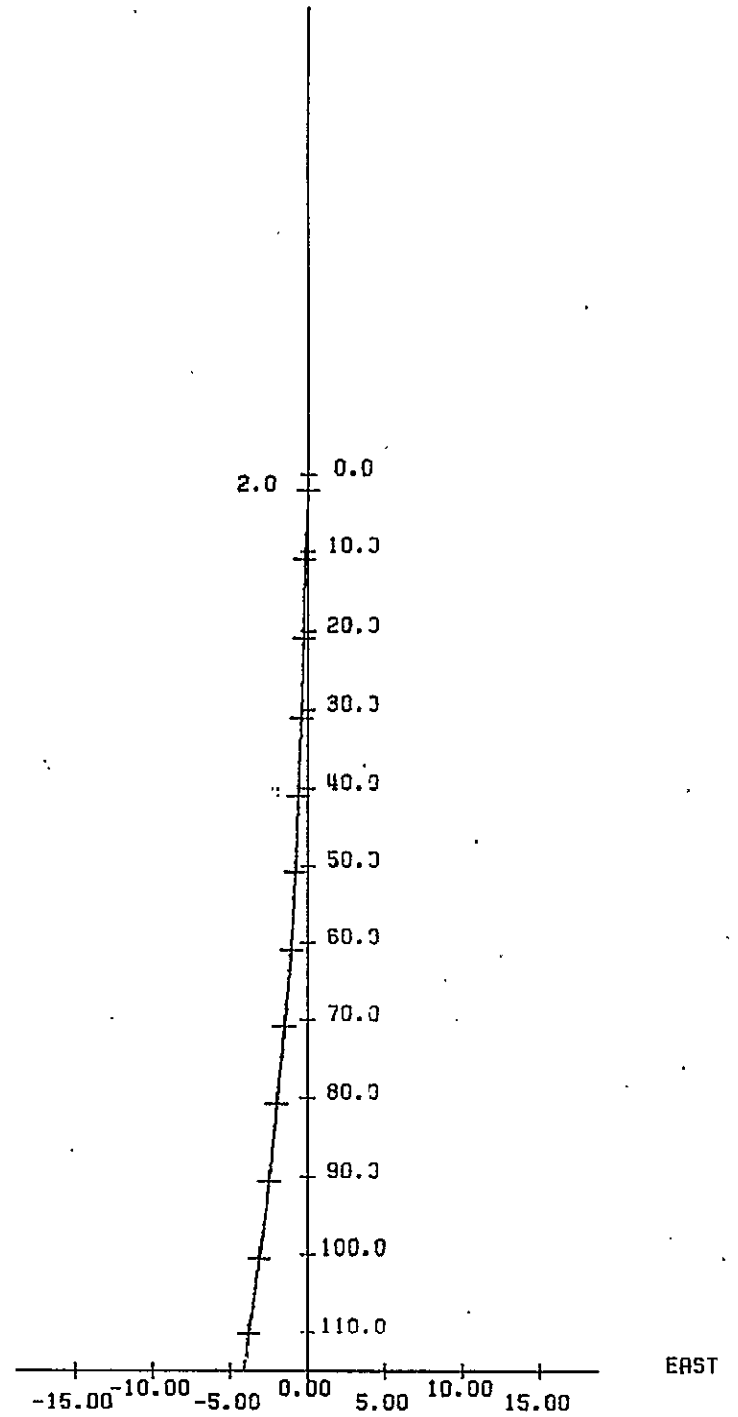
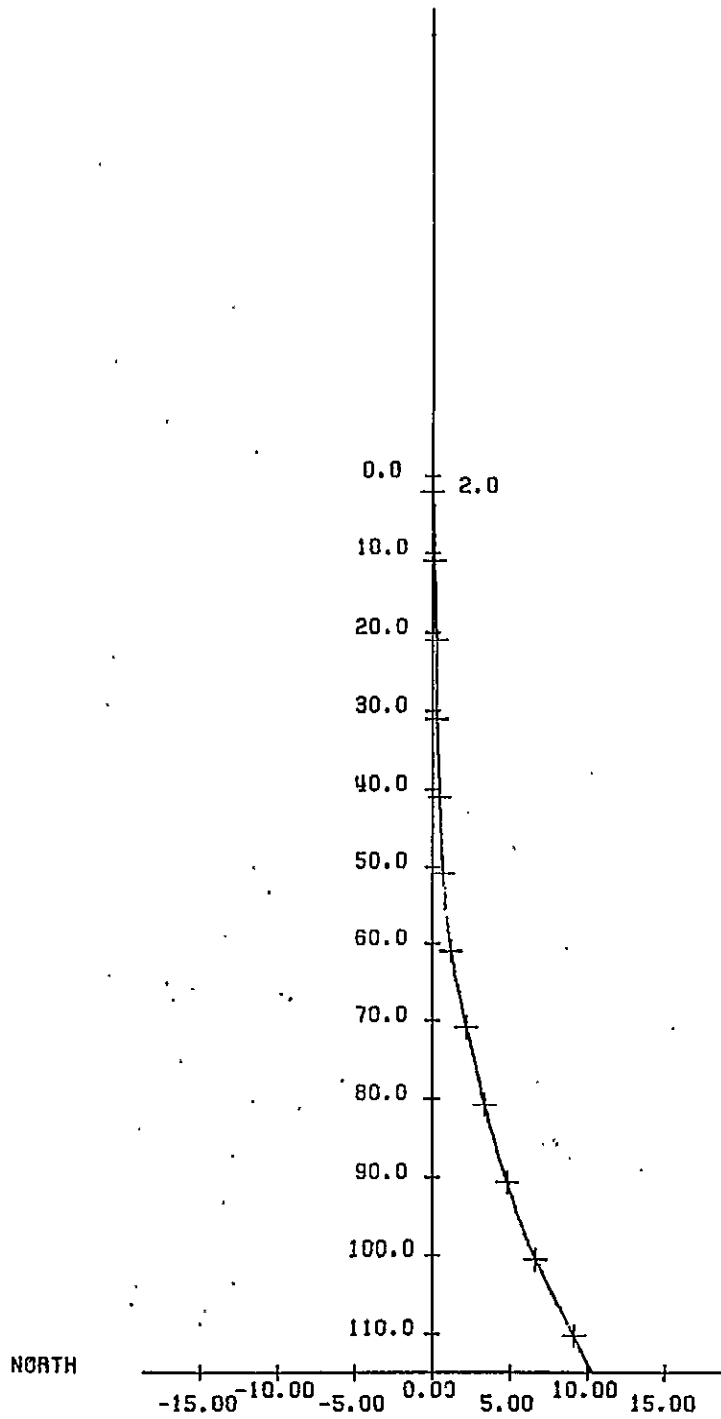
VERTICAL SECTIONS
(TRUE DEPTH VS. DISPLACEMENT)

N-S SECTION

W-E SECTION

VERTICAL SCALE 1000 ± 1

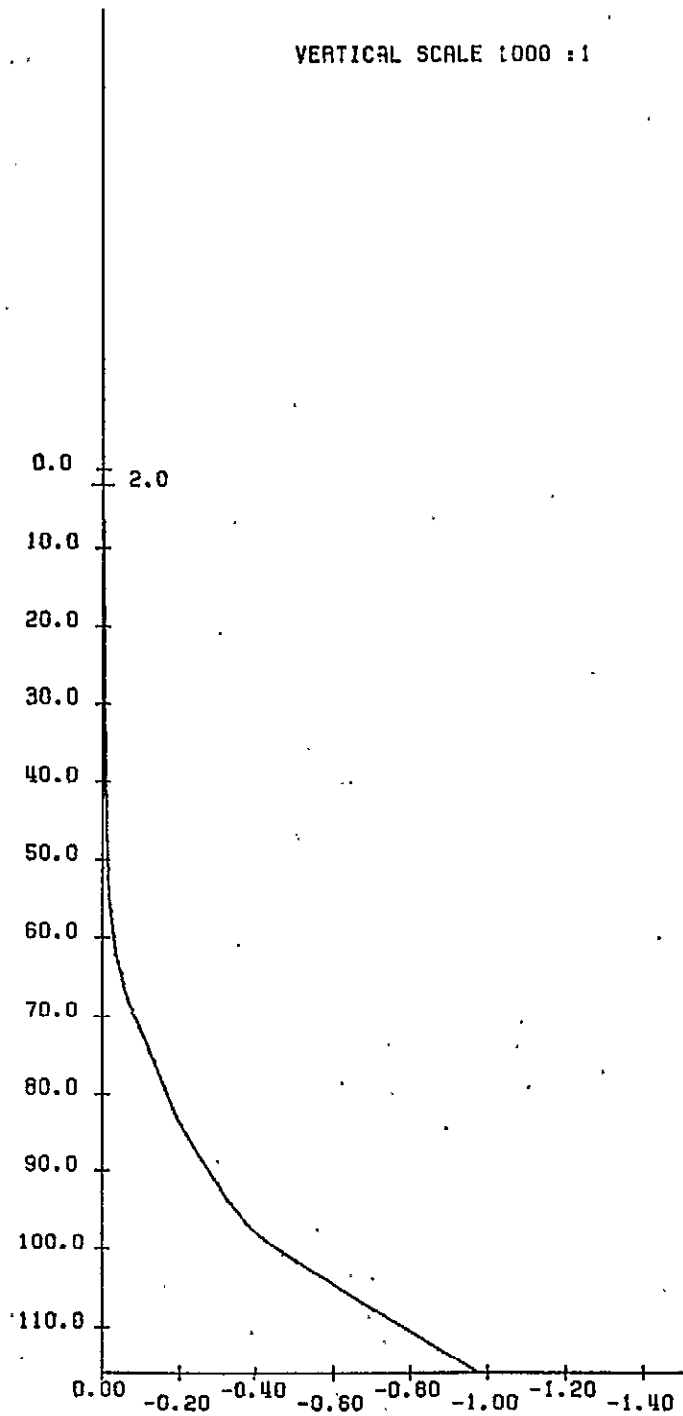
MARKERS ANNOTATED
AS ABOVE



DEPTH CORRECTION ANALYSIS

LOG
DEPTH

VERTICAL SCALE 1000 : 1



| DEPTHS: | | DEPTHS: | |
|---------|-------|---------|--------|
| LOG | TRUE | LOG | TRUE |
| 3.00 | 3.00 | 73.00 | 72.89 |
| 4.00 | 4.00 | 74.00 | 73.88 |
| 5.00 | 5.00 | 75.00 | 74.87 |
| 6.00 | 6.00 | 76.00 | 75.87 |
| 7.00 | 7.00 | 77.00 | 76.86 |
| 8.00 | 8.00 | 78.00 | 77.85 |
| 9.00 | 9.00 | 79.00 | 78.84 |
| 10.00 | 10.00 | 80.00 | 79.83 |
| 11.00 | 11.00 | 81.00 | 80.82 |
| 12.00 | 12.00 | 82.00 | 81.82 |
| 13.00 | 13.00 | 83.00 | 82.81 |
| 14.00 | 14.00 | 84.00 | 83.80 |
| 15.00 | 15.00 | 85.00 | 84.79 |
| 16.00 | 16.00 | 86.00 | 85.77 |
| 17.00 | 17.00 | 87.00 | 86.76 |
| 18.00 | 18.00 | 88.00 | 87.75 |
| 19.00 | 19.00 | 89.00 | 88.74 |
| 20.00 | 20.00 | 90.00 | 89.73 |
| 21.00 | 21.00 | 91.00 | 90.71 |
| 22.00 | 22.00 | 92.00 | 91.70 |
| 23.00 | 23.00 | 93.00 | 92.68 |
| 24.00 | 24.00 | 94.00 | 93.67 |
| 25.00 | 25.00 | 95.00 | 94.65 |
| 26.00 | 26.00 | 96.00 | 95.64 |
| 27.00 | 27.00 | 97.00 | 96.62 |
| 28.00 | 28.00 | 98.00 | 97.60 |
| 29.00 | 29.00 | 99.00 | 98.57 |
| 30.00 | 29.99 | 100.00 | 99.54 |
| 31.00 | 30.99 | 101.00 | 100.51 |
| 32.00 | 31.99 | 102.00 | 101.48 |
| 33.00 | 32.99 | 103.00 | 102.45 |
| 34.00 | 33.99 | 104.00 | 103.42 |
| 35.00 | 34.99 | 105.00 | 104.38 |
| 36.00 | 35.99 | 106.00 | 105.35 |
| 37.00 | 36.99 | 107.00 | 106.32 |
| 38.00 | 37.99 | 108.00 | 107.29 |
| 39.00 | 38.99 | 109.00 | 108.25 |
| 40.00 | 39.99 | 110.00 | 109.22 |
| 41.00 | 40.99 | 111.00 | 110.19 |
| 42.00 | 41.99 | 112.00 | 111.15 |
| 43.00 | 42.99 | 113.00 | 112.12 |
| 44.00 | 43.99 | 114.00 | 113.09 |
| 45.00 | 44.99 | 115.00 | 114.05 |
| 46.00 | 45.99 | | |
| 47.00 | 46.99 | | |
| 48.00 | 47.99 | | |
| 49.00 | 48.99 | | |
| 50.00 | 49.99 | | |
| 51.00 | 50.99 | | |
| 52.00 | 51.99 | | |
| 53.00 | 52.98 | | |
| 54.00 | 53.98 | | |
| 55.00 | 54.98 | | |
| 56.00 | 55.98 | | |
| 57.00 | 56.98 | | |
| 58.00 | 57.98 | | |
| 59.00 | 58.97 | | |
| 60.00 | 59.97 | | |
| 61.00 | 60.97 | | |
| 62.00 | 61.96 | | |
| 63.00 | 62.96 | | |
| 64.00 | 63.96 | | |
| 65.00 | 64.95 | | |
| 66.00 | 65.95 | | |
| 67.00 | 66.94 | | |
| 68.00 | 67.93 | | |
| 69.00 | 68.92 | | |
| 70.00 | 69.92 | | |
| 71.00 | 70.91 | | |
| 72.00 | 71.90 | | |

BPB VERTICALITY ANALYSIS
INTERPRETATION NOTES

1. All plotted output is automatically scaled to obtain the best visual effect within the physical space available. The maximum scales being 50000:1 (metric) & 48000:1 (imperial), and the minimum 1:1.
2. The analysis is derived by integrating 10 cm./6" sampled data down the borehole. However the listing supplied will contain a maximum of 200 points in multiples of 1,2,5,10,20,25,50, or 100 metres/feet depending upon the total range of the analysis. However the analysis is calculated for the entire range of the borehole, and the final borehole position is included in the listing.
3. Computed verticality may only be fully derived in open sections of the borehole, away from the influence of any magnetic media (as the azimuth calculations are derived from three solid state magnetometers). So the analysis will generally begin at the end of the casing, and all borehole positional information will relate to this depth.
4. Up to ten cross-sections may be requested for any borehole to be displayed at any scale (the default scale is that of the cross-section for the entire hole).
5. Borehole positional error is derived assuming the following parameters:

| | TILT(degrees) | AZIMUTH(degrees) |
|---------------|---------------|------------------|
| Typical Error | +/- 0.33333 | +/- 10.0 |
| Maximum Error | +/- 0.5 | +/- 15.0 |
6. Error analysis may be calculated and plotted from the data listing as follows:
 - a) Plot the four coordinates from the error listing (based upon zero azimuth error) on a target plot, origin at the start of the analysis.
 - b) Describe arcs of +/- 10 degrees & +/- 15 degrees (centre at the origin) through the inner and outer points respectively.
 - c) Connect the respective arcs together with straight lines to give the typical & maximum borehole positional error.
7. Given below is a full description of the parameters displayed on the ensuing listing:

| | |
|---------------------|--|
| LOG DEPTH | the depth recorded on the field logs for the borehole |
| TRUE DEPTH | the true vertical depth corresponding to the above depth, corrected from the start of the analysis |
| HOLE TILT & AZIMUTH | the SAMPLED borehole orientation |
| AXIAL COORDINATES | the coordinates North & East from the target origin |
| POLAR COORDINATES | the polar, or radial, coordinates of the borehole |
| ERROR COORDINATES | the polar coordinates corresponding to the typical and maximum tilt error |

N.B. The reference point for ALL bearing angles on this listing is given at the top of each sheet

Verticality Data Listing
All co-ordinates with respect to True North

Date processed: 11-JAN-88

| DEPTHS | | BOREHOLE AXIAL CO-ORDS. | | | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | | | |
|--------|-------|-------------------------|------|-------|-------|--|-------------|-------------|-------------|-------------|------|------|------|------|------|
| log | true | tilt | AZI | North | East | brng radius | brng radius | brng radius | brng radius | brng radius | | | | | |
| 3.00 | 3.00 | 1.3 | 247. | -0.01 | -0.02 | 233. | 0.02 | 233. | 0.03 | 234. | 0.01 | 233. | 0.03 | 234. | 0.01 |
| 4.00 | 4.00 | 1.2 | 256. | -0.02 | -0.04 | 241. | 0.04 | 241. | 0.06 | 242. | 0.02 | 241. | 0.05 | 241. | 0.03 |
| 5.00 | 5.00 | 0.8 | 248. | -0.03 | -0.06 | 243. | 0.06 | 243. | 0.09 | 243. | 0.04 | 243. | 0.08 | 243. | 0.05 |
| 6.00 | 6.00 | 1.3 | 258. | -0.03 | -0.08 | 247. | 0.08 | 246. | 0.12 | 247. | 0.05 | 246. | 0.11 | 247. | 0.06 |
| 7.00 | 7.00 | 1.1 | 274. | -0.04 | -0.10 | 251. | 0.11 | 250. | 0.15 | 251. | 0.07 | 251. | 0.14 | 251. | 0.08 |
| 8.00 | 8.00 | 1.7 | 266. | -0.04 | -0.13 | 253. | 0.14 | 252. | 0.19 | 253. | 0.09 | 252. | 0.17 | 253. | 0.10 |
| 9.00 | 9.00 | 1.1 | 289. | -0.04 | -0.15 | 255. | 0.16 | 255. | 0.22 | 256. | 0.10 | 255. | 0.20 | 256. | 0.12 |
| 10.00 | 10.00 | 1.4 | 259. | -0.04 | -0.17 | 256. | 0.18 | 256. | 0.24 | 257. | 0.11 | 256. | 0.22 | 257. | 0.13 |
| 11.00 | 11.00 | 1.4 | 244. | -0.05 | -0.19 | 256. | 0.20 | 256. | 0.28 | 256. | 0.13 | 256. | 0.25 | 256. | 0.15 |
| 12.00 | 12.00 | 1.4 | 240. | -0.05 | -0.21 | 256. | 0.22 | 256. | 0.30 | 256. | 0.14 | 256. | 0.28 | 256. | 0.16 |
| 13.00 | 13.00 | 1.2 | 244. | -0.06 | -0.23 | 256. | 0.24 | 256. | 0.33 | 256. | 0.15 | 256. | 0.30 | 256. | 0.18 |
| 14.00 | 14.00 | 1.4 | 272. | -0.06 | -0.25 | 256. | 0.26 | 255. | 0.36 | 256. | 0.16 | 256. | 0.33 | 256. | 0.19 |
| 15.00 | 15.00 | 1.2 | 251. | -0.07 | -0.27 | 256. | 0.28 | 255. | 0.39 | 256. | 0.17 | 255. | 0.35 | 256. | 0.21 |
| 16.00 | 16.00 | 1.0 | 268. | -0.07 | -0.29 | 256. | 0.30 | 255. | 0.42 | 256. | 0.18 | 256. | 0.38 | 256. | 0.22 |
| 17.00 | 17.00 | 1.1 | 250. | -0.08 | -0.31 | 256. | 0.32 | 256. | 0.44 | 256. | 0.19 | 256. | 0.40 | 256. | 0.23 |
| 18.00 | 18.00 | 0.9 | 263. | -0.08 | -0.32 | 256. | 0.33 | 256. | 0.46 | 256. | 0.19 | 256. | 0.42 | 256. | 0.24 |
| 19.00 | 19.00 | 0.6 | 230. | -0.08 | -0.33 | 256. | 0.34 | 256. | 0.48 | 256. | 0.20 | 256. | 0.43 | 256. | 0.24 |
| 20.00 | 20.00 | 0.5 | 265. | -0.09 | -0.34 | 256. | 0.35 | 256. | 0.50 | 256. | 0.20 | 256. | 0.45 | 256. | 0.25 |
| 21.00 | 21.00 | 0.2 | 283. | -0.09 | -0.34 | 256. | 0.36 | 256. | 0.51 | 256. | 0.20 | 256. | 0.46 | 256. | 0.25 |
| 22.00 | 22.00 | 0.4 | 280. | -0.09 | -0.36 | 256. | 0.37 | 256. | 0.53 | 256. | 0.20 | 256. | 0.48 | 256. | 0.26 |
| 23.00 | 23.00 | 0.7 | 298. | -0.09 | -0.36 | 256. | 0.37 | 256. | 0.55 | 256. | 0.20 | 256. | 0.49 | 256. | 0.26 |
| 24.00 | 24.00 | 0.5 | 268. | -0.09 | -0.37 | 257. | 0.38 | 257. | 0.56 | 256. | 0.20 | 257. | 0.50 | 257. | 0.26 |
| 25.00 | 25.00 | 0.9 | 293. | -0.09 | -0.39 | 257. | 0.40 | 257. | 0.59 | 257. | 0.21 | 257. | 0.52 | 257. | 0.27 |
| 26.00 | 26.00 | 0.9 | 260. | -0.09 | -0.40 | 258. | 0.41 | 258. | 0.61 | 257. | 0.21 | 258. | 0.54 | 258. | 0.28 |
| 27.00 | 27.00 | 1.3 | 287. | -0.08 | -0.42 | 259. | 0.43 | 259. | 0.63 | 258. | 0.22 | 259. | 0.56 | 258. | 0.29 |
| 28.00 | 28.00 | 1.1 | 263. | -0.08 | -0.44 | 259. | 0.45 | 259. | 0.66 | 259. | 0.23 | 259. | 0.59 | 259. | 0.30 |
| 29.00 | 29.00 | 1.2 | 246. | -0.09 | -0.46 | 259. | 0.47 | 260. | 0.69 | 259. | 0.24 | 260. | 0.61 | 259. | 0.32 |
| 30.00 | 29.99 | 1.4 | 250. | -0.08 | -0.48 | 260. | 0.48 | 260. | 0.71 | 260. | 0.25 | 260. | 0.64 | 260. | 0.33 |
| 31.00 | 30.99 | 1.4 | 251. | -0.09 | -0.50 | 260. | 0.51 | 260. | 0.74 | 260. | 0.27 | 260. | 0.67 | 260. | 0.35 |
| 32.00 | 31.99 | 1.2 | 236. | -0.09 | -0.52 | 260. | 0.53 | 260. | 0.77 | 260. | 0.28 | 260. | 0.69 | 260. | 0.36 |
| 33.00 | 32.99 | 1.2 | 254. | -0.09 | -0.54 | 260. | 0.55 | 260. | 0.81 | 260. | 0.29 | 260. | 0.72 | 260. | 0.38 |
| 34.00 | 33.99 | 1.4 | 255. | -0.10 | -0.57 | 260. | 0.58 | 260. | 0.84 | 260. | 0.31 | 260. | 0.75 | 260. | 0.40 |
| 35.00 | 34.99 | 2.0 | 243. | -0.11 | -0.59 | 260. | 0.60 | 260. | 0.87 | 259. | 0.33 | 260. | 0.78 | 259. | 0.42 |
| 36.00 | 35.99 | 1.9 | 244. | -0.12 | -0.61 | 259. | 0.63 | 259. | 0.91 | 259. | 0.34 | 259. | 0.81 | 259. | 0.44 |
| 37.00 | 36.99 | 1.6 | 251. | -0.12 | -0.64 | 259. | 0.65 | 259. | 0.94 | 258. | 0.36 | 259. | 0.84 | 259. | 0.46 |
| 38.00 | 37.99 | 1.5 | 251. | -0.13 | -0.66 | 259. | 0.67 | 259. | 0.97 | 258. | 0.37 | 259. | 0.87 | 258. | 0.47 |
| 39.00 | 38.99 | 1.8 | 252. | -0.14 | -0.68 | 258. | 0.70 | 258. | 1.01 | 258. | 0.39 | 258. | 0.90 | 258. | 0.49 |
| 40.00 | 39.99 | 1.6 | 239. | -0.15 | -0.71 | 258. | 0.72 | 258. | 1.04 | 257. | 0.41 | 258. | 0.93 | 257. | 0.51 |
| 41.00 | 40.99 | 1.5 | 235. | -0.16 | -0.73 | 257. | 0.75 | 258. | 1.08 | 257. | 0.43 | 258. | 0.97 | 257. | 0.54 |
| 42.00 | 41.99 | 1.8 | 254. | -0.17 | -0.76 | 257. | 0.78 | 257. | 1.11 | 256. | 0.45 | 257. | 1.00 | 257. | 0.56 |
| 43.00 | 42.99 | 1.5 | 252. | -0.18 | -0.79 | 257. | 0.81 | 257. | 1.15 | 256. | 0.47 | 257. | 1.04 | 256. | 0.58 |
| 44.00 | 43.99 | 1.4 | 256. | -0.19 | -0.81 | 257. | 0.84 | 257. | 1.18 | 256. | 0.49 | 257. | 1.07 | 256. | 0.60 |
| 45.00 | 44.99 | 1.4 | 252. | -0.20 | -0.84 | 256. | 0.86 | 257. | 1.22 | 256. | 0.51 | 257. | 1.10 | 256. | 0.62 |
| 46.00 | 45.99 | 1.1 | 258. | -0.21 | -0.86 | 256. | 0.89 | 257. | 1.25 | 255. | 0.52 | 256. | 1.13 | 256. | 0.64 |
| 47.00 | 46.99 | 1.1 | 243. | -0.22 | -0.88 | 256. | 0.91 | 256. | 1.29 | 255. | 0.54 | 256. | 1.16 | 256. | 0.66 |
| 48.00 | 47.99 | 1.5 | 233. | -0.23 | -0.91 | 256. | 0.93 | 256. | 1.32 | 255. | 0.55 | 256. | 1.19 | 255. | 0.68 |
| 49.00 | 48.99 | 2.7 | 233. | -0.25 | -0.94 | 255. | 0.97 | 255. | 1.36 | 254. | 0.58 | 255. | 1.23 | 254. | 0.71 |
| 50.00 | 49.99 | 2.3 | 239. | -0.28 | -0.97 | 254. | 1.01 | 255. | 1.41 | 253. | 0.61 | 255. | 1.28 | 254. | 0.75 |
| 51.00 | 50.99 | 2.7 | 245. | -0.30 | -1.01 | 254. | 1.05 | 254. | 1.46 | 252. | 0.65 | 254. | 1.32 | 253. | 0.78 |
| 52.00 | 51.99 | 2.5 | 228. | -0.32 | -1.05 | 253. | 1.09 | 254. | 1.51 | 252. | 0.68 | 253. | 1.37 | 252. | 0.82 |

Verticality Data Listing

Date processed: 11-JAN-88

All co-ordinates with respect to True North

| DEPTHS | | BOREHOLE tillt | AZI | AXIAL CO-ORDS. | | POLAR | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | |
|--------|--------|-------------------|------|----------------|-------|-------|--------|--|--------|------|--------|------|--------|------|--------|
| log | true | | | North | East | brng | radius | brng | radius | brng | radius | brng | radius | brng | radius |
| 53.00 | 52.98 | 2.6 | 229. | -0.35 | -1.08 | 252. | 1.14 | 253. | 1.56 | 251. | 0.71 | 253. | 1.42 | 251. | 0.86 |
| 54.00 | 53.98 | 2.9 | 245. | -0.37 | -1.12 | 252. | 1.18 | 252. | 1.61 | 250. | 0.75 | 252. | 1.47 | 251. | 0.89 |
| 55.00 | 54.98 | 3.3 | 232. | -0.40 | -1.16 | 251. | 1.23 | 252. | 1.67 | 249. | 0.79 | 251. | 1.52 | 250. | 0.94 |
| 56.00 | 55.98 | 3.2 | 234. | -0.44 | -1.21 | 250. | 1.28 | 251. | 1.73 | 248. | 0.84 | 251. | 1.58 | 249. | 0.99 |
| 57.00 | 56.98 | 3.3 | 226. | -0.48 | -1.25 | 249. | 1.34 | 250. | 1.80 | 247. | 0.89 | 250. | 1.65 | 248. | 1.04 |
| 58.00 | 57.98 | 4.2 | 228. | -0.52 | -1.31 | 248. | 1.41 | 249. | 1.87 | 246. | 0.94 | 249. | 1.72 | 247. | 1.10 |
| 59.00 | 58.97 | 4.2 | 230. | -0.57 | -1.36 | 247. | 1.48 | 249. | 1.95 | 245. | 1.01 | 248. | 1.79 | 246. | 1.16 |
| 60.00 | 59.97 | 4.5 | 229. | -0.62 | -1.42 | 247. | 1.55 | 248. | 2.03 | 244. | 1.07 | 247. | 1.87 | 245. | 1.23 |
| 61.00 | 60.97 | 4.4 | 233. | -0.67 | -1.48 | 246. | 1.62 | 247. | 2.11 | 243. | 1.14 | 247. | 1.95 | 244. | 1.30 |
| 62.00 | 61.96 | 4.8 | 226. | -0.72 | -1.54 | 245. | 1.70 | 246. | 2.19 | 242. | 1.21 | 246. | 2.03 | 243. | 1.37 |
| 63.00 | 62.96 | 5.5 | 229. | -0.78 | -1.60 | 244. | 1.78 | 245. | 2.29 | 241. | 1.28 | 245. | 2.12 | 242. | 1.45 |
| 64.00 | 63.96 | 5.7 | 228. | -0.85 | -1.67 | 243. | 1.87 | 245. | 2.38 | 240. | 1.37 | 244. | 2.21 | 242. | 1.54 |
| 65.00 | 64.95 | 6.0 | 224. | -0.92 | -1.75 | 242. | 1.97 | 244. | 2.49 | 240. | 1.46 | 244. | 2.32 | 241. | 1.63 |
| 66.00 | 65.95 | 6.0 | 225. | -0.98 | -1.82 | 242. | 2.07 | 243. | 2.59 | 239. | 1.55 | 243. | 2.42 | 240. | 1.72 |
| 67.00 | 66.94 | 6.1 | 229. | -1.06 | -1.90 | 241. | 2.18 | 243. | 2.71 | 238. | 1.65 | 242. | 2.53 | 239. | 1.82 |
| 68.00 | 67.93 | 7.6 | 226. | -1.14 | -1.99 | 240. | 2.29 | 242. | 2.83 | 237. | 1.76 | 241. | 2.65 | 239. | 1.93 |
| 69.00 | 68.92 | 6.7 | 225. | -1.22 | -2.08 | 240. | 2.41 | 241. | 2.96 | 237. | 1.87 | 241. | 2.78 | 238. | 2.05 |
| 70.00 | 69.92 | 7.4 | 223. | -1.31 | -2.17 | 239. | 2.53 | 241. | 3.08 | 236. | 1.98 | 240. | 2.90 | 237. | 2.16 |
| 71.00 | 70.91 | 7.6 | 228. | -1.39 | -2.26 | 238. | 2.66 | 240. | 3.22 | 236. | 2.10 | 240. | 3.03 | 237. | 2.29 |
| 72.00 | 71.90 | 7.5 | 228. | -1.48 | -2.36 | 238. | 2.79 | 240. | 3.36 | 235. | 2.22 | 239. | 3.17 | 236. | 2.41 |
| 73.00 | 72.89 | 7.4 | 229. | -1.57 | -2.46 | 237. | 2.91 | 239. | 3.49 | 235. | 2.34 | 239. | 3.30 | 236. | 2.53 |
| 74.00 | 73.88 | 7.4 | 228. | -1.66 | -2.55 | 237. | 3.04 | 239. | 3.63 | 234. | 2.46 | 238. | 3.43 | 235. | 2.65 |
| 75.00 | 74.87 | 7.3 | 230. | -1.75 | -2.64 | 236. | 3.17 | 238. | 3.76 | 234. | 2.58 | 238. | 3.57 | 235. | 2.78 |
| 76.00 | 75.87 | 7.3 | 228. | -1.84 | -2.74 | 236. | 3.30 | 238. | 3.90 | 234. | 2.70 | 237. | 3.70 | 235. | 2.90 |
| 77.00 | 76.86 | 6.9 | 230. | -1.93 | -2.83 | 236. | 3.43 | 237. | 4.03 | 233. | 2.82 | 237. | 3.83 | 234. | 3.02 |
| 78.00 | 77.85 | 7.1 | 228. | -2.02 | -2.92 | 235. | 3.55 | 237. | 4.17 | 233. | 2.94 | 236. | 3.96 | 234. | 3.14 |
| 79.00 | 78.84 | 7.4 | 227. | -2.11 | -3.01 | 235. | 3.68 | 237. | 4.30 | 233. | 3.06 | 236. | 4.10 | 234. | 3.27 |
| 80.00 | 79.83 | 7.2 | 223. | -2.20 | -3.10 | 235. | 3.80 | 236. | 4.44 | 232. | 3.18 | 236. | 4.23 | 233. | 3.39 |
| 81.00 | 80.82 | 7.6 | 227. | -2.29 | -3.20 | 234. | 3.93 | 236. | 4.57 | 232. | 3.30 | 235. | 4.36 | 233. | 3.51 |
| 82.00 | 81.82 | 7.4 | 224. | -2.38 | -3.29 | 234. | 4.06 | 236. | 4.71 | 232. | 3.42 | 235. | 4.49 | 233. | 3.63 |
| 83.00 | 82.81 | 7.9 | 225. | -2.48 | -3.38 | 234. | 4.19 | 235. | 4.84 | 232. | 3.54 | 235. | 4.63 | 232. | 3.75 |
| 84.00 | 83.80 | 8.4 | 225. | -2.58 | -3.48 | 233. | 4.33 | 235. | 4.99 | 231. | 3.67 | 234. | 4.77 | 232. | 3.89 |
| 85.00 | 84.79 | 8.4 | 223. | -2.69 | -3.58 | 233. | 4.48 | 235. | 5.15 | 231. | 3.81 | 234. | 4.93 | 232. | 4.03 |
| 86.00 | 85.77 | 8.6 | 225. | -2.80 | -3.69 | 233. | 4.63 | 234. | 5.31 | 231. | 3.95 | 234. | 5.08 | 232. | 4.18 |
| 87.00 | 86.76 | 9.0 | 221. | -2.91 | -3.79 | 233. | 4.78 | 234. | 5.47 | 231. | 4.10 | 234. | 5.24 | 231. | 4.32 |
| 88.00 | 87.75 | 8.6 | 222. | -3.01 | -3.90 | 232. | 4.93 | 234. | 5.62 | 230. | 4.24 | 233. | 5.39 | 231. | 4.46 |
| 89.00 | 88.74 | 9.3 | 225. | -3.13 | -4.00 | 232. | 5.08 | 233. | 5.78 | 230. | 4.38 | 233. | 5.55 | 231. | 4.61 |
| 90.00 | 89.73 | 9.4 | 221. | -3.25 | -4.11 | 232. | 5.24 | 233. | 5.95 | 230. | 4.53 | 233. | 5.71 | 231. | 4.77 |
| 91.00 | 90.71 | 9.4 | 223. | -3.36 | -4.22 | 231. | 5.40 | 233. | 6.12 | 230. | 4.69 | 232. | 5.88 | 230. | 4.92 |
| 92.00 | 91.70 | 9.5 | 223. | -3.49 | -4.34 | 231. | 5.56 | 233. | 6.29 | 230. | 4.84 | 232. | 6.05 | 230. | 5.08 |
| 93.00 | 92.68 | 9.8 | 226. | -3.61 | -4.45 | 231. | 5.73 | 232. | 6.46 | 229. | 5.00 | 232. | 6.22 | 230. | 5.24 |
| 94.00 | 93.67 | 10.0 | 222. | -3.73 | -4.56 | 231. | 5.90 | 232. | 6.64 | 229. | 5.16 | 232. | 6.39 | 230. | 5.40 |
| 95.00 | 94.65 | 10.6 | 222. | -3.87 | -4.69 | 230. | 6.08 | 232. | 6.82 | 229. | 5.33 | 231. | 6.57 | 229. | 5.58 |
| 96.00 | 95.64 | 10.8 | 222. | -4.00 | -4.81 | 230. | 6.26 | 231. | 7.02 | 229. | 5.50 | 231. | 6.76 | 229. | 5.75 |
| 97.00 | 96.62 | 11.2 | 222. | -4.15 | -4.94 | 230. | 6.45 | 231. | 7.22 | 228. | 5.69 | 231. | 6.96 | 229. | 5.94 |
| 98.00 | 97.60 | 12.2 | 221. | -4.30 | -5.08 | 230. | 6.65 | 231. | 7.43 | 228. | 5.88 | 231. | 7.17 | 229. | 6.14 |
| 99.00 | 98.57 | 12.8 | 220. | -4.46 | -5.22 | 229. | 6.87 | 231. | 7.65 | 228. | 6.09 | 230. | 7.39 | 229. | 6.35 |
| 100.00 | 99.54 | 13.1 | 223. | -4.63 | -5.38 | 229. | 7.10 | 230. | 7.89 | 228. | 6.31 | 230. | 7.62 | 228. | 6.57 |
| 101.00 | 100.51 | 14.7 | 224. | -4.82 | -5.53 | 229. | 7.34 | 230. | 8.13 | 228. | 6.54 | 230. | 7.87 | 228. | 6.81 |
| 102.00 | 101.48 | 14.6 | 221. | -5.00 | -5.70 | 229. | 7.58 | 230. | 8.39 | 227. | 6.78 | 229. | 8.12 | 228. | 7.05 |

Verticality Data Listing

Date processed: 11-JAN-88

All co-ordinates with respect to True North

| DEPTH | | BOREHOLE | | AXIAL CO-ORDS. | | POLAR | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | |
|--------|--------|----------|------|----------------|-------|-------|--------|--|-------------|-------------|-------------|-------------|-------|------|-------|
| log | true | tilt | AZI | North | East | brng | radius | brng radius | brng radius | brng radius | brng radius | brng radius | | | |
| 103.00 | 102.45 | 14.5 | 219. | -5.19 | -5.86 | 228. | 7.83 | 230. | 8.64 | 227. | 7.02 | 229. | 8.37 | 228. | 7.29 |
| 104.00 | 103.42 | 14.8 | 219. | -5.39 | -6.02 | 228. | 8.08 | 229. | 8.90 | 227. | 7.27 | 229. | 8.63 | 227. | 7.54 |
| 105.00 | 104.38 | 14.9 | 220. | -5.59 | -6.19 | 228. | 8.34 | 229. | 9.16 | 227. | 7.51 | 229. | 8.89 | 227. | 7.79 |
| 106.00 | 105.35 | 14.3 | 217. | -5.78 | -6.35 | 228. | 8.59 | 229. | 9.42 | 226. | 7.76 | 228. | 9.14 | 227. | 8.03 |
| 107.00 | 106.32 | 14.6 | 220. | -5.98 | -6.51 | 227. | 8.84 | 228. | 9.68 | 226. | 8.00 | 228. | 9.40 | 227. | 8.28 |
| 108.00 | 107.29 | 15.4 | 222. | -6.17 | -6.68 | 227. | 9.09 | 228. | 9.94 | 226. | 8.25 | 228. | 9.66 | 226. | 8.53 |
| 109.00 | 108.25 | 15.0 | 220. | -6.37 | -6.84 | 227. | 9.35 | 228. | 10.21 | 226. | 8.50 | 228. | 9.92 | 226. | 8.78 |
| 110.00 | 109.22 | 14.4 | 219. | -6.57 | -7.00 | 227. | 9.60 | 228. | 10.47 | 226. | 8.74 | 228. | 10.18 | 226. | 9.03 |
| 111.00 | 110.19 | 14.8 | 218. | -6.77 | -7.16 | 227. | 9.85 | 228. | 10.73 | 225. | 8.99 | 227. | 10.44 | 226. | 9.27 |
| 112.00 | 111.15 | 14.7 | 218. | -6.96 | -7.33 | 226. | 10.11 | 227. | 10.99 | 225. | 9.23 | 227. | 10.69 | 226. | 9.52 |
| 113.00 | 112.12 | 14.8 | 219. | -7.16 | -7.49 | 226. | 10.36 | 227. | 11.25 | 225. | 9.47 | 227. | 10.95 | 226. | 9.77 |
| 114.00 | 113.09 | 14.6 | 223. | -7.35 | -7.65 | 226. | 10.61 | 227. | 11.50 | 225. | 9.72 | 227. | 11.20 | 225. | 10.01 |
| 115.00 | 114.05 | 14.7 | 219. | -7.55 | -7.81 | 226. | 10.86 | 227. | 11.77 | 225. | 9.96 | 227. | 11.47 | 225. | 10.26 |
| 115.90 | 114.92 | 14.9 | 217. | -7.73 | -7.96 | 226. | 11.09 | 227. | 12.00 | 225. | 10.18 | 226. | 11.70 | 225. | 10.49 |

QHR87044
VALLEY ROAD

LOG DEPTH 0130.00
TRUE DEPTH 0129.74
TILT 6.59 DG
BEARING 59.15 DG
NORTHING +002.57
EASTING +006.29

LOG DEPTH 0120.00
TRUE DEPTH 0119.81
TILT 5.66 DG
BEARING 62.42 DG
NORTHING +001.98
EASTING +005.30

LOG DEPTH 0110.00
TRUE DEPTH 0109.86
TILT 5.13 DG
BEARING 67.03 DG
NORTHING +001.53
EASTING +004.43

LOG DEPTH 0100.00
TRUE DEPTH 0099.90
TILT 4.55 DG
BEARING 72.80 DG
NORTHING +001.18
EASTING +003.60

LOG DEPTH 0090.00
TRUE DEPTH 0089.93
TILT 3.64 DG
BEARING 77.41 DG
NORTHING +000.94
EASTING +002.84

LOG DEPTH 0080.00
TRUE DEPTH 0079.95
TILT 3.16 DG
BEARING 80.01 DG
NORTHING +000.81
EASTING +002.22

LOG DEPTH 0070.00
TRUE DEPTH 0069.97
TILT 2.65 DG
BEARING 83.74 DG
NORTHING +000.71
EASTING +001.68

LOG DEPTH 0060.00
TRUE DEPTH 0059.98
TILT 2.19 DG
BEARING 78.68 DG
NORTHING +000.66
EASTING +001.22

LOG DEPTH 0050.00
TRUE DEPTH 0049.99
TILT 1.89 DG
BEARING 63.94 DG
NORTHING +000.58
EASTING +000.84

LOG DEPTH 0040.00
TRUE DEPTH 0040.00
TILT 1.57 DG
BEARING 67.66 DG
NORTHING +000.44
EASTING +000.55

LOG DEPTH 0030.00
TRUE DEPTH 0030.00
TILT 1.54 DG
BEARING 53.77 DG
NORTHING +000.33
EASTING +000.29

LOG DEPTH 0020.00
TRUE DEPTH 0020.00
TILT 1.03 DG
BEARING 29.20 DG
NORTHING +000.17
EASTING +000.08

LOG DEPTH 0010.00
TRUE DEPTH 0010.00
TILT .26 DG
BEARING 340.79 DG
NORTHING +000.02
EASTING -000.00

LOG DEPTH 0005.00
TRUE DEPTH 0005.00
TILT .00 DG
BEARING 293.99 DG
NORTHING +000.00
EASTING +000.00

739

DEPTH = 0010.00
TILT = 53 DG
BEARING = 27.58 DG

DEPTH = 0020.00
TILT = 1.54 DG
BEARING = 30.81 DG

DEPTH = 0030.00
TILT = 1.55 DG
BEARING = 76.73 DG

DEPTH = 0040.00
TILT = 1.59 DG
BEARING = 58.59 DG

DEPTH = 0050.00
TILT = 2.19 DG
BEARING = 69.30 DG

DEPTH = 0060.00
TILT = 2.19 DG
BEARING = 88.06 DG

DEPTH = 0070.00
TILT = 3.11 DG
BEARING = 79.42 DG

DEPTH = 0080.00
TILT = 3.22 DG
BEARING = 80.59 DG

DEPTH = 0090.00
TILT = 4.05 DG
BEARING = 74.23 DG

DEPTH = 0100.00
TILT = 5.05 DG
BEARING = 71.38 DG

DEPTH = 0110.00
TILT = 5.20 DG
BEARING = 62.67 DG

DEPTH = 0120.00
TILT = 6.11 DG
BEARING = 62.16 DG

DEPTH = 0130.00
TILT = 7.07 DG
BEARING = 56.15 DG

DATE = 870819
JOB NUMBER = 0044
LOG LABEL = 026.1
MAG 1 MAX = 229
MAG 1 MIN = 129
MAG 2 MAX = 229
MAG 2 MIN = 130
MAG 3 MAX = 205
MAG 3 MIN = 155
L. CELL 1 TILT 1 = 20
L. CELL 1 CPS 1 = 233
L. CELL 1 TILT 2 = -20
L. CELL 1 CPS 2 = 126
L. CELL 2 TILT 1 = 20
L. CELL 2 CPS 1 = 232
L. CELL 2 TILT 2 = -20
L. CELL 2 CPS 2 = 126

MAG 1 CENTRE = 179
MAG 2 CENTRE = 179
MAG 3 CENTRE = 180
L. CELL 1 CENTRE = 180
L. CELL 2 CENTRE = 179

MAG DECL = 024
STOP DEPTH = 0005

QHR87044
VALLEY ROAD



LOG SUITE
GAMMA RAY
L.S. DENSITY
CALIPER

SONDE TYPE
COAL
COMBINATION
SONDE

COAL
LITHOLOGY
LOG

BOREHOLE QHR 87-044
CLIENT QUINLETTE
AREA TRANSFER
COUNTRY CANADA
DATE LOGGED 87 08 29
DEPTH SCALE 1:200
LOGS 1 OF 5 LOGS

BOREHOLE DATA

PERMANENT DATUM (ROUND LEVEL)
ELEVATION OF P.D. 898
MEASUREMENTS FROM C-1 1.1
DEPTH REACHED 135.70m 136.00m
CASING SHOPE 3.20m 3.20m
BIT SIZES 1 8.1" TO 2.20m 2 5.1" TO 3.5m
CASING SIZES 3 6.1" TO 3.7m 2 TO

FLUID DATA

NATURE WATER
SG 1.01877
LEVEL 67.80m
VISCOSITY N/A
Rem at 100ms temp N/A
BHT N/A

OPERATION DATA

FIRST READING 133.00m
LAST READING 00m
INTERVAL LOGGED 133m
UNIT-TRUCK No 467/217
ENGINEER M.COX
WITNESS

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EQUIPMENT AND RECORDING DATA

| COAL COMBINATION SONDE | | | | | | | | | | | | | | |
|------------------------|-------------------|--------|------------|-----------|--------------|------------------|-------|----------|------|--------------|------|----|----------|---|
| LOG | EQUIPMENT | | | TAPING | | PANEL | | DEPTHS | | SEAM LOG RUN | | | | |
| | SONDE | SOURCE | CALIBRATOR | LOG TAPED | RECORD SPEED | DIRECT or REPLAY | SPEED | T.C SECS | NORM | CAL COEFF | FROM | TO | INTERVAL | |
| GAMMA RAY | | | 367 | Y | 9 | D | 9 | 1 | - | 1.44 | 133 | 0 | 133 | Y |
| L.S. DENSITY | 153 | | 0041 | Y | 9 | D | 9 | .3 | 7.38 | - | 134 | 1 | 133 | Y |
| CALIPER | SIDEWALL POSITION | | | Y | 9 | D | 9 | .3 | - | 1.0 | 134 | 1 | 133 | Y |

| COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log) | | | | | | | | | | |
|---|------|------|-----|-----|-----|-----|--|--|--|----------|
| FROM | 127m | 120m | 97m | 71m | 49m | 14m | | | | INTERVAL |
| TO | 124m | 111m | 90m | 64m | 46m | 10m | | | | TOTAL |
| INTERVAL | 3m | 9m | 7m | 7m | 3m | 4m | | | | 33m |

| ADDITIONAL SONDES RUN | | | | REMARKS | |
|-----------------------|------|-------------------|------------|------------------------------|--|
| SONDE | LOG | GENERAL SCALE LOG | DETAIL LOG | | |
| 215 | N-N | 1:200 | | REFER TO ADDITIONAL HEADINGS | |
| 231 | VERT | | | | |
| 204 | DIP | | | | |

BPB COAL LITHOLOGY LOG

CALIBRATION DATA

| | | | | | | | |
|---------------------------------|----------------|--------------|-----------|-------|-------------------|-----|-----|
| JIG No | VALUE @ 5 DIAM | JIG CAL DATE | JIG VALUE | SDU @ | g/cm ³ | ins | cps |
| JIG MARK SHOWN AT ABOVE VALUE - | | JIG No | SPAN | NORM | SDU = CPS | ins | cps |

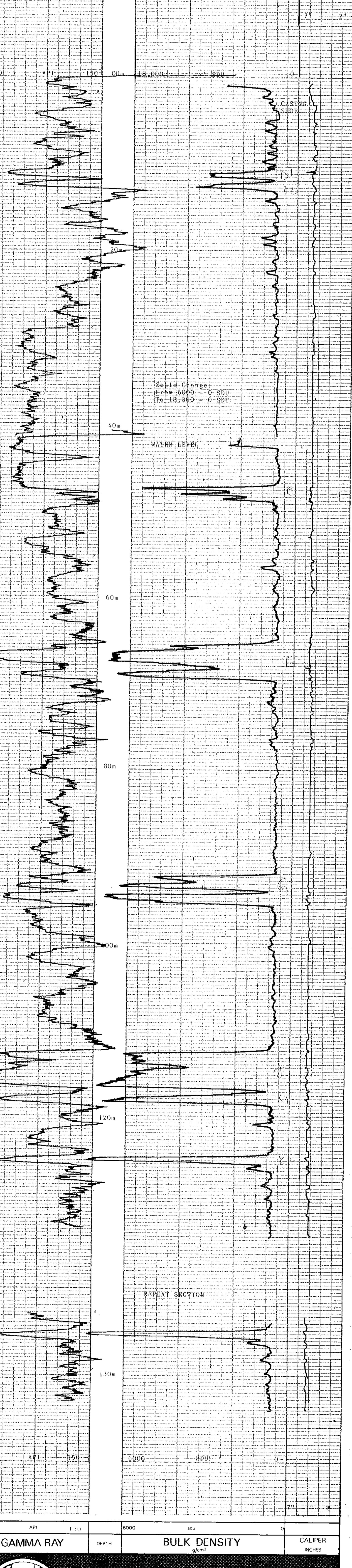
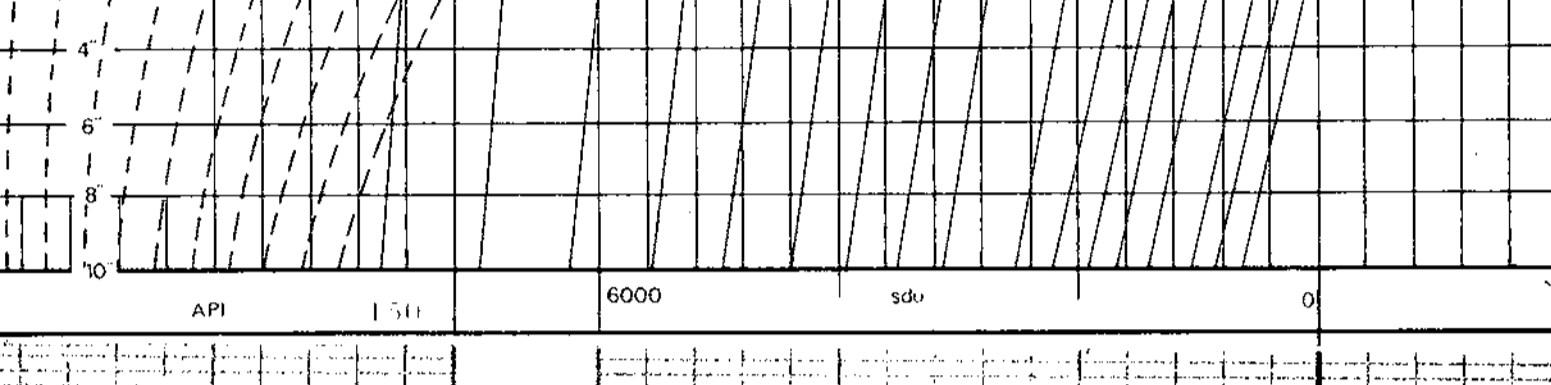
GAMMA RAY

DEPTH

BULK DENSITY g/cm³

CALIPER INCHES

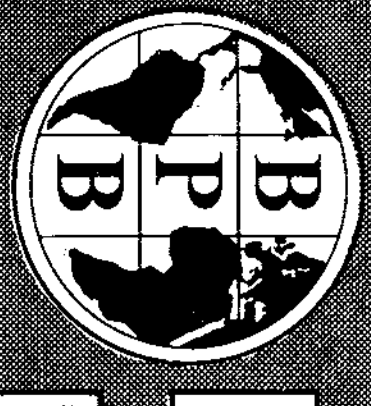
HOLE SIZE CORRECTION DATA



| | | | |
|-----------|---------|--------------------------------|----------------|
| GAMMA RAY | DEPTH | BULK DENSITY g/cm ³ | CALIPER INCHES |
| 0 | API 150 | 6000 | SDU 0 |

BOREHOLE QHR 87-044 AREA TRANSFER
CLIENT QUINLETTE COUNTRY CANADA

COAL LITHOLOGY LOG



NEUTRON-NEUTRON
GAMMA RAY

BOREHOLE OHR 87-044
CLIENT QUINTETTE

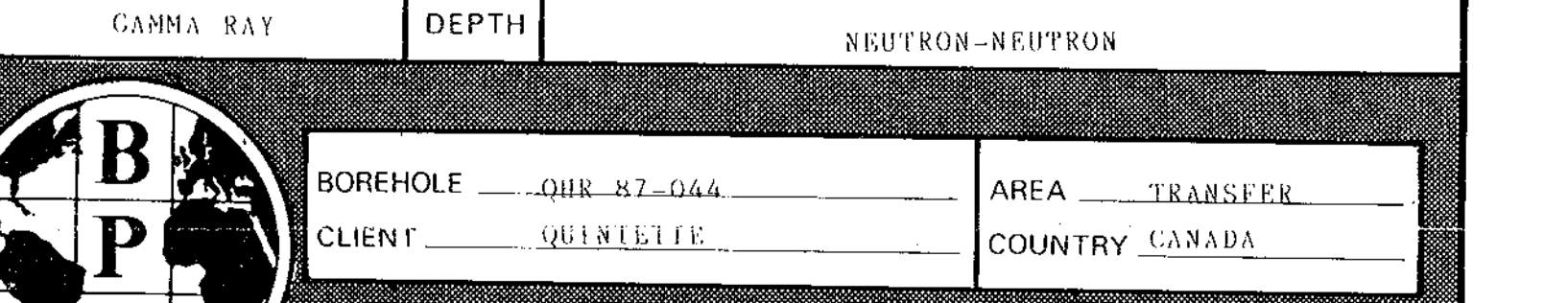
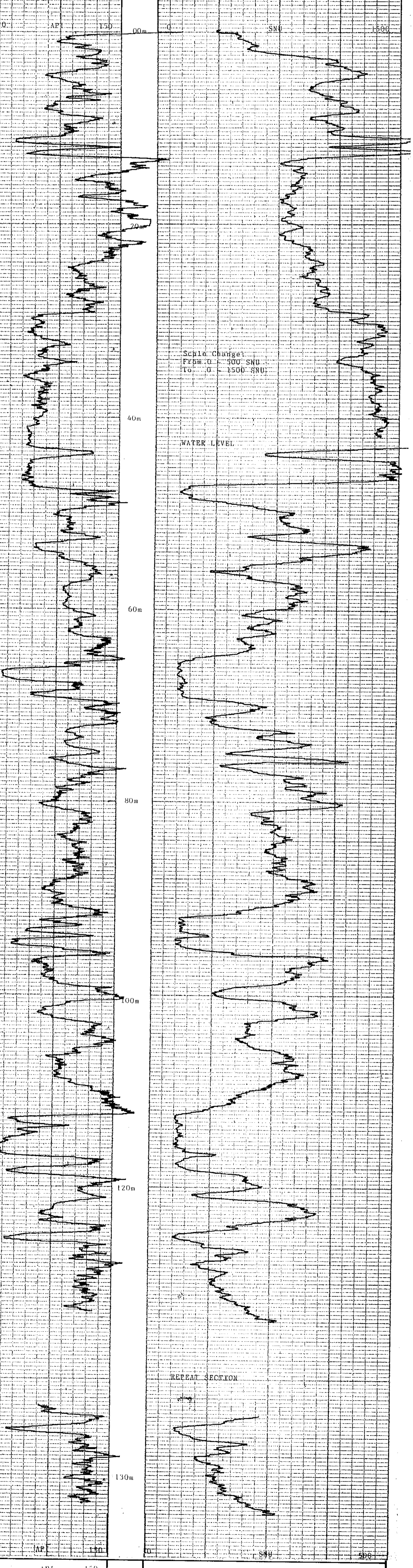
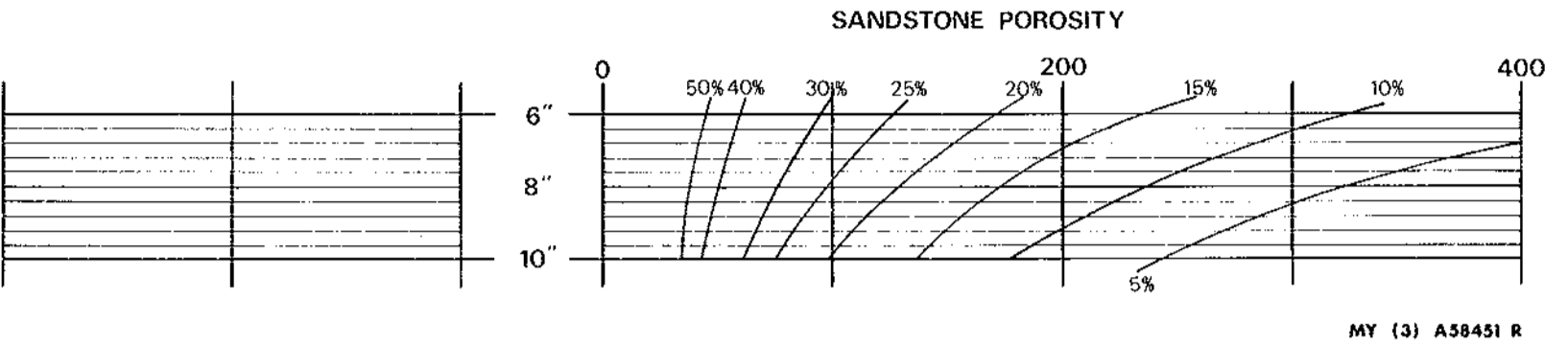
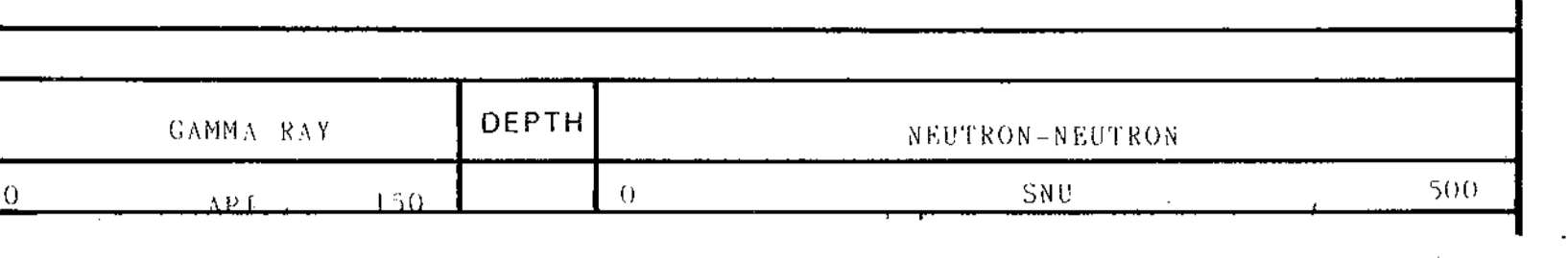
AREA TRANSFER
COUNTRY CANADA
DATE LOGGED 87 08 19

DEPTH SCALE
1-200

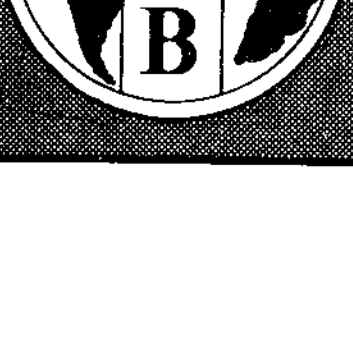
BOREHOLE DATA REFER TO LITHOLOGY LOG
OPERATION DATA REFER TO LITHOLOGY LOG
EQUIPMENT AND RECORDING DATA

| LOG | TAPING | PANEL | DATE |
|-------|--------|-------|-------|
| N-N | Y | 9 | 1 1.6 |
| GAMMA | Y | 9 | 1 .44 |

REMARKS
739



BOREHOLE OHR 87-044
CLIENT QUINTETTE
AREA TRANSFER
COUNTRY CANADA





DIPMETER ANALYSIS

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CLIENT _____
BOREHOLE _____
AREA _____
COUNTRY _____

QUINETTE COAL LTD.
QHR 87044
TRANSFER PIT
CANADA

DATE LOGGED.....19-AUG-87
DATE PROCESSED..04-SEP-87

057



COMMENTS.....

WATER LEVEL @ 42.0M

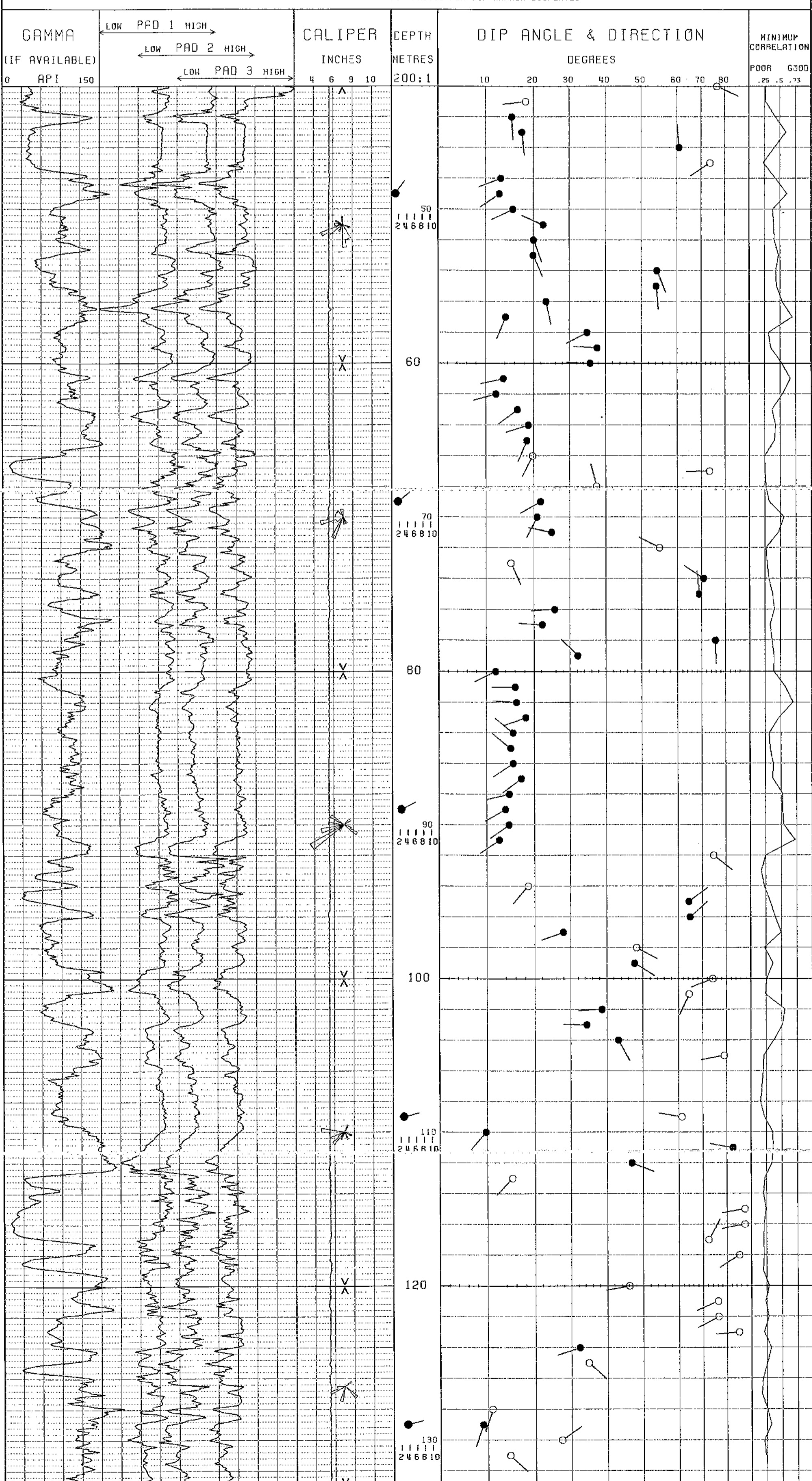
INTERPRETATION PARAMETERS

STEP 1.00M.
INTERVAL 2.00M.
SEARCH ANGLE 80.

DECLINATION 24.0 EAST
DEPTH RANGE 42.00 - 133.03M.
DATE PROCESSED 04-SEP-87

AVERAGE BOREHOLE DEVIATION & DIRECTION
ANNOTATED EVERY 20.0M.
DIP DIAGRAMS SEGMENTED EVERY TEN DEGREES,
.1" RADIUS PER DIP MARKER DISPLAYED

LEGEND:
● GOOD (>0.30)
○ FAIR (>0.20)



058

059

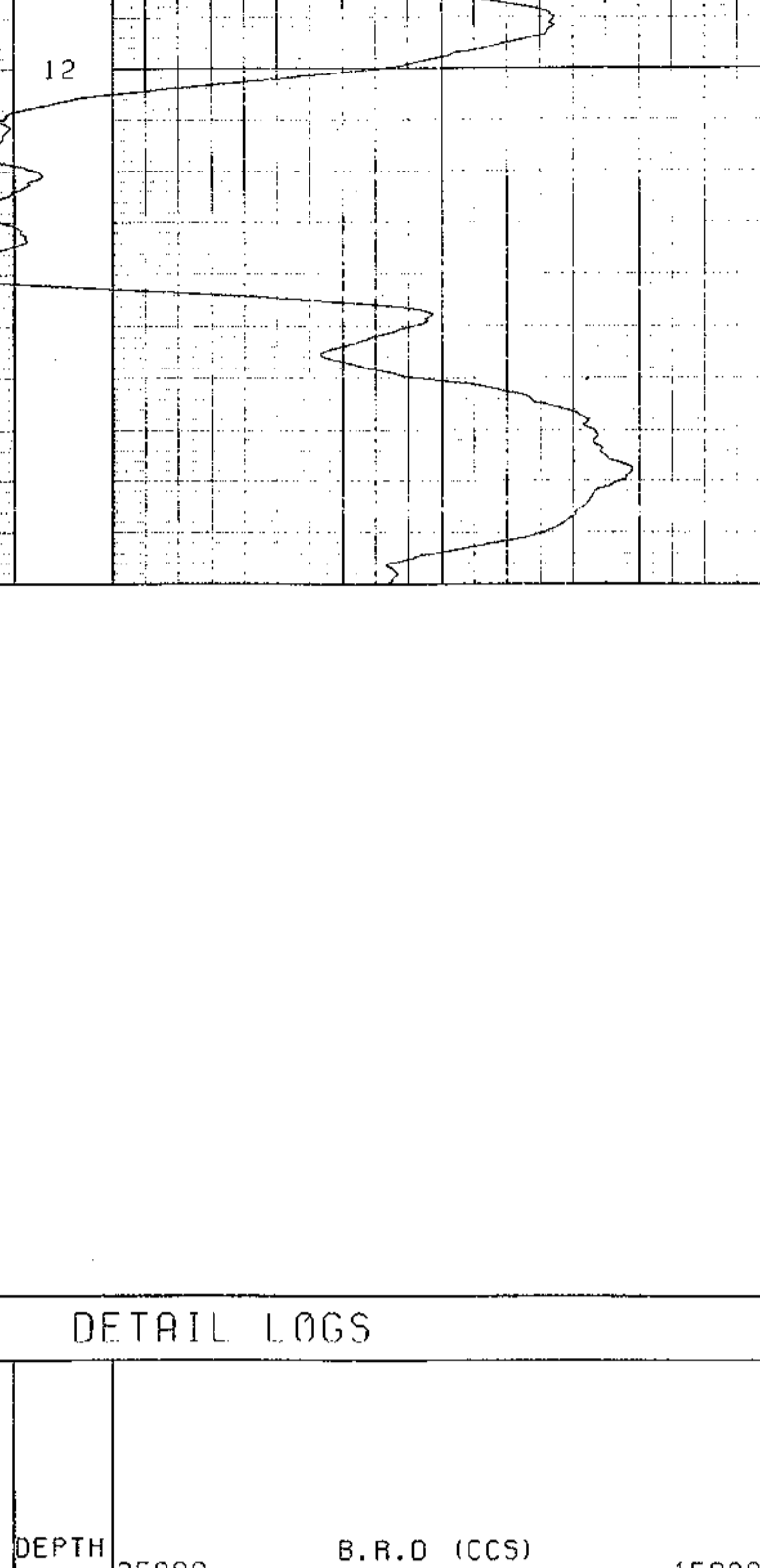
060

DETAIL LOGS

739

DEPTH SCALE 25000 B.R.D (CCS) 15000
CLIENT: QUINTE (ECS)
WELL NO: QHR 87041
AREA: TRANSFER P11
CASING: 3.2M
WATER: 42.8M
DEPTH: 10.00-14.00
DATE PROCESSED: 09-SEP-87

CALIPER 7 2



DETAIL LOGS

DEPTH SCALE 25000 B.R.D (CCS) 15000
CLIENT: QUINTE (ECS)
WELL NO: QHR 87044
AREA: TRANSFER P11
CASING: 3.2M
WATER: 42.8M
DEPTH: 46.00-49.00
DATE PROCESSED: 10-SEP-87

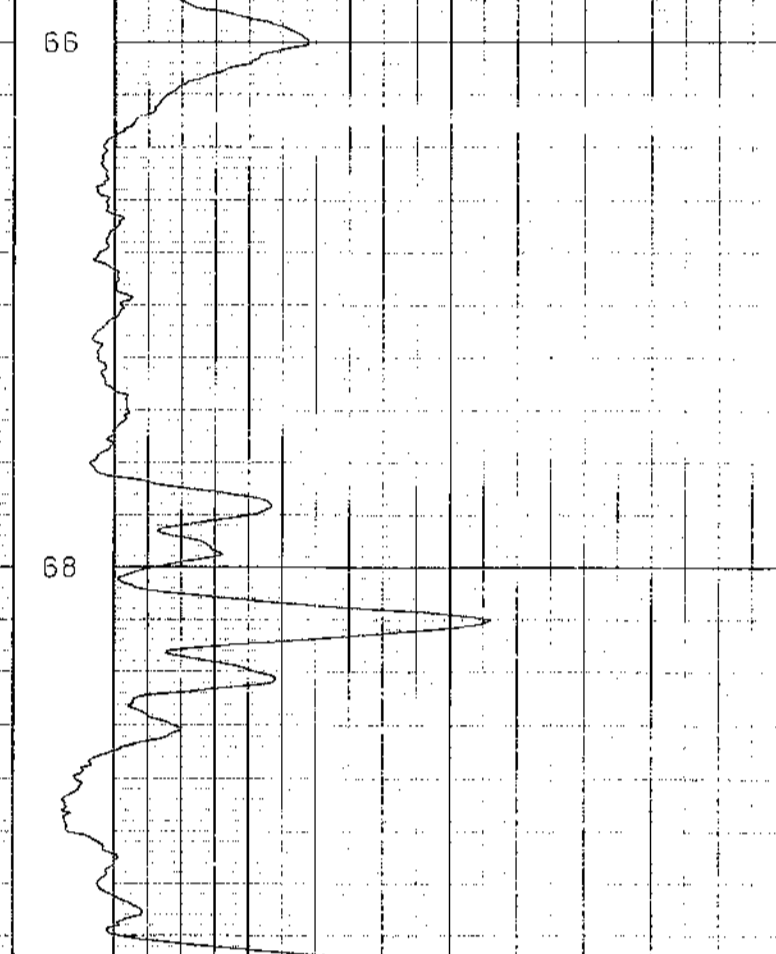
CALIPER 7 2



DETAIL LOGS

DEPTH SCALE 25000 B.R.D (CCS) 15000
CLIENT: QUINTE (ECS)
WELL NO: QHR 87044
AREA: TRANSFER P11
CASING: 3.2M
WATER: 42.8M
DEPTH: 64.00-71.00
DATE PROCESSED: 10-SEP-87

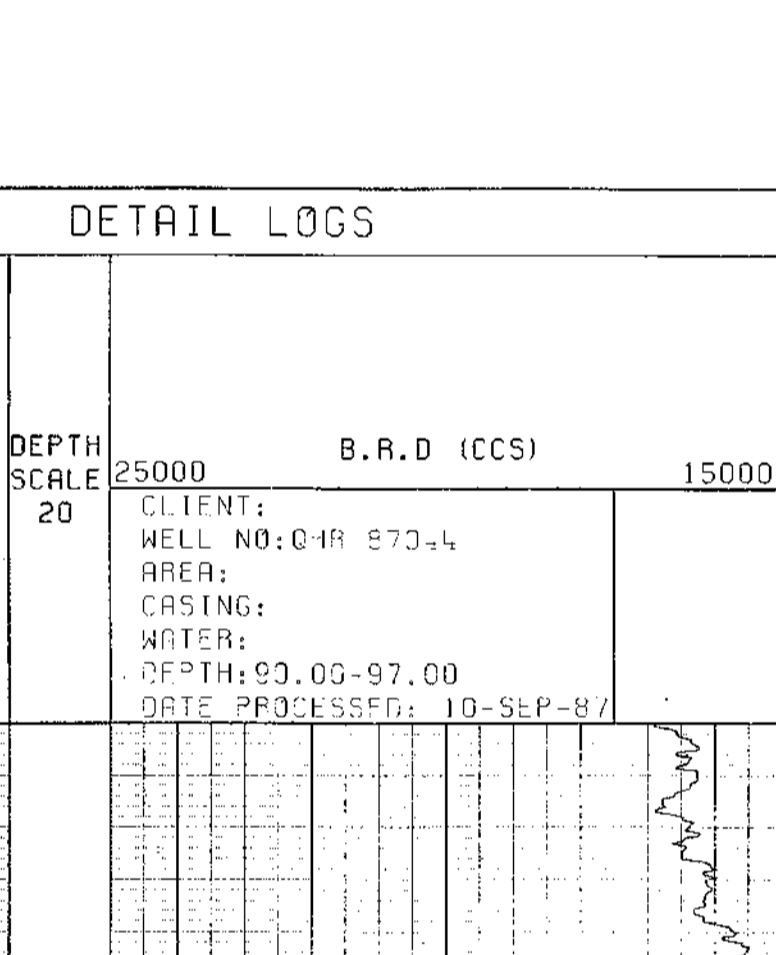
CALIPER 7 2



DETAIL LOGS

DEPTH SCALE 25000 B.R.D (CCS) 15000
CLIENT: QUINTE (ECS)
WELL NO: QHR 87044
AREA: TRANSFER P11
CASING: 3.2M
WATER: 42.8M
DEPTH: 90.00-97.00
DATE PROCESSED: 10-SEP-87

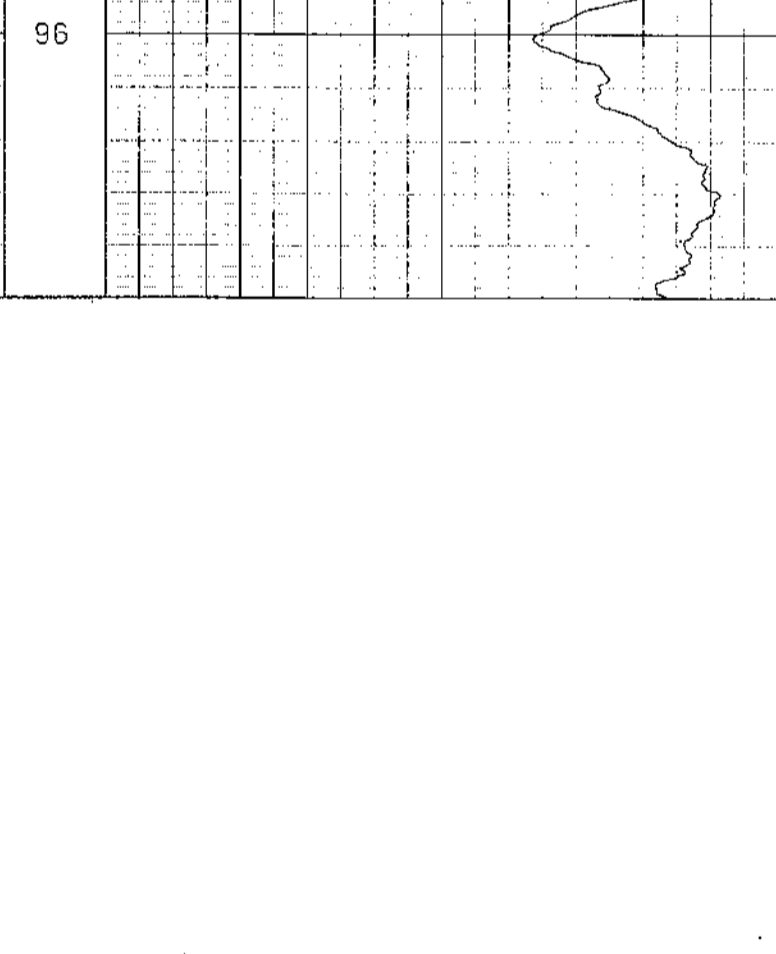
CALIPER 7 2



DETAIL LOGS

DEPTH SCALE 25000 B.R.D (CCS) 15000
CLIENT: QUINTE (ECS)
WELL NO: QHR 87044
AREA: TRANSFER P11
CASING: 3.2M
WATER: 42.8M
DEPTH: 111.00-120.00
DATE PROCESSED: 10-SEP-87

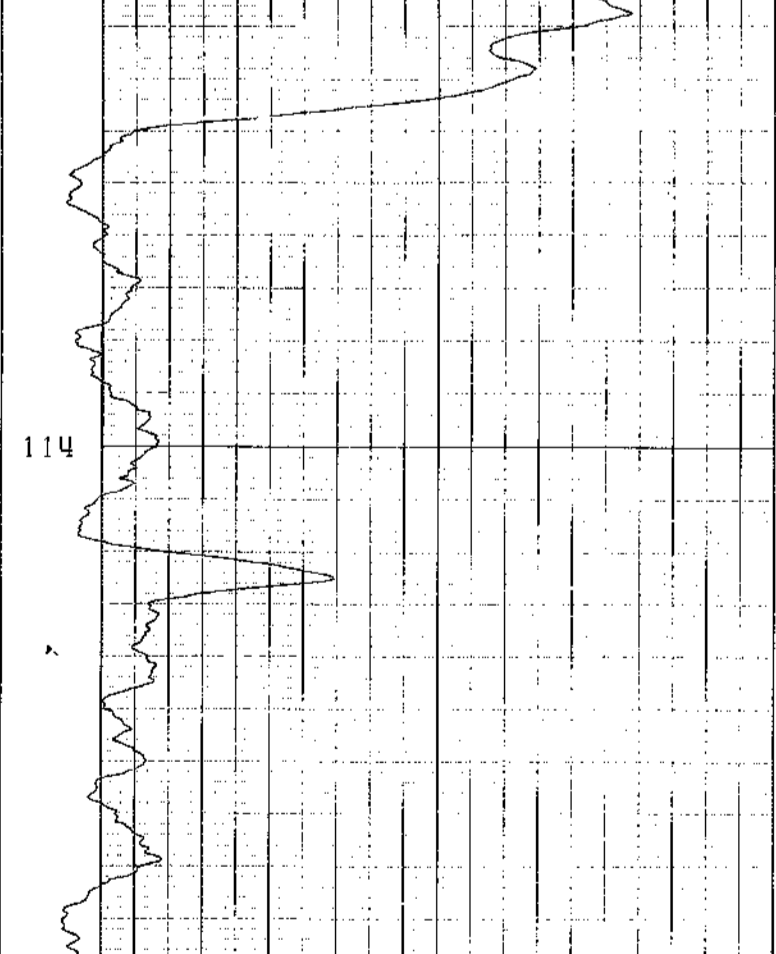
CALIPER 7 2



DETAIL LOGS

DEPTH SCALE 25000 B.R.D (CCS) 15000
CLIENT: QUINTE (ECS)
WELL NO: QHR 87044
AREA: TRANSFER P11
CASING: 3.2M
WATER: 42.8M
DEPTH: 124.00-127.00
DATE PROCESSED: 10-SEP-87

CALIPER 7 2



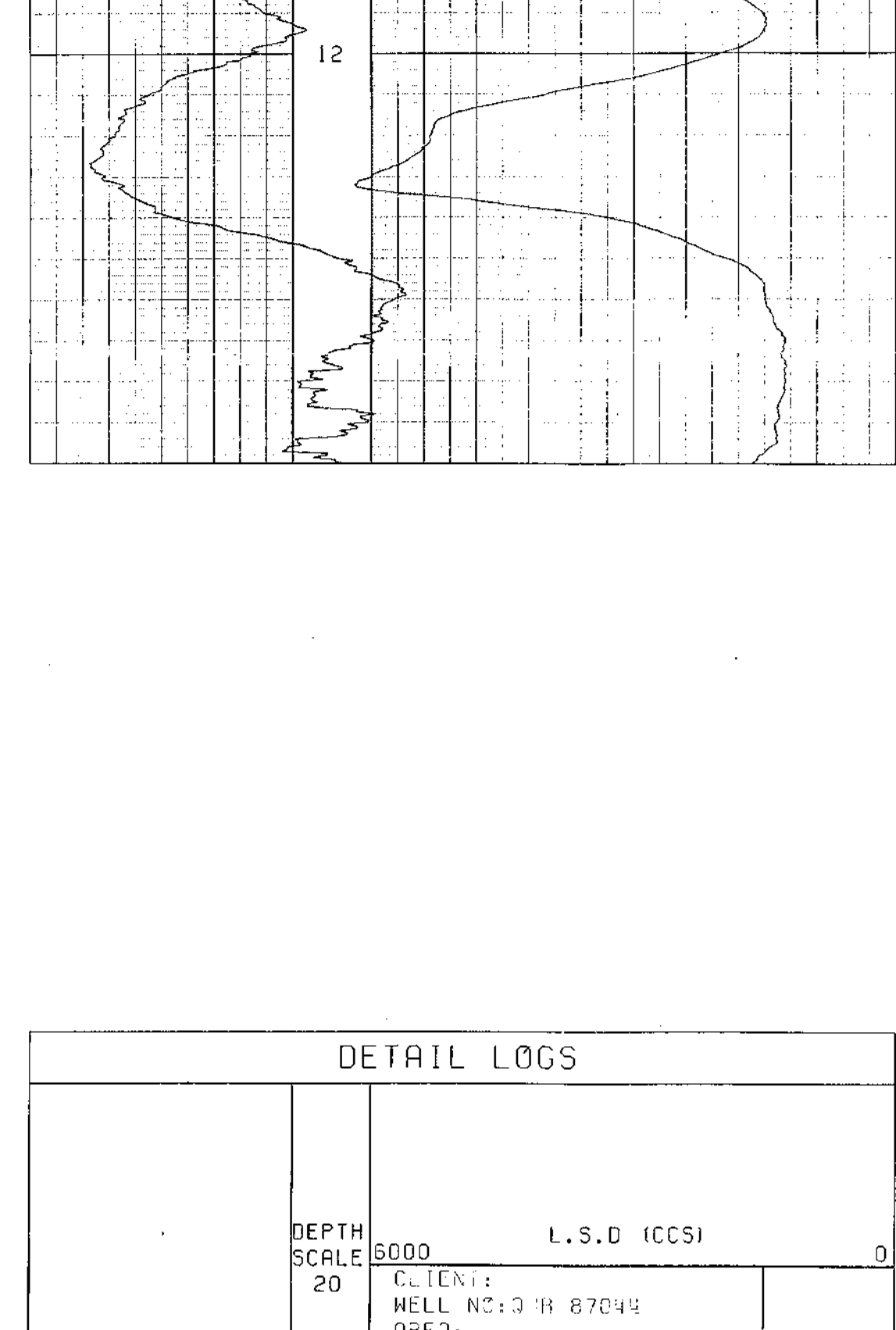
DETAIL LOGS

739

DEPTH SCALE 10000 L.S.D (CCS) 0

CLIENT: QUINETTE COF.
WELL NO: CHP 87044
AREA: TRANSFER PIT
CASING: 3.2M
WATER: 12.8M
DEPTH: 10.00-14.00
DATE PROCESSED: 10-SEP-87

GAMMA RAY

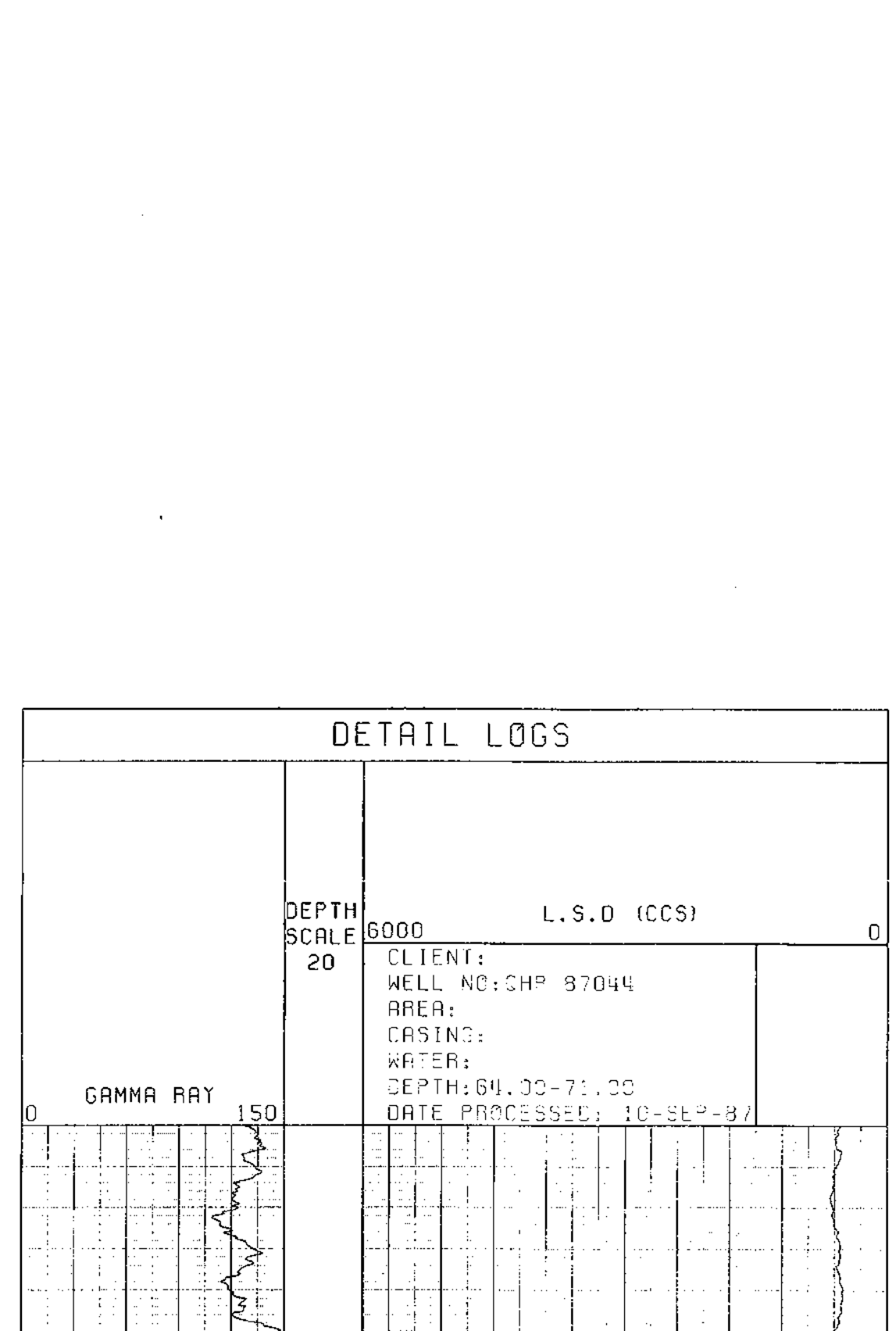


DETAIL LOGS

DEPTH SCALE 6000 L.S.D (CCS) 0

CLIENT: QUINETTE COF.
WELL NO: CHP 87044
AREA: TRANSFER PIT
CASING: 3.2M
WATER: 12.8M
DEPTH: 46.00-49.00
DATE PROCESSED: 10-SEP-87

GAMMA RAY

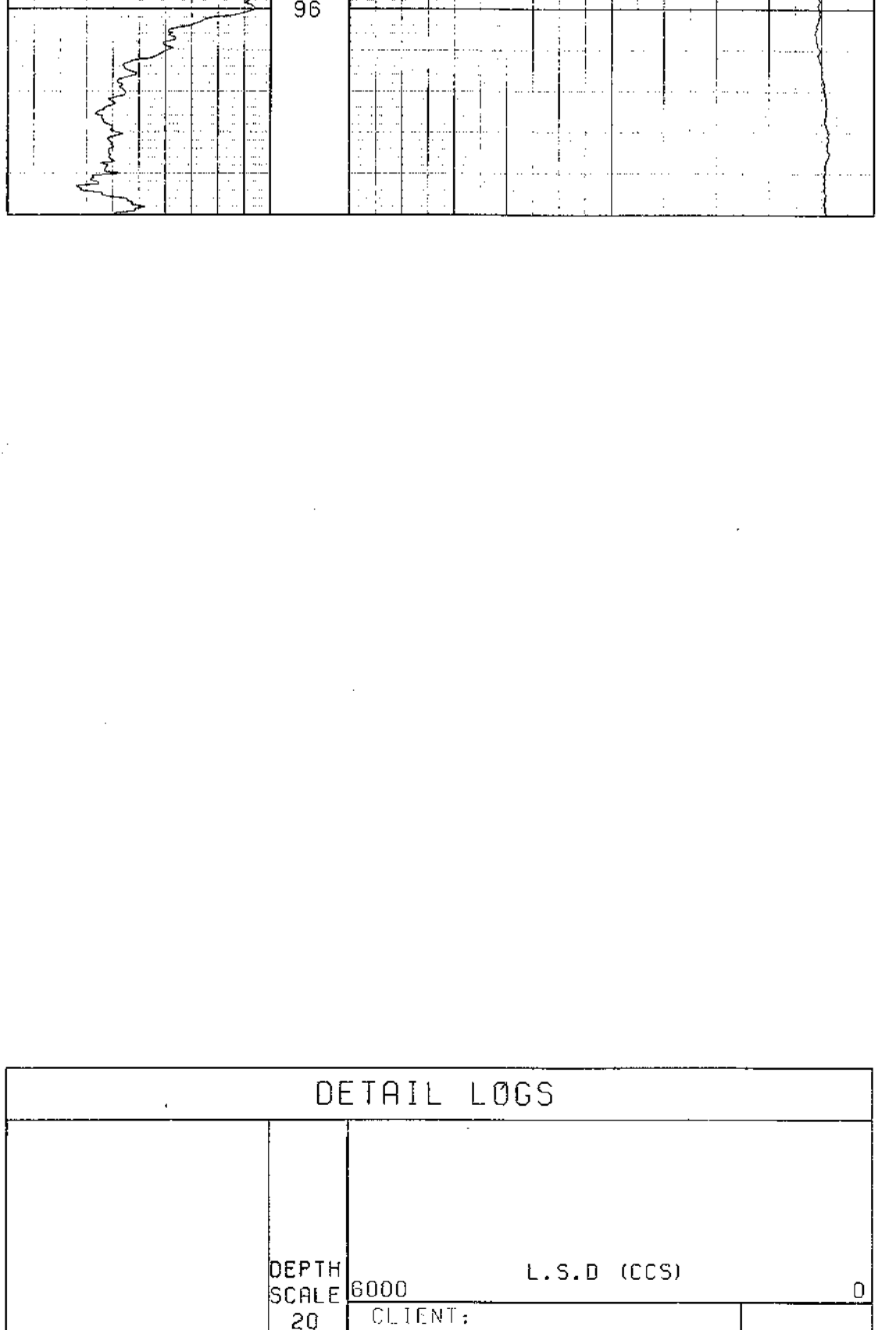


DETAIL LOGS

DEPTH SCALE 6000 L.S.D (CCS) 0

CLIENT: QUINETTE COF.
WELL NO: CHP 87044
AREA: TRANSFER PIT
CASING: 3.2M
WATER: 12.8M
DEPTH: 61.00-71.00
DATE PROCESSED: 10-SEP-87

GAMMA RAY

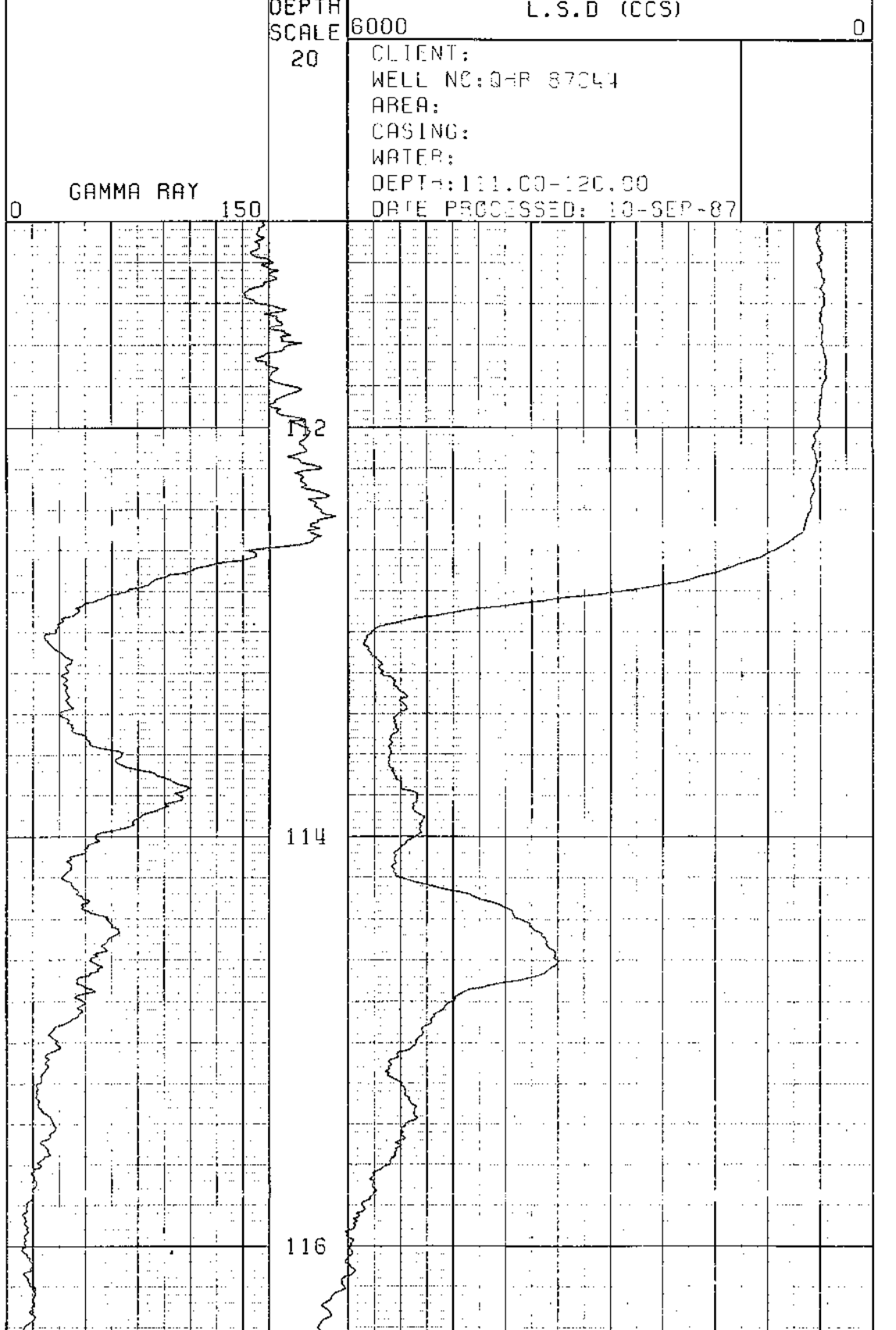


DETAIL LOGS

DEPTH SCALE 6000 L.S.D (CCS) 0

CLIENT: QUINETTE COF.
WELL NO: CHP 87044
AREA: TRANSFER PIT
CASING: 3.2M
WATER: 12.8M
DEPTH: 90.00-97.00
DATE PROCESSED: 10-SEP-87

GAMMA RAY

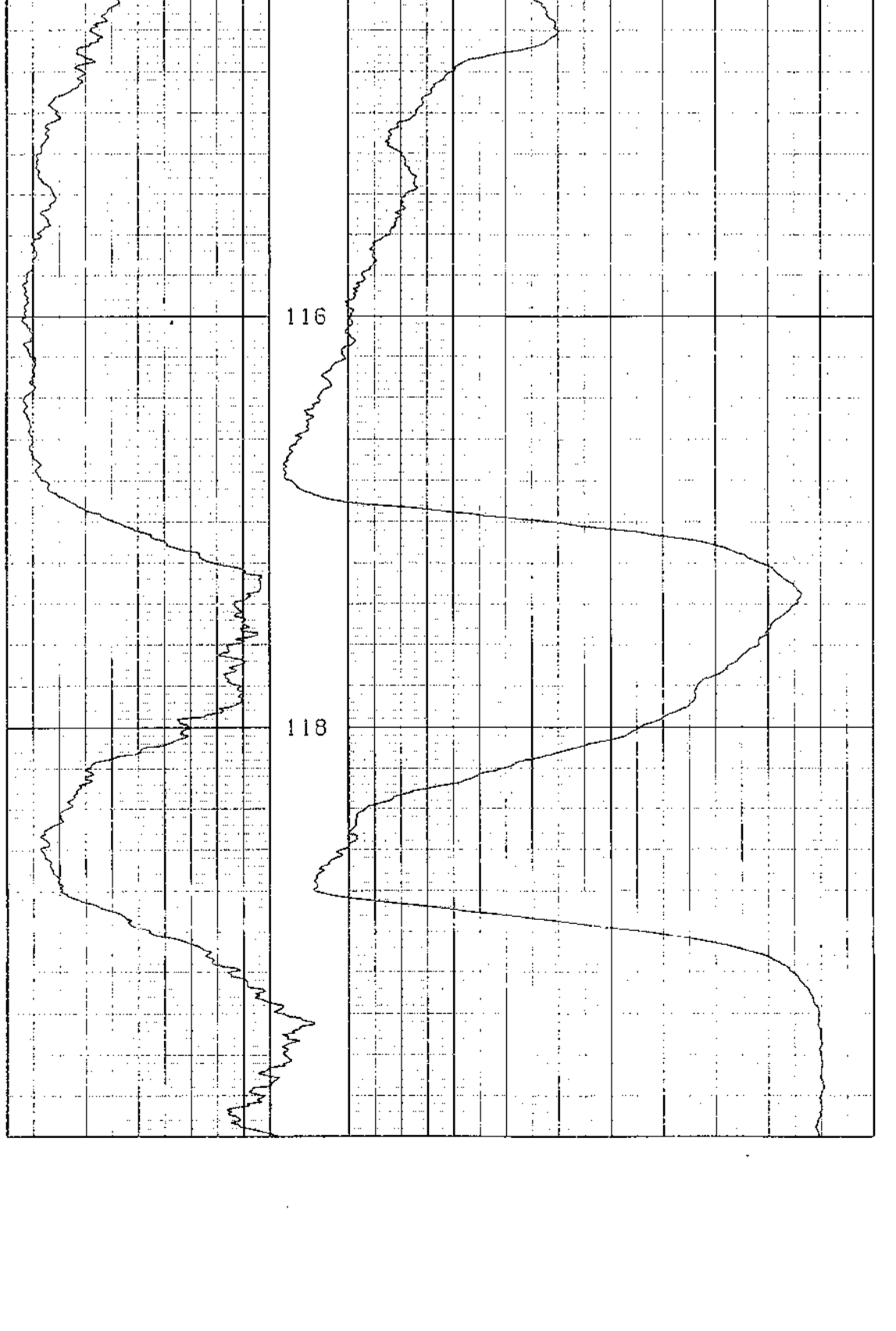


DETAIL LOGS

DEPTH SCALE 6000 L.S.D (CCS) 0

CLIENT: QUINETTE COF.
WELL NO: CHP 87044
AREA: TRANSFER PIT
CASING: 3.2M
WATER: 12.8M
DEPTH: 111.00-120.00
DATE PROCESSED: 10-SEP-87

GAMMA RAY



DETAIL LOGS

DEPTH SCALE 6000 L.S.D (CCS) 0

CLIENT: QUINETTE COF.
WELL NO: CHP 87044
AREA: TRANSFER PIT
CASING: 3.2M
WATER: 12.8M
DEPTH: 124.00-127.00
DATE PROCESSED: 10-SEP-87

GAMMA RAY



BPB DIPMETER ANALYSIS
INTERPRETATION NOTES

- All plots are correct to the resolution of the plotter used, ie. one hundredth of an inch. Vertical resolution may vary by up to one percent but each plot is correct within itself, the plotted data being dynamically merged with its gridded background. Plots exceeding eight metres in length will be split into multiples thereof, however there is no data loss associated with this subdivision.
- Rose diagrams are plotted between every major division and are delimited by two bold arrows. For certain replay scales it may be desirable to plot these less frequently; this option is available on request.
- The borehole tilt and azimuth displayed on the plot are the average values over the whole major division.
- The replay scale for pads 1, 2 & 3 are designed to give the maximum visual effect over the plotted interval. Replaying shorter sections of the curve will enhance this display.
- The grid over which the computed dip information is displayed is locally linear. That is to say it is linear between 0 & 10, degrees, 10 & 20, 20 & 30 etc.
- The correlation value will vary depending upon the interval size selected. Generally speaking the larger the correlation interval, the lower the value becomes. For this reason a direct comparison of this value for differing correlation intervals is meaningless, quality control being exercised with an appreciation of this effect.
- For customised control of computed dipmeter analysis the following parameters must be specified:
 correlation step and interval(s)
 magnetic declination (ie. the difference between true and magnetic North)
 search angle(s)
 depth range(s)
 replay scale(s)
 the frequency for rose diagrams
 (quality control is exercised in accordance with the correlation interval used, alternatively all correlations may be displayed on request)

The following information is a listing of ALL the output from BPB's dipmeter analysis. The data is subdivided into three consecutive sets of data readings, being read from left to right. Below is a full description of each data item:

DEPTH the depth corresponding to the centre of the correlation interval
 CALIPER the average borehole caliper recorded over the correlation interval
 HOLE DRIFT the average borehole deviation from vertical over the correlation interval
 HOLE AZIMUTH the average borehole azimuth over the correlation interval in degrees East of true North
 DIP ANGLE the computed formation dip in degrees, from the horizontal plane
 DIP AZIMUTH the formation azimuth in degrees East from true North
 CORRELATION a measure of the reliability of the computed result. This parameter is also used in the visual display to determine the quality of result

Further recorrelations over any step & interval size are available on any scale over any section of the log. Alternative methods of presentation, or analysis may be made available on request.

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| Magnetic declination 24.00 degrees East of North | | | | | | | | | | | | | | | |
|---|------|----------|-----------|-----------|--------|------|----------|-----------|-----------|--------|------|----------|-----------|-----------|--|
| Correlation step 1.00 metres ,interval 2.00 metres Search angle 80, degrees | | | | | | | | | | | | | | | |
| Ø4-SEP-87 PAGE 1 | | | | | | | | | | | | | | | |
| DEPTH | CAL. | BOREHOLE | FORMATION | MIN. | DEPTH | CAL. | BOREHOLE | FORMATION | MIN. | DEPTH | CAL. | BOREHOLE | FORMATION | MIN. | |
| metres | ins. | TILT AZI | DIP AZI | COR. | metres | ins. | TILT AZI | DIP AZI | COR. | metres | ins. | TILT AZI | DIP AZI | COR. | |
| 42.00 | 5.6 | 2.3 | 62. 76.6 | 115. 0.27 | 43.00 | 5.6 | 2.3 | 63. 18.4 | 263. 0.27 | 44.00 | 5.6 | 2.4 | 63. 15.4 | 178. 0.42 | |
| 45.00 | 5.6 | 2.4 | 63. 17.6 | 174. 0.59 | 46.00 | 5.6 | 2.3 | 63. 60.7 | 355. 0.41 | 47.00 | 5.6 | 2.3 | 63. 73.7 | 236. 0.23 | |
| 48.00 | 5.6 | 2.3 | 65. 13.2 | 249. 0.42 | 49.00 | 5.6 | 2.3 | 66. 12.9 | 235. 0.61 | 50.00 | 5.5 | 2.3 | 65. 15.7 | 244. 0.38 | |
| 51.00 | 5.6 | 2.3 | 65. 23.0 | 294. 0.40 | 52.00 | 5.6 | 2.3 | 66. 20.0 | 161. 0.41 | 53.00 | 5.5 | 2.3 | 67. 19.9 | 157. 0.47 | |
| 54.00 | 5.6 | 2.3 | 68. 54.9 | 158. 0.43 | 55.00 | 5.5 | 2.3 | 68. 54.6 | 175. 0.44 | 56.00 | 5.5 | 2.4 | 68. 23.8 | 169. 0.53 | |
| 57.00 | 5.6 | 2.4 | 68. 14.1 | 202. 0.69 | 58.00 | 5.5 | 2.4 | 69. 35.4 | 243. 0.31 | 59.00 | 5.5 | 2.4 | 70. 38.6 | 274. 0.35 | |
| 60.00 | 5.5 | 2.4 | 72. 36.4 | 273. 0.53 | 61.00 | 5.6 | 2.5 | 73. 13.7 | 257. 0.66 | 62.00 | 5.6 | 2.6 | 73. 12.1 | 254. 0.54 | |
| 63.00 | 5.6 | 2.6 | 74. 16.6 | 233. 0.37 | 64.00 | 5.6 | 2.7 | 74. 18.9 | 253. 0.42 | 65.00 | 5.6 | 2.7 | 75. 18.5 | 202. 0.40 | |
| 66.00 | 5.6 | 2.8 | 75. 19.7 | 206. 0.25 | 67.00 | 5.6 | 2.8 | 75. 73.4 | 269. 0.25 | 68.00 | 5.6 | 2.9 | 77. 38.3 | 346. 0.27 | |
| 69.00 | 5.5 | 2.9 | 78. 22.1 | 241. 0.32 | 70.00 | 5.5 | 3.0 | 77. 21.0 | 207. 0.56 | 71.00 | 5.5 | 3.0 | 76. 25.5 | 281. 0.47 | |
| 72.00 | 5.5 | 3.1 | 76. 55.6 | 298. 0.27 | 73.00 | 5.5 | 3.1 | 76. 15.2 | 157. 0.29 | 74.00 | 5.5 | 3.2 | 77. 70.8 | 304. 0.32 | |
| 75.00 | 5.5 | 3.2 | 76. 69.0 | 355. 0.37 | 76.00 | 5.5 | 3.2 | 76. 26.5 | 268. 0.40 | 77.00 | 5.5 | 3.2 | 75. 22.6 | 273. 0.33 | |
| 78.00 | 5.5 | 3.3 | 75. 75.8 | 180. 0.36 | 79.00 | 5.5 | 3.4 | 75. 32.4 | 315. 0.39 | 80.00 | 5.5 | 3.5 | 75. 11.9 | 244. 0.39 | |
| 81.00 | 5.5 | 3.6 | 75. 16.0 | 270. 0.57 | 82.00 | 5.5 | 3.7 | 74. 16.3 | 274. 0.69 | 83.00 | 5.5 | 3.7 | 74. 18.2 | 251. 0.47 | |
| 84.00 | 5.5 | 3.8 | 74. 15.5 | 309. 0.31 | 85.00 | 5.5 | 3.9 | 73. 15.0 | 310. 0.33 | 86.00 | 5.5 | 4.0 | 73. 15.5 | 235. 0.30 | |
| 87.00 | 5.5 | 4.1 | 72. 17.2 | 233. 0.37 | 88.00 | 5.5 | 4.3 | 72. 14.7 | 256. 0.53 | 89.00 | 5.5 | 4.4 | 71. 13.9 | 240. 0.53 | |
| 90.00 | 5.5 | 4.5 | 71. 14.6 | 234. 0.54 | 91.00 | 5.5 | 4.7 | 71. 12.6 | 235. 0.72 | 92.00 | 5.5 | 4.8 | 71. 74.7 | 128. 0.25 | |
| 93.00 | 5.5 | 4.8 | 70. 59.0 | 273. 0.17 | 94.00 | 5.5 | 4.9 | 70. 18.6 | 219. 0.23 | 95.00 | 5.5 | 4.9 | 69. 64.3 | 53. 0.32 | |
| 96.00 | 5.5 | 5.0 | 69. 64.7 | 48. 0.40 | 97.00 | 5.5 | 4.9 | 68. 28.9 | 251. 0.49 | 98.00 | 5.5 | 4.9 | 68. 49.3 | 110. 0.22 | |
| 99.00 | 5.5 | 4.9 | 68. 48.7 | 122. 0.37 | 100.00 | 5.5 | 5.1 | 69. 74.2 | 249. 0.26 | 101.00 | 5.5 | 5.2 | 70. 64.4 | 205. 0.24 | |
| 102.00 | 5.5 | 5.3 | 70. 39.7 | 267. 0.55 | 103.00 | 5.5 | 5.4 | 70. 34.9 | 271. 0.51 | 104.00 | 5.5 | 5.4 | 69. 43.5 | 152. 0.38 | |
| 105.00 | 5.5 | 5.4 | 69. 78.9 | 260. 0.21 | 106.00 | 5.5 | 5.4 | 69. 51.4 | 123. 0.20 | 107.00 | 5.5 | 5.4 | 69. 81.6 | 285. 0.18 | |
| 108.00 | 5.5 | 5.4 | 69. 63.6 | 112. 0.16 | 109.00 | 5.5 | 5.4 | 69. 61.3 | 279. 0.22 | 110.00 | 5.5 | 5.4 | 69. 9.7 | 220. 0.35 | |
| 111.00 | 5.5 | 5.6 | 69. 82.5 | 279. 0.36 | 112.00 | 5.5 | 5.8 | 69. 47.7 | 112. 0.34 | 113.00 | 5.5 | 5.9 | 70. 15.2 | 223. 0.22 | |
| 114.00 | 5.5 | 5.8 | 69. 65.3 | 115. 0.20 | 115.00 | 5.5 | 5.8 | 69. 87.5 | 261. 0.24 | 116.00 | 5.5 | 5.8 | 69. 87.4 | 260. 0.21 | |
| 117.00 | 5.5 | 5.9 | 69. 72.4 | 28. 0.20 | 118.00 | 5.5 | 6.0 | 69. 85.1 | 238. 0.21 | 119.00 | 5.5 | 6.1 | 69. 82.2 | 275. 0.19 | |
| 120.00 | 5.5 | 6.2 | 69. 46.8 | 259. 0.29 | 121.00 | 5.5 | 6.3 | 69. 76.1 | 246. 0.23 | 122.00 | 5.5 | 6.5 | 68. 76.3 | 243. 0.28 | |
| 123.00 | 5.5 | 6.5 | 67. 85.0 | 265. 0.21 | 124.00 | 5.5 | 6.6 | 66. 32.5 | 251. 0.32 | 125.00 | 5.5 | 6.7 | 67. 35.4 | 133. 0.26 | |
| 126.00 | 5.5 | 6.8 | 66. 40.2 | 112. 0.19 | 127.00 | 5.5 | 7.0 | 66. 43.8 | 101. 0.17 | 128.00 | 5.5 | 7.3 | 66. 10.9 | 199. 0.25 | |
| 129.00 | 5.5 | 7.6 | 65. 8.9 | 198. 0.32 | 130.00 | 5.5 | 7.8 | 64. 28.1 | 54. 0.21 | 131.00 | 5.5 | 8.2 | 64. 14.6 | 134. 0.23 | |

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CONTINUOUS VERTICALITY ANALYSIS

CLIENT_____

QUINTETTE COAL

BOREHOLE_____

QHR-87-044

AREA_____

TRANSFER

COUNTRY_____

CANADA

DATE LOGGED.....20-AUG-87

DATE PROCESSED..08-JAN-88

UPPER REFERENCE POINT.....

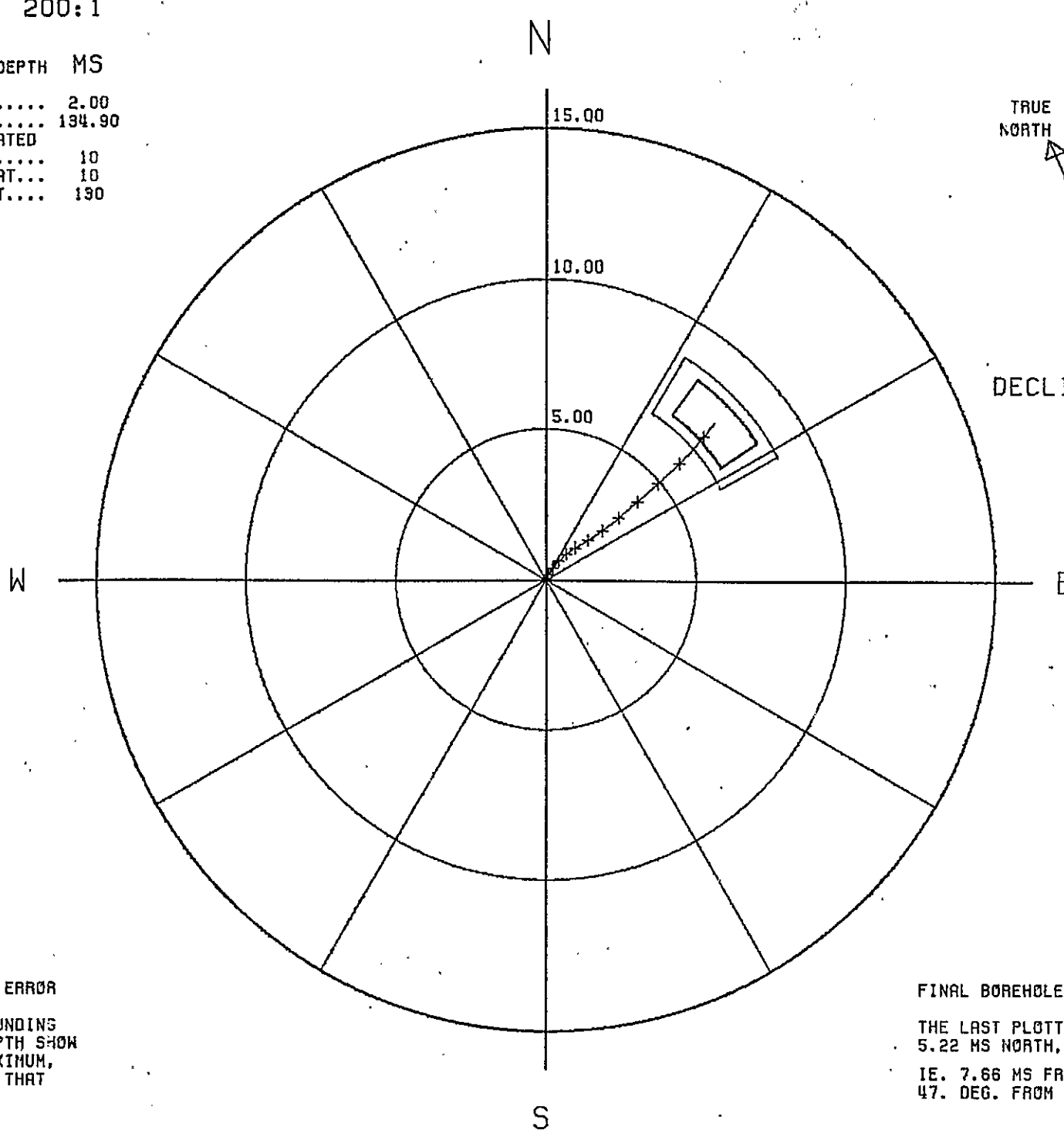
LOWER REFERENCE POINT....T.D.

CROSS-SECTION

SCALE: 200:1

ALL FIGURES IN LOG DEPTH MS

| | |
|--------------------------|--------|
| TARGET ORIGIN DEPTH..... | 2.00 |
| LAST PLOTTED DEPTH..... | 134.90 |
| DEPTH MARKERS ANNOTATED | |
| IN MULTIPLES OF..... | 10 |
| FIRST DEPTH MARKER AT... | 10 |
| LAST DEPTH MARKER AT.... | 130 |



DECLINATION 24.0 DEG.

BOREHOLE POSITIONAL ERROR

THE TWO BOXES SURROUNDING THE LAST PLOTTED DEPTH SHOW THE TYPICAL, AND MAXIMUM, POSITIONAL ERROR AT THAT DEPTH.

FINAL BOREHOLE POSITION

THE LAST PLOTTED DEPTH IS AT
 5.22 MS NORTH, 5.61 MS EAST
 IE. 7.66 MS FROM THE ORIGIN,
 47. DEG. FROM MAGNETIC NORTH

VERTICAL SECTIONS

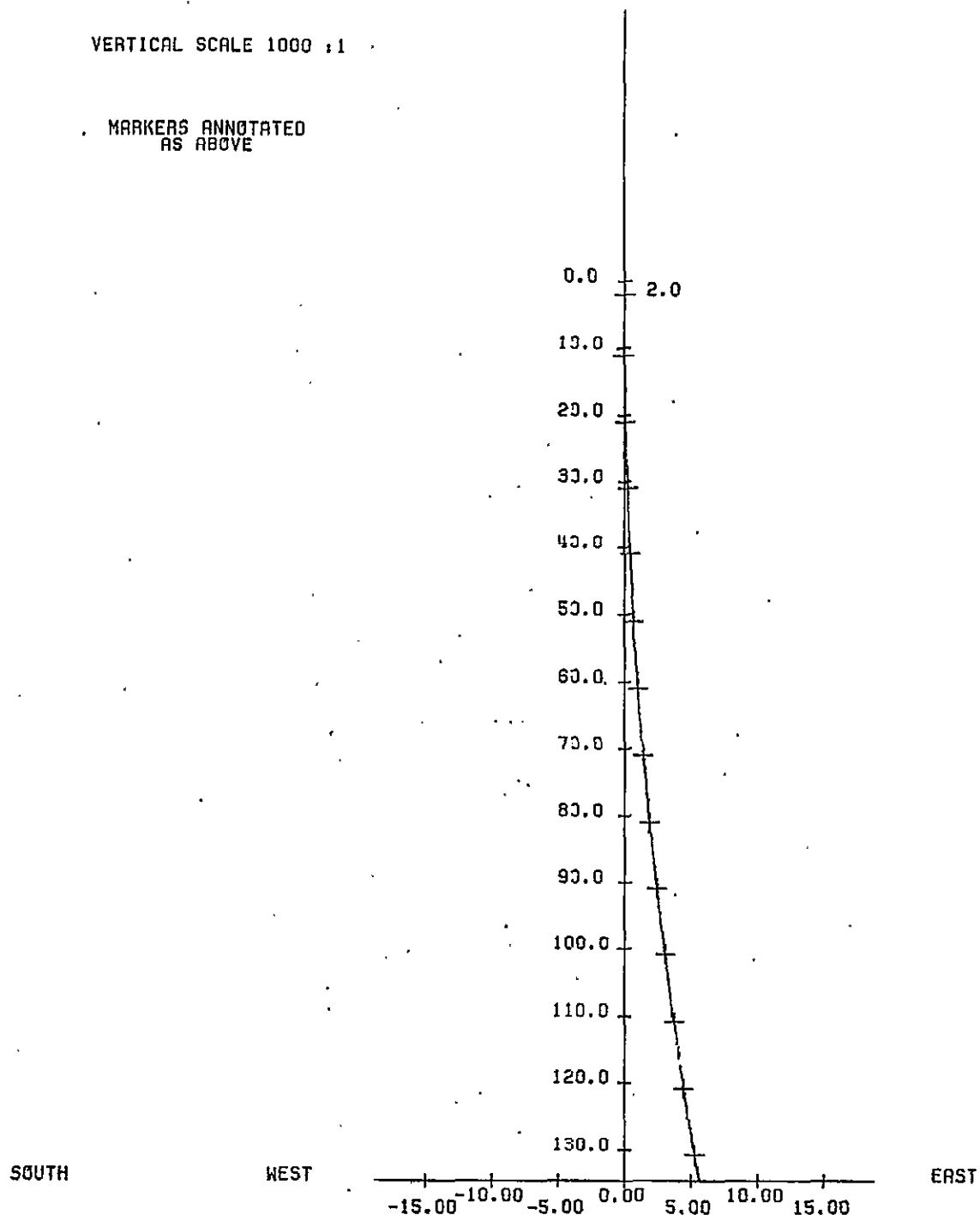
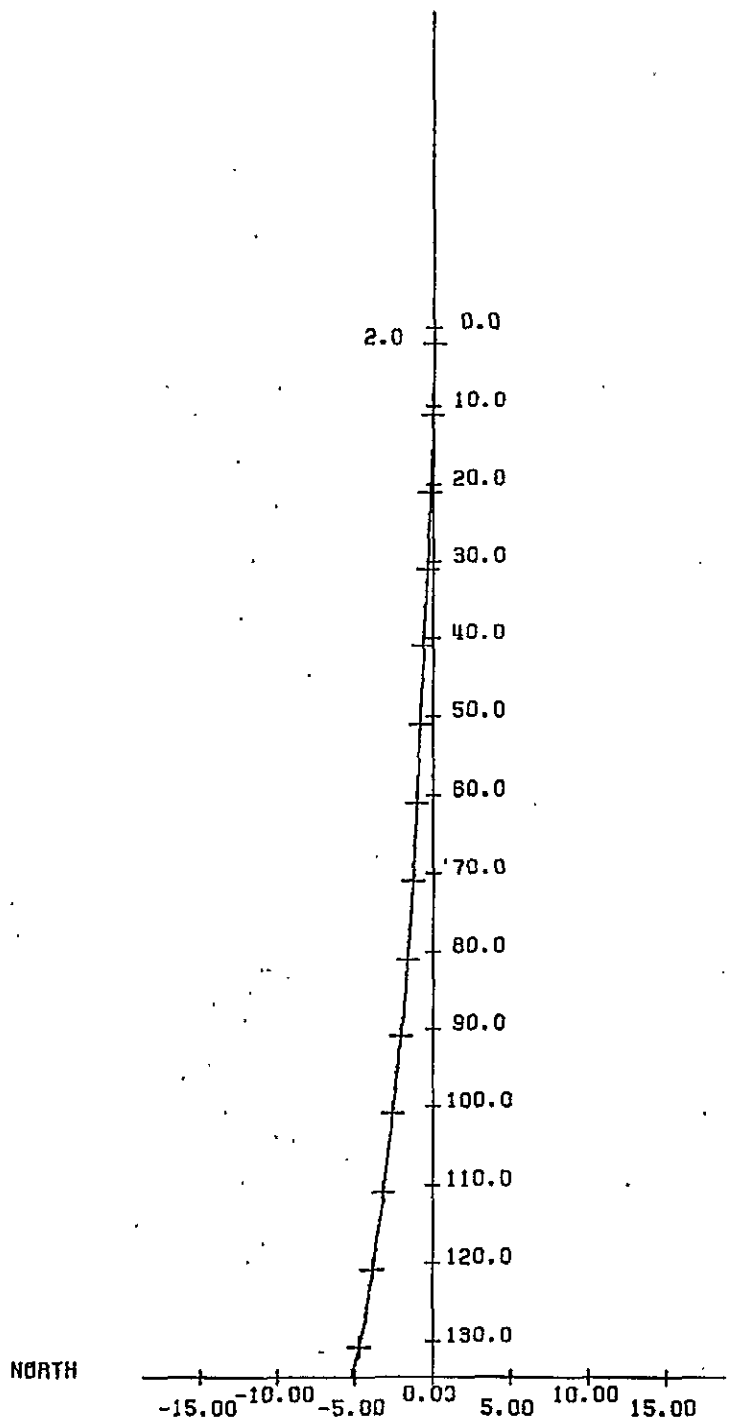
(TRUE DEPTH VS. DISPLACEMENT)

N-S SECTION

W-E SECTION

VERTICAL SCALE 1000 : 1

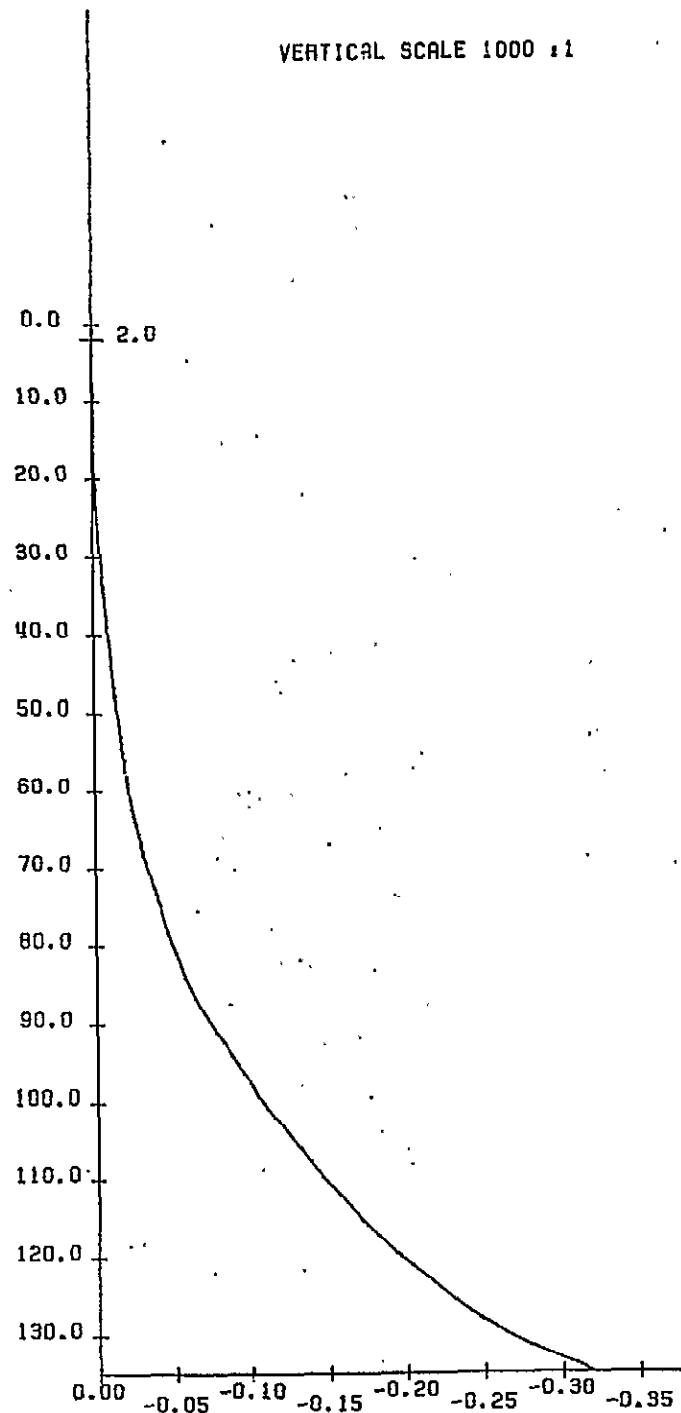
MARKERS ANNOTATED
AS ABOVE



DEPTH CORRECTION ANALYSIS

LOG
DEPTH

VERTICAL SCALE 1000 : 1



CORRECTION FOR TRUE DEPTH
SCALE 5 : 1

| DEPTHS: | | DEPTHS: | |
|---------|-------|---------|--------|
| LOG | TRUE | LOG | TRUE |
| 3.00 | 3.00 | 73.00 | 72.96 |
| 4.00 | 4.00 | 74.00 | 73.96 |
| 5.00 | 5.00 | 75.00 | 74.96 |
| 6.00 | 6.00 | 76.00 | 75.96 |
| 7.00 | 7.00 | 77.00 | 76.96 |
| 8.00 | 8.00 | 78.00 | 77.95 |
| 9.00 | 9.00 | 79.00 | 78.95 |
| 10.00 | 10.00 | 80.00 | 79.95 |
| 11.00 | 11.00 | 81.00 | 80.95 |
| 12.00 | 12.00 | 82.00 | 81.95 |
| 13.00 | 13.00 | 83.00 | 82.94 |
| 14.00 | 14.00 | 84.00 | 83.94 |
| 15.00 | 15.00 | 85.00 | 84.94 |
| 16.00 | 16.00 | 86.00 | 85.94 |
| 17.00 | 17.00 | 87.00 | 86.93 |
| 18.00 | 18.00 | 88.00 | 87.93 |
| 19.00 | 19.00 | 89.00 | 88.93 |
| 20.00 | 20.00 | 90.00 | 89.93 |
| 21.00 | 21.00 | 91.00 | 90.92 |
| 22.00 | 22.00 | 92.00 | 91.92 |
| 23.00 | 23.00 | 93.00 | 92.92 |
| 24.00 | 24.00 | 94.00 | 93.91 |
| 25.00 | 25.00 | 95.00 | 94.91 |
| 26.00 | 26.00 | 96.00 | 95.91 |
| 27.00 | 27.00 | 97.00 | 96.90 |
| 28.00 | 28.00 | 98.00 | 97.90 |
| 29.00 | 29.00 | 99.00 | 98.90 |
| 30.00 | 30.00 | 100.00 | 99.89 |
| 31.00 | 30.99 | 101.00 | 100.89 |
| 32.00 | 31.99 | 102.00 | 101.88 |
| 33.00 | 32.99 | 103.00 | 102.88 |
| 34.00 | 33.99 | 104.00 | 103.88 |
| 35.00 | 34.99 | 105.00 | 104.87 |
| 36.00 | 35.99 | 106.00 | 105.87 |
| 37.00 | 36.99 | 107.00 | 106.86 |
| 38.00 | 37.99 | 108.00 | 107.86 |
| 39.00 | 38.99 | 109.00 | 108.86 |
| 40.00 | 39.99 | 110.00 | 109.85 |
| 41.00 | 40.99 | 111.00 | 110.85 |
| 42.00 | 41.99 | 112.00 | 111.84 |
| 43.00 | 42.99 | 113.00 | 112.84 |
| 44.00 | 43.99 | 114.00 | 113.83 |
| 45.00 | 44.99 | 115.00 | 114.83 |
| 46.00 | 45.99 | 116.00 | 115.82 |
| 47.00 | 46.99 | 117.00 | 116.82 |
| 48.00 | 47.99 | 118.00 | 117.81 |
| 49.00 | 48.99 | 119.00 | 118.81 |
| 50.00 | 49.99 | 120.00 | 119.80 |
| 51.00 | 50.98 | 121.00 | 120.80 |
| 52.00 | 51.98 | 122.00 | 121.79 |
| 53.00 | 52.98 | 123.00 | 122.78 |
| 54.00 | 53.98 | 124.00 | 123.78 |
| 55.00 | 54.98 | 125.00 | 124.77 |
| 56.00 | 55.98 | 126.00 | 125.77 |
| 57.00 | 56.98 | 127.00 | 126.76 |
| 58.00 | 57.98 | 128.00 | 127.75 |
| 59.00 | 58.98 | 129.00 | 128.74 |
| 60.00 | 59.98 | 130.00 | 129.73 |
| 61.00 | 60.98 | 131.00 | 130.72 |
| 62.00 | 61.98 | 132.00 | 131.71 |
| 63.00 | 62.98 | 133.00 | 132.70 |
| 64.00 | 63.97 | 134.00 | 133.69 |
| 65.00 | 64.97 | 135.00 | 134.68 |
| 66.00 | 65.97 | | |
| 67.00 | 66.97 | | |
| 68.00 | 67.97 | | |
| 69.00 | 68.97 | | |
| 70.00 | 69.97 | | |
| 71.00 | 70.96 | | |
| 72.00 | 71.96 | | |

BPB VERTICALITY ANALYSIS
INTERPRETATION NOTES

1. All plotted output is automatically scaled to obtain the best visual effect within the physical space available. The maximum scales being 50000:1 (metric) & 48000:1 (imperial), and the minimum 1:1.
 2. The analysis is derived by integrating 10 cm./6" sampled data down the borehole. However the listing supplied will contain a maximum of 200 points in multiples of 1,2,5,10,20,25,50, or 100 metres/feet depending upon the total range of the analysis. However the analysis is calculated for the entire range of the borehole, and the final borehole position is included in the listing.
 3. Computed verticality may only be fully derived in open sections of the borehole, away from the influence of any magnetic media (as the azimuth calculations are derived from three solid state magnetometers). So the analysis will generally begin at the end of the casing, and all borehole positional information will relate to this depth.
 4. Up to ten cross-sections may be requested for any borehole to be displayed at any scale (the default scale is that of the cross-section for the entire hole).
 5. Borehole positional error is derived assuming the following parameters:

| | | |
|---------------|---------------|------------------|
| | TILT(degrees) | AZIMUTH(degrees) |
| Typical Error | +/- 0.33333 | +/- 10.0 |
| Maximum Error | +/- 0.5 | +/- 15.0 |
 6. Error analysis may be calculated and plotted from the data listing as follows:
 - a) Plot the four coordinates from the error listing (based upon zero azimuth error) on a target plot, origin at the start of the analysis.
 - b) Describe arcs of +/- 10 degrees & +/- 15 degrees (centre at the origin) through the inner and outer points respectively.
 - c) Connect the respective arcs together with straight lines to give the typical & maximum borehole positional error.
 7. Given below is a full description of the parameters displayed on the ensuing listing:

| | |
|---------------------|--|
| LOG DEPTH | the depth recorded on the field logs for the borehole |
| TRUE DEPTH | the true vertical depth corresponding to the above depth, corrected from the start of the analysis |
| HOLE TILT & AZIMUTH | the SAMPLED borehole orientation |
| AXIAL COORDINATES | the coordinates North & East from the target origin |
| POLAR COORDINATES | the polar, or radial, coordinates of the borehole |
| ERROR COORDINATES | the polar coordinates corresponding to the typical and maximum tilt error |
- N.B. The reference point for ALL bearing angles on this listing is given at the top of each sheet

Verticality Data Listing

Date processed: 08-JAN-88

All co-ordinates with respect to True North

| DEPTHS | | BOREHOLE tilt | AZI | AXIAL CO-ORDS. | | POLAR | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | |
|--------|-------|------------------|------|----------------|------|-------|--------|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| log | true | | | North | East | brng | radius | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius |
| 3.00 | 3.00 | 0.2 | 126. | 0.00 | 0.00 | 42. | 0.01 | 45. | 0.01 | 24. | 0.00 | 45. | 0.01 | 35. | 0.00 |
| 4.00 | 4.00 | 0.4 | 69. | 0.01 | 0.00 | 26. | 0.01 | 27. | 0.02 | 7. | 0.00 | 27. | 0.02 | 22. | 0.00 |
| 5.00 | 5.00 | 0.7 | 128. | 0.01 | 0.01 | 46. | 0.01 | 47. | 0.03 | 9. | 0.00 | 47. | 0.02 | 41. | 0.01 |
| 6.00 | 6.00 | 0.1 | 340. | 0.01 | 0.01 | 46. | 0.02 | 46. | 0.04 | 60. | 0.00 | 46. | 0.03 | 49. | 0.01 |
| 7.00 | 7.00 | 0.4 | 5. | 0.02 | 0.02 | 40. | 0.03 | 39. | 0.05 | 43. | 0.00 | 39. | 0.05 | 40. | 0.01 |
| 8.00 | 8.00 | 0.2 | 18. | 0.03 | 0.02 | 32. | 0.04 | 32. | 0.07 | 45. | 0.00 | 32. | 0.06 | 35. | 0.01 |
| 9.00 | 9.00 | 0.4 | 38. | 0.04 | 0.02 | 33. | 0.04 | 33. | 0.08 | 34. | 0.00 | 33. | 0.07 | 33. | 0.02 |
| 10.00 | 10.00 | 0.2 | 99. | 0.04 | 0.03 | 35. | 0.05 | 35. | 0.10 | 29. | 0.00 | 35. | 0.08 | 34. | 0.02 |
| 11.00 | 11.00 | 0.4 | 12. | 0.05 | 0.03 | 34. | 0.06 | 34. | 0.12 | 33. | 0.01 | 34. | 0.10 | 34. | 0.02 |
| 12.00 | 12.00 | 0.3 | 83. | 0.05 | 0.04 | 36. | 0.06 | 37. | 0.12 | 21. | 0.01 | 37. | 0.10 | 34. | 0.02 |
| 13.00 | 13.00 | 0.5 | 33. | 0.05 | 0.04 | 40. | 0.07 | 40. | 0.13 | 31. | 0.00 | 40. | 0.11 | 39. | 0.03 |
| 14.00 | 14.00 | 0.3 | 62. | 0.06 | 0.05 | 42. | 0.08 | 42. | 0.15 | 41. | 0.01 | 42. | 0.12 | 42. | 0.03 |
| 15.00 | 15.00 | 0.9 | 48. | 0.06 | 0.06 | 45. | 0.09 | 44. | 0.16 | 48. | 0.01 | 44. | 0.14 | 45. | 0.04 |
| 16.00 | 16.00 | 1.3 | 75. | 0.07 | 0.08 | 46. | 0.11 | 46. | 0.19 | 51. | 0.02 | 46. | 0.16 | 47. | 0.05 |
| 17.00 | 17.00 | 1.0 | 66. | 0.08 | 0.09 | 48. | 0.12 | 48. | 0.22 | 54. | 0.03 | 48. | 0.19 | 50. | 0.06 |
| 18.00 | 18.00 | 1.2 | 55. | 0.09 | 0.11 | 50. | 0.14 | 49. | 0.24 | 56. | 0.04 | 49. | 0.21 | 52. | 0.07 |
| 19.00 | 19.00 | 1.1 | 56. | 0.10 | 0.12 | 50. | 0.16 | 50. | 0.27 | 55. | 0.05 | 50. | 0.23 | 52. | 0.08 |
| 20.00 | 20.00 | 0.9 | 46. | 0.11 | 0.13 | 50. | 0.17 | 49. | 0.29 | 54. | 0.05 | 49. | 0.25 | 52. | 0.09 |
| 21.00 | 21.00 | 0.9 | 22. | 0.12 | 0.14 | 49. | 0.19 | 49. | 0.32 | 52. | 0.06 | 49. | 0.27 | 50. | 0.10 |
| 22.00 | 22.00 | 1.4 | 30. | 0.14 | 0.16 | 49. | 0.21 | 49. | 0.34 | 51. | 0.07 | 49. | 0.30 | 50. | 0.12 |
| 23.00 | 23.00 | 1.2 | 48. | 0.15 | 0.17 | 49. | 0.23 | 49. | 0.37 | 51. | 0.08 | 49. | 0.32 | 50. | 0.13 |
| 24.00 | 24.00 | 1.3 | 52. | 0.16 | 0.19 | 50. | 0.25 | 49. | 0.40 | 52. | 0.10 | 49. | 0.35 | 51. | 0.15 |
| 25.00 | 25.00 | 1.6 | 60. | 0.18 | 0.21 | 50. | 0.28 | 50. | 0.44 | 52. | 0.12 | 50. | 0.39 | 51. | 0.17 |
| 26.00 | 26.00 | 1.4 | 63. | 0.19 | 0.24 | 51. | 0.31 | 50. | 0.48 | 53. | 0.14 | 50. | 0.42 | 52. | 0.19 |
| 27.00 | 27.00 | 1.4 | 58. | 0.21 | 0.26 | 51. | 0.33 | 50. | 0.51 | 53. | 0.15 | 51. | 0.45 | 52. | 0.21 |
| 28.00 | 28.00 | 1.9 | 64. | 0.22 | 0.28 | 52. | 0.35 | 51. | 0.54 | 54. | 0.17 | 52. | 0.48 | 53. | 0.23 |
| 29.00 | 29.00 | 1.5 | 69. | 0.23 | 0.31 | 53. | 0.38 | 52. | 0.58 | 55. | 0.19 | 52. | 0.52 | 54. | 0.25 |
| 30.00 | 30.00 | 1.8 | 62. | 0.24 | 0.34 | 54. | 0.41 | 53. | 0.62 | 56. | 0.21 | 53. | 0.55 | 55. | 0.28 |
| 31.00 | 30.99 | 1.7 | 69. | 0.25 | 0.36 | 55. | 0.44 | 54. | 0.66 | 58. | 0.23 | 54. | 0.58 | 56. | 0.30 |
| 32.00 | 31.99 | 1.5 | 58. | 0.26 | 0.38 | 55. | 0.46 | 55. | 0.68 | 58. | 0.24 | 55. | 0.61 | 57. | 0.32 |
| 33.00 | 32.99 | 1.6 | 56. | 0.28 | 0.41 | 56. | 0.49 | 55. | 0.72 | 58. | 0.26 | 55. | 0.64 | 57. | 0.34 |
| 34.00 | 33.99 | 2.1 | 68. | 0.29 | 0.43 | 56. | 0.52 | 55. | 0.76 | 59. | 0.28 | 55. | 0.68 | 57. | 0.36 |
| 35.00 | 34.99 | 1.7 | 70. | 0.31 | 0.46 | 56. | 0.55 | 56. | 0.80 | 59. | 0.31 | 56. | 0.72 | 58. | 0.39 |
| 36.00 | 35.99 | 1.6 | 51. | 0.32 | 0.49 | 57. | 0.58 | 56. | 0.84 | 59. | 0.33 | 56. | 0.75 | 58. | 0.42 |
| 37.00 | 36.99 | 2.0 | 60. | 0.33 | 0.52 | 57. | 0.61 | 56. | 0.88 | 59. | 0.35 | 56. | 0.79 | 58. | 0.44 |
| 38.00 | 37.99 | 1.8 | 67. | 0.35 | 0.55 | 58. | 0.65 | 57. | 0.92 | 60. | 0.38 | 57. | 0.83 | 59. | 0.47 |
| 39.00 | 38.99 | 1.9 | 54. | 0.36 | 0.58 | 58. | 0.68 | 57. | 0.96 | 60. | 0.40 | 57. | 0.87 | 59. | 0.49 |
| 40.00 | 39.99 | 1.8 | 72. | 0.37 | 0.60 | 58. | 0.71 | 57. | 1.00 | 60. | 0.42 | 57. | 0.90 | 59. | 0.52 |
| 41.00 | 40.99 | 2.0 | 61. | 0.39 | 0.63 | 58. | 0.74 | 58. | 1.04 | 60. | 0.45 | 58. | 0.94 | 60. | 0.54 |
| 42.00 | 41.99 | 1.9 | 70. | 0.40 | 0.66 | 59. | 0.77 | 58. | 1.08 | 61. | 0.47 | 58. | 0.98 | 60. | 0.57 |
| 43.00 | 42.99 | 1.8 | 74. | 0.41 | 0.69 | 60. | 0.80 | 59. | 1.12 | 62. | 0.49 | 59. | 1.01 | 61. | 0.59 |
| 44.00 | 43.99 | 1.5 | 77. | 0.41 | 0.72 | 60. | 0.83 | 59. | 1.15 | 62. | 0.51 | 59. | 1.05 | 61. | 0.62 |
| 45.00 | 44.99 | 2.1 | 78. | 0.42 | 0.75 | 61. | 0.86 | 60. | 1.19 | 63. | 0.53 | 60. | 1.08 | 62. | 0.64 |
| 46.00 | 45.99 | 1.6 | 67. | 0.43 | 0.78 | 61. | 0.90 | 60. | 1.23 | 63. | 0.56 | 60. | 1.12 | 62. | 0.67 |
| 47.00 | 46.99 | 2.0 | 83. | 0.45 | 0.81 | 61. | 0.93 | 60. | 1.27 | 63. | 0.58 | 61. | 1.16 | 62. | 0.70 |
| 48.00 | 47.99 | 1.8 | 85. | 0.45 | 0.84 | 62. | 0.96 | 61. | 1.31 | 64. | 0.60 | 61. | 1.19 | 63. | 0.72 |
| 49.00 | 48.99 | 1.7 | 75. | 0.47 | 0.88 | 62. | 0.99 | 61. | 1.36 | 64. | 0.63 | 61. | 1.23 | 63. | 0.75 |
| 50.00 | 49.99 | 2.1 | 79. | 0.48 | 0.91 | 62. | 1.03 | 62. | 1.40 | 64. | 0.66 | 62. | 1.28 | 64. | 0.78 |
| 51.00 | 50.98 | 1.8 | 67. | 0.49 | 0.95 | 63. | 1.06 | 62. | 1.44 | 65. | 0.68 | 62. | 1.32 | 64. | 0.81 |
| 52.00 | 51.98 | 1.7 | 90. | 0.49 | 0.98 | 63. | 1.10 | 62. | 1.48 | 65. | 0.71 | 63. | 1.35 | 64. | 0.84 |

Verticality Data Listing

All co-ordinates with respect to True North

| DEPTHS | | BOREHOLE | | AXIAL CO-ORDS. | | POLAR | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | |
|--------|--------|----------|-----|----------------|------|-------|--------|--|--------|------|--------|------|--------|-----|------|
| log | true | tilt | AZI | North | East | brng | radius | brng | radius | brng | radius | brng | radius | | |
| 53.00 | 52.98 | 2.1 | 83. | 0.50 | 1.01 | 64. | 1.13 | 63. | 1.53 | 65. | 0.73 | 63. | 1.39 | 65. | 0.87 |
| 54.00 | 53.98 | 2.0 | 68. | 0.51 | 1.04 | 64. | 1.16 | 63. | 1.57 | 66. | 0.76 | 63. | 1.43 | 65. | 0.89 |
| 55.00 | 54.98 | 2.4 | 86. | 0.52 | 1.08 | 64. | 1.20 | 63. | 1.61 | 66. | 0.79 | 64. | 1.48 | 65. | 0.93 |
| 56.00 | 55.98 | 2.3 | 81. | 0.53 | 1.12 | 65. | 1.24 | 64. | 1.66 | 67. | 0.82 | 64. | 1.52 | 66. | 0.96 |
| 57.00 | 56.98 | 2.2 | 81. | 0.54 | 1.16 | 65. | 1.27 | 64. | 1.70 | 67. | 0.85 | 64. | 1.56 | 66. | 0.99 |
| 58.00 | 57.98 | 2.1 | 90. | 0.54 | 1.20 | 66. | 1.31 | 65. | 1.75 | 68. | 0.88 | 65. | 1.60 | 67. | 1.02 |
| 59.00 | 58.98 | 1.9 | 84. | 0.55 | 1.24 | 66. | 1.35 | 65. | 1.80 | 68. | 0.91 | 65. | 1.65 | 67. | 1.06 |
| 60.00 | 59.98 | 2.3 | 80. | 0.55 | 1.27 | 67. | 1.39 | 66. | 1.84 | 69. | 0.93 | 66. | 1.69 | 68. | 1.08 |
| 61.00 | 60.98 | 2.4 | 85. | 0.56 | 1.31 | 67. | 1.43 | 66. | 1.89 | 69. | 0.97 | 66. | 1.74 | 68. | 1.12 |
| 62.00 | 61.98 | 2.8 | 76. | 0.56 | 1.36 | 68. | 1.47 | 67. | 1.94 | 70. | 1.00 | 67. | 1.78 | 69. | 1.15 |
| 63.00 | 62.98 | 2.9 | 84. | 0.57 | 1.40 | 68. | 1.51 | 67. | 1.99 | 70. | 1.04 | 67. | 1.83 | 69. | 1.19 |
| 64.00 | 63.97 | 3.0 | 82. | 0.58 | 1.45 | 68. | 1.56 | 67. | 2.05 | 70. | 1.08 | 68. | 1.89 | 70. | 1.24 |
| 65.00 | 64.97 | 3.2 | 85. | 0.58 | 1.50 | 69. | 1.61 | 68. | 2.11 | 71. | 1.12 | 68. | 1.94 | 70. | 1.28 |
| 66.00 | 65.97 | 3.1 | 85. | 0.59 | 1.55 | 69. | 1.66 | 68. | 2.16 | 71. | 1.16 | 69. | 2.00 | 71. | 1.33 |
| 67.00 | 66.97 | 2.8 | 87. | 0.59 | 1.60 | 70. | 1.70 | 69. | 2.21 | 72. | 1.19 | 69. | 2.04 | 71. | 1.36 |
| 68.00 | 67.97 | 3.0 | 82. | 0.60 | 1.65 | 70. | 1.75 | 69. | 2.27 | 72. | 1.23 | 69. | 2.10 | 71. | 1.41 |
| 69.00 | 68.97 | 2.8 | 86. | 0.60 | 1.70 | 71. | 1.81 | 69. | 2.33 | 73. | 1.28 | 70. | 2.16 | 72. | 1.45 |
| 70.00 | 69.97 | 2.7 | 79. | 0.60 | 1.75 | 71. | 1.85 | 70. | 2.39 | 73. | 1.32 | 70. | 2.21 | 72. | 1.50 |
| 71.00 | 70.96 | 3.1 | 80. | 0.61 | 1.81 | 71. | 1.91 | 70. | 2.45 | 73. | 1.37 | 70. | 2.27 | 73. | 1.55 |
| 72.00 | 71.96 | 3.2 | 80. | 0.62 | 1.87 | 72. | 1.97 | 70. | 2.52 | 74. | 1.42 | 71. | 2.33 | 73. | 1.60 |
| 73.00 | 72.96 | 3.2 | 82. | 0.63 | 1.92 | 72. | 2.02 | 71. | 2.58 | 74. | 1.46 | 71. | 2.39 | 73. | 1.65 |
| 74.00 | 73.96 | 3.4 | 80. | 0.64 | 1.98 | 72. | 2.08 | 71. | 2.64 | 74. | 1.51 | 71. | 2.46 | 73. | 1.70 |
| 75.00 | 74.96 | 2.7 | 92. | 0.64 | 2.03 | 72. | 2.13 | 71. | 2.71 | 74. | 1.56 | 72. | 2.52 | 74. | 1.75 |
| 76.00 | 75.96 | 3.3 | 79. | 0.65 | 2.08 | 73. | 2.18 | 71. | 2.77 | 75. | 1.60 | 72. | 2.57 | 74. | 1.79 |
| 77.00 | 76.96 | 2.9 | 83. | 0.66 | 2.13 | 73. | 2.23 | 72. | 2.82 | 75. | 1.64 | 72. | 2.63 | 74. | 1.83 |
| 78.00 | 77.95 | 3.6 | 81. | 0.67 | 2.19 | 73. | 2.29 | 72. | 2.89 | 75. | 1.69 | 72. | 2.69 | 74. | 1.89 |
| 79.00 | 78.95 | 3.6 | 79. | 0.69 | 2.24 | 73. | 2.35 | 72. | 2.96 | 75. | 1.74 | 72. | 2.75 | 74. | 1.94 |
| 80.00 | 79.95 | 3.6 | 77. | 0.70 | 2.30 | 73. | 2.41 | 72. | 3.03 | 75. | 1.79 | 72. | 2.82 | 74. | 2.00 |
| 81.00 | 80.95 | 3.6 | 79. | 0.71 | 2.36 | 73. | 2.47 | 72. | 3.10 | 75. | 1.84 | 72. | 2.89 | 74. | 2.05 |
| 82.00 | 81.96 | 3.5 | 80. | 0.73 | 2.43 | 73. | 2.53 | 72. | 3.17 | 75. | 1.90 | 73. | 2.96 | 74. | 2.11 |
| 83.00 | 82.94 | 3.5 | 75. | 0.74 | 2.49 | 73. | 2.60 | 72. | 3.24 | 75. | 1.95 | 73. | 3.03 | 74. | 2.17 |
| 84.00 | 83.94 | 3.9 | 73. | 0.75 | 2.55 | 74. | 2.66 | 73. | 3.31 | 75. | 2.01 | 73. | 3.10 | 75. | 2.23 |
| 85.00 | 84.94 | 3.6 | 77. | 0.77 | 2.62 | 74. | 2.73 | 73. | 3.39 | 75. | 2.07 | 73. | 3.17 | 75. | 2.29 |
| 86.00 | 85.94 | 4.0 | 77. | 0.79 | 2.68 | 74. | 2.80 | 73. | 3.47 | 75. | 2.13 | 73. | 3.24 | 75. | 2.35 |
| 87.00 | 86.93 | 4.3 | 75. | 0.80 | 2.76 | 74. | 2.87 | 73. | 3.55 | 75. | 2.19 | 73. | 3.32 | 75. | 2.42 |
| 88.00 | 87.93 | 4.5 | 73. | 0.82 | 2.83 | 74. | 2.95 | 73. | 3.64 | 75. | 2.26 | 73. | 3.41 | 75. | 2.49 |
| 89.00 | 88.93 | 4.6 | 72. | 0.84 | 2.91 | 74. | 3.03 | 73. | 3.72 | 75. | 2.33 | 73. | 3.49 | 75. | 2.56 |
| 90.00 | 89.93 | 4.4 | 74. | 0.86 | 2.98 | 74. | 3.11 | 73. | 3.81 | 75. | 2.40 | 73. | 3.58 | 75. | 2.64 |
| 91.00 | 90.92 | 4.4 | 72. | 0.89 | 3.06 | 74. | 3.19 | 73. | 3.90 | 75. | 2.47 | 73. | 3.66 | 75. | 2.71 |
| 92.00 | 91.92 | 4.9 | 75. | 0.91 | 3.14 | 74. | 3.27 | 73. | 3.99 | 75. | 2.55 | 73. | 3.75 | 75. | 2.79 |
| 93.00 | 92.92 | 4.7 | 74. | 0.93 | 3.22 | 74. | 3.35 | 73. | 4.08 | 75. | 2.62 | 73. | 3.84 | 75. | 2.86 |
| 94.00 | 93.91 | 4.4 | 79. | 0.95 | 3.29 | 74. | 3.43 | 73. | 4.17 | 75. | 2.69 | 73. | 3.92 | 75. | 2.94 |
| 95.00 | 94.91 | 5.1 | 72. | 0.98 | 3.37 | 74. | 3.51 | 73. | 4.26 | 75. | 2.76 | 73. | 4.01 | 75. | 3.01 |
| 96.00 | 95.91 | 4.8 | 69. | 1.00 | 3.45 | 74. | 3.60 | 73. | 4.35 | 75. | 2.84 | 73. | 4.10 | 75. | 3.09 |
| 97.00 | 96.90 | 4.4 | 70. | 1.03 | 3.53 | 74. | 3.68 | 73. | 4.44 | 75. | 2.91 | 73. | 4.19 | 74. | 3.17 |
| 98.00 | 97.90 | 4.7 | 66. | 1.06 | 3.60 | 74. | 3.76 | 73. | 4.53 | 75. | 2.98 | 73. | 4.27 | 74. | 3.24 |
| 99.00 | 98.90 | 5.1 | 75. | 1.08 | 3.68 | 74. | 3.84 | 73. | 4.62 | 75. | 3.05 | 73. | 4.36 | 74. | 3.32 |
| 100.00 | 99.89 | 4.9 | 68. | 1.11 | 3.76 | 74. | 3.92 | 73. | 4.71 | 75. | 3.13 | 73. | 4.45 | 74. | 3.40 |
| 101.00 | 100.89 | 4.7 | 72. | 1.13 | 3.85 | 74. | 4.01 | 73. | 4.81 | 75. | 3.21 | 73. | 4.54 | 74. | 3.48 |
| 102.00 | 101.88 | 4.9 | 74. | 1.16 | 3.93 | 74. | 4.10 | 73. | 4.91 | 75. | 3.29 | 73. | 4.64 | 74. | 3.56 |

Verticality Data Listing

All co-ordinates with respect to True North

| DEPTHS | | BOREHOLE tillt | AZI | AXIAL CO-ORDS. | | POLAR | | POLAR ERROR CO-ORDINATES (maximum & typical) | | | | | | | |
|--------|--------|-------------------|-----|----------------|------|-------|--------|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| log | true | | | North | East | brng | radius | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius | brng radius |
| 103.00 | 102.88 | 5.3 | 74. | 1.18 | 4.02 | 74. | 4.19 | 73. | 5.01 | 75. | 3.37 | 73. | 4.73 | 74. | 3.64 |
| 104.00 | 103.88 | 5.1 | 72. | 1.21 | 4.10 | 74. | 4.28 | 73. | 5.10 | 75. | 3.45 | 73. | 4.83 | 74. | 3.73 |
| 105.00 | 104.87 | 5.1 | 70. | 1.24 | 4.19 | 74. | 4.37 | 73. | 5.20 | 74. | 3.53 | 73. | 4.92 | 74. | 3.81 |
| 106.00 | 105.87 | 5.1 | 72. | 1.27 | 4.27 | 73. | 4.46 | 73. | 5.30 | 74. | 3.61 | 73. | 5.02 | 74. | 3.89 |
| 107.00 | 106.86 | 5.5 | 69. | 1.30 | 4.36 | 73. | 4.55 | 73. | 5.40 | 74. | 3.69 | 73. | 5.11 | 74. | 3.98 |
| 108.00 | 107.86 | 5.0 | 72. | 1.32 | 4.44 | 73. | 4.63 | 73. | 5.49 | 74. | 3.77 | 73. | 5.21 | 74. | 4.06 |
| 109.00 | 108.86 | 5.2 | 76. | 1.35 | 4.52 | 73. | 4.72 | 73. | 5.59 | 74. | 3.85 | 73. | 5.30 | 74. | 4.14 |
| 110.00 | 109.85 | 5.3 | 73. | 1.38 | 4.61 | 73. | 4.81 | 73. | 5.69 | 74. | 3.93 | 73. | 5.40 | 74. | 4.22 |
| 111.00 | 110.85 | 5.9 | 70. | 1.41 | 4.70 | 73. | 4.91 | 73. | 5.80 | 74. | 4.02 | 73. | 5.50 | 74. | 4.32 |
| 112.00 | 111.84 | 6.3 | 72. | 1.44 | 4.80 | 73. | 5.01 | 73. | 5.91 | 74. | 4.12 | 73. | 5.61 | 74. | 4.42 |
| 113.00 | 112.84 | 5.5 | 68. | 1.48 | 4.89 | 73. | 5.11 | 73. | 6.01 | 74. | 4.20 | 73. | 5.71 | 74. | 4.51 |
| 114.00 | 113.83 | 5.4 | 72. | 1.51 | 4.98 | 73. | 5.20 | 73. | 6.11 | 74. | 4.29 | 73. | 5.81 | 74. | 4.59 |
| 115.00 | 114.83 | 5.7 | 70. | 1.54 | 5.06 | 73. | 5.29 | 73. | 6.22 | 74. | 4.37 | 73. | 5.91 | 74. | 4.68 |
| 116.00 | 115.82 | 5.7 | 75. | 1.57 | 5.16 | 73. | 5.39 | 73. | 6.32 | 74. | 4.46 | 73. | 6.01 | 74. | 4.77 |
| 117.00 | 116.82 | 5.9 | 68. | 1.60 | 5.25 | 73. | 5.49 | 73. | 6.43 | 74. | 4.55 | 73. | 6.12 | 73. | 4.87 |
| 118.00 | 117.81 | 5.6 | 69. | 1.63 | 5.34 | 73. | 5.59 | 73. | 6.54 | 74. | 4.64 | 73. | 6.22 | 73. | 4.96 |
| 119.00 | 118.81 | 6.1 | 73. | 1.67 | 5.44 | 73. | 5.69 | 73. | 6.65 | 74. | 4.73 | 73. | 6.33 | 73. | 5.05 |
| 120.00 | 119.80 | 6.5 | 71. | 1.70 | 5.54 | 73. | 5.80 | 73. | 6.76 | 74. | 4.83 | 73. | 6.44 | 73. | 5.15 |
| 121.00 | 120.80 | 6.7 | 66. | 1.74 | 5.65 | 73. | 5.91 | 72. | 6.88 | 74. | 4.93 | 73. | 6.56 | 73. | 5.26 |
| 122.00 | 121.79 | 6.2 | 70. | 1.78 | 5.75 | 73. | 6.02 | 72. | 7.00 | 73. | 5.03 | 73. | 6.67 | 73. | 5.36 |
| 123.00 | 122.78 | 6.4 | 65. | 1.82 | 5.85 | 73. | 6.13 | 72. | 7.12 | 73. | 5.14 | 72. | 6.79 | 73. | 5.47 |
| 124.00 | 123.78 | 6.6 | 65. | 1.87 | 5.96 | 73. | 6.24 | 72. | 7.24 | 73. | 5.24 | 72. | 6.91 | 73. | 5.57 |
| 125.00 | 124.77 | 6.4 | 66. | 1.91 | 6.06 | 73. | 6.35 | 72. | 7.36 | 73. | 5.34 | 72. | 7.03 | 73. | 5.68 |
| 126.00 | 125.77 | 6.8 | 65. | 1.95 | 6.15 | 72. | 6.46 | 72. | 7.47 | 73. | 5.44 | 72. | 7.13 | 73. | 5.78 |
| 127.00 | 126.76 | 7.0 | 64. | 1.99 | 6.26 | 72. | 6.57 | 72. | 7.60 | 73. | 5.54 | 72. | 7.26 | 73. | 5.89 |
| 128.00 | 127.75 | 7.5 | 63. | 2.05 | 6.38 | 72. | 6.70 | 72. | 7.73 | 73. | 5.66 | 72. | 7.39 | 72. | 6.01 |
| 129.00 | 128.74 | 7.6 | 66. | 2.10 | 6.50 | 72. | 6.83 | 72. | 7.87 | 73. | 5.79 | 72. | 7.53 | 72. | 6.13 |
| 130.00 | 129.73 | 8.5 | 62. | 2.16 | 6.61 | 72. | 6.95 | 72. | 8.01 | 72. | 5.90 | 72. | 7.65 | 72. | 6.25 |
| 131.00 | 130.72 | 8.4 | 63. | 2.22 | 6.74 | 72. | 7.09 | 71. | 8.15 | 72. | 6.03 | 72. | 7.80 | 72. | 6.38 |
| 132.00 | 131.71 | 8.3 | 64. | 2.29 | 6.86 | 72. | 7.23 | 71. | 8.30 | 72. | 6.16 | 71. | 7.95 | 72. | 6.52 |
| 133.00 | 132.70 | 9.2 | 61. | 2.36 | 7.00 | 71. | 7.38 | 71. | 8.45 | 72. | 6.30 | 71. | 8.10 | 72. | 6.66 |
| 134.00 | 133.69 | 9.4 | 61. | 2.43 | 7.14 | 71. | 7.54 | 71. | 8.63 | 72. | 6.45 | 71. | 8.27 | 71. | 6.82 |
| 134.90 | 134.58 | 9.3 | 59. | 2.49 | 7.25 | 71. | 7.66 | 71. | 8.76 | 71. | 6.57 | 71. | 8.39 | 71. | 6.93 |

QHR 87045
VALLEY ROAD

LOG DEPTH 0090.00
TRUE DEPTH 0089.65
TILT 8.71 DG
BEARING 93.79 DG
NORTHING -000.34
EASTING +006.37

LOG DEPTH 0080.00
TRUE DEPTH 0079.77
TILT 7.54 DG
BEARING 97.35 DG
NORTHING -000.24
EASTING +004.86

LOG DEPTH 0070.00
TRUE DEPTH 0069.86
TILT 6.50 DG
BEARING 99.20 DG
NORTHING -000.08
EASTING +003.56

LOG DEPTH 0060.00
TRUE DEPTH 0059.92
TILT 4.61 DG
BEARING 105.32 DG
NORTHING +000.09
EASTING +002.44

LOG DEPTH 0050.00
TRUE DEPTH 0049.95
TILT 3.65 DG
BEARING 101.69 DG
NORTHING +000.31
EASTING +001.66

LOG DEPTH 0040.00
TRUE DEPTH 0039.97
TILT 3.03 DG
BEARING 98.16 DG
NORTHING +000.44
EASTING +001.04

LOG DEPTH 0030.00
TRUE DEPTH 0029.98
TILT 2.40 DG
BEARING 96.19 DG
NORTHING +000.51
EASTING +000.51

LOG DEPTH 0020.00
TRUE DEPTH 0019.99
TILT 2.25 DG
BEARING 17.56 DG
NORTHING +000.56
EASTING +000.10

LOG DEPTH 0010.00
TRUE DEPTH 0010.00
TILT 2.16 DG
BEARING 354.63 DG
NORTHING +000.18
EASTING -000.01

LOG DEPTH 0005.00
TRUE DEPTH 0005.00
TILT 2.04 DG
BEARING 47.38 DG
NORTHING +000.00
EASTING +000.00

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DEPTH = 0010.00
TILT = 2.28 DG
BEARING = 301.88 DG

DEPTH = 0020.00
TILT = 2.21 DG
BEARING = 93.24 DG

DEPTH = 0030.00
TILT = 2.60 DG
BEARING = 99.14 DG

DEPTH = 0040.00
TILT = 3.46 DG
BEARING = 97.19 DG

DEPTH = 0050.00
TILT = 3.85 DG
BEARING = 106.19 DG

DEPTH = 0060.00
TILT = 5.37 DG
BEARING = 104.44 DG

DEPTH = 0070.00
TILT = 7.63 DG
BEARING = 93.96 DG

DEPTH = 0080.00
TILT = 7.44 DG
BEARING = 100.74 DG

DEPTH = 0090.00
TILT = 9.97 DG
BEARING = 86.83 DG

DATE 870821
JOB NUMBER 0045
LOG LABEL 026.1
MAG 1 MAX 206
MAG 1 MIN 150
MAG 2 MAX 204
MAG 2 MIN 156
MAG 3 MAX 206
MAG 3 MIN 156
L. CELL 1 TILT 1 06
L. CELL 1 CPS 1 250
L. CELL 1 TILT 2 -06
L. CELL 1 CPS 2 192
L. CELL 2 TILT 1 06
L. CELL 2 CPS 1 249
L. CELL 2 TILT 2 -06
L. CELL 2 CPS 2 192

MAG 1 CENTRE 178
MAG 2 CENTRE 180
MAG 3 CENTRE 181
L. CELL 1 CENTRE 223
L. CELL 2 CENTRE 220

MAG DECL 024
STOP DEPTH 0005

QHR87045
VALLEY ROAD



LOG SUITE
GAMMA RAY
L.S. DENSITY
CALIPER

SONDE TYPE:
COAL COMBINATION
SONDE

COAL LITHOLOGY LOG

BOREHOLE QHR 87-045
CLIENT QUINTETTE
AREA TRANSFER
COUNTRY CANADA
DATE LOGGED 87 08 21

DEPTH SCALE
1:200
1 OF 5 LOGS

BOREHOLE DATA

| | |
|-------------------|-------------------------------------|
| PERMANENT DATUM | GROUND LEVEL |
| ELEVATION OF P.D. | 878 |
| MEASUREMENTS FROM | G.L. |
| DEPTH REACHED | 99.00m |
| DEPTH TO 8.80m | 100.00m |
| CASING SHOE | 8.80m |
| BIT SIZES | 1 8 1/2" TO 8.50" 2 5 1/2" TO 10.0m |
| | 3 7" TO 10" 4 7" TO 10" |
| CASING SIZES | 1 6 1/2" TO 8.50m 2 7" TO 10" |

FLUID DATA

| | |
|-------------------|-----------|
| NATURE | WATER |
| SG | 1.01 g/cc |
| LEVEL | 27.60m |
| VISCOSITY | N/A |
| Rm at press. temp | N/A |
| BHT | N/A |

OPERATION DATA

| | |
|-----------------|---------|
| FIRST READING | 97.00m |
| LAST READING | 0.00m |
| INTERVAL LOGGED | 97m |
| UNIT-TRUCK No | 46/1217 |
| ENGINEER | M. COX |
| WITNESS | |

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EQUIPMENT AND RECORDING DATA

| LOG | EQUIPMENT | | | TAPING | | | PANEL | | | CAL COEFF | DEPTHS | | | SEAM LOG RUN |
|--------------|-------------------|--------|-----------|----------|--------------|---------------|-------|---------|------|-----------|--------|----|----------|--------------|
| | SONDE | SOURCE | CALBRATOR | LOG TAPE | RECORD SPEED | DIRECT/REPLAY | SPEED | TC SECS | NORM | | FROM | TO | INTERVAL | |
| GAMMA RAY | | | 367 | Y | 9 | D | 9 | 1 | - | 1.44 | 97 | 0 | 97 | Y |
| L.S. DENSITY | 153 | | | Y | 9 | D | 9 | 3 | 7.38 | - | 98 | 1 | 97 | Y |
| CALIPER | SIDEWALL POSITION | | | Y | 9 | D | 9 | 3 | - | 1.0 | 98 | 1 | 97 | Y |

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

| | | | | |
|----------|-----|-----|-----|----------------|
| FROM | 63m | 56m | 30m | INTERVAL TOTAL |
| TO | 60m | 47m | 24m | |
| INTERVAL | 3m | 9m | 6m | 18m |

| ADDITIONAL SONDES RUN | | | | REMARKS |
|-----------------------|------|-------------------|------------------|------------------------------|
| SONDE | LOG | GENERAL SCALE LOG | DETAIL SCALE LOG | |
| 215 | N-N | 1:200 | | REFER TO ADDITIONAL HEADINGS |
| 213 | VERT | | | |
| 204 | DIP | | | |

BPB COAL LITHOLOGY LOG

CALIBRATION DATA

| | | | | | | | |
|---------------------------------|-----------------|--------------|-----------|-------|-------------------|-----|-----|
| JIG No | VALUE @ 5" DIAM | JIG CAL DATE | JIG VALUE | SDU @ | g/cm ³ | ins | cps |
| JIG MARK SHOWN AT ABOVE VALUE - | | JIG No | SPAN | NORM | SDU - CPS | ins | cps |

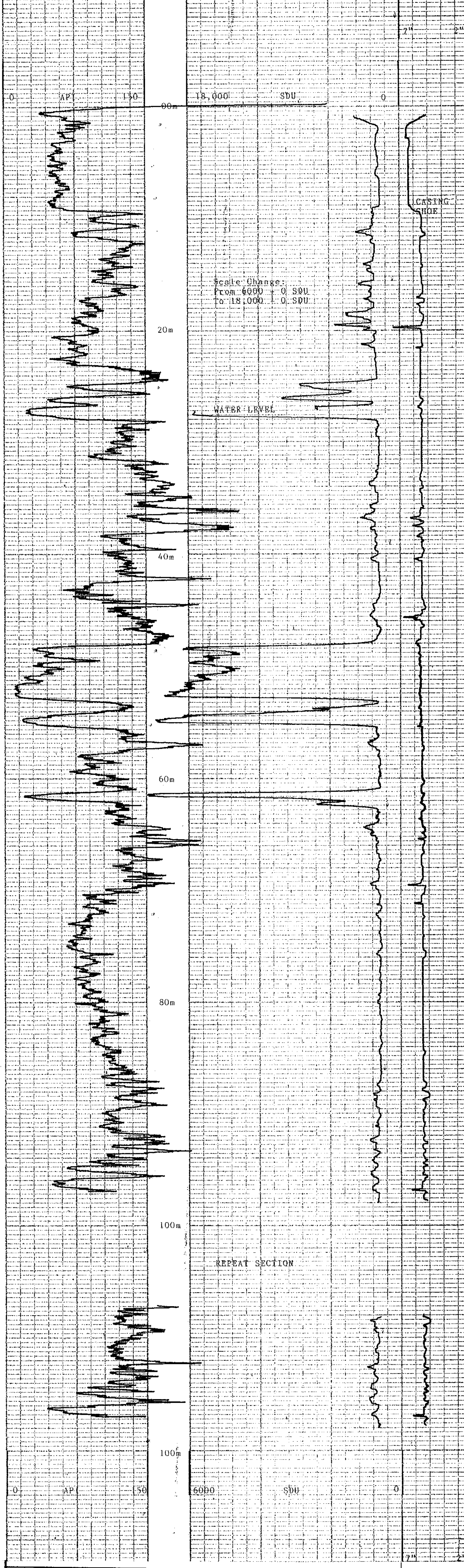
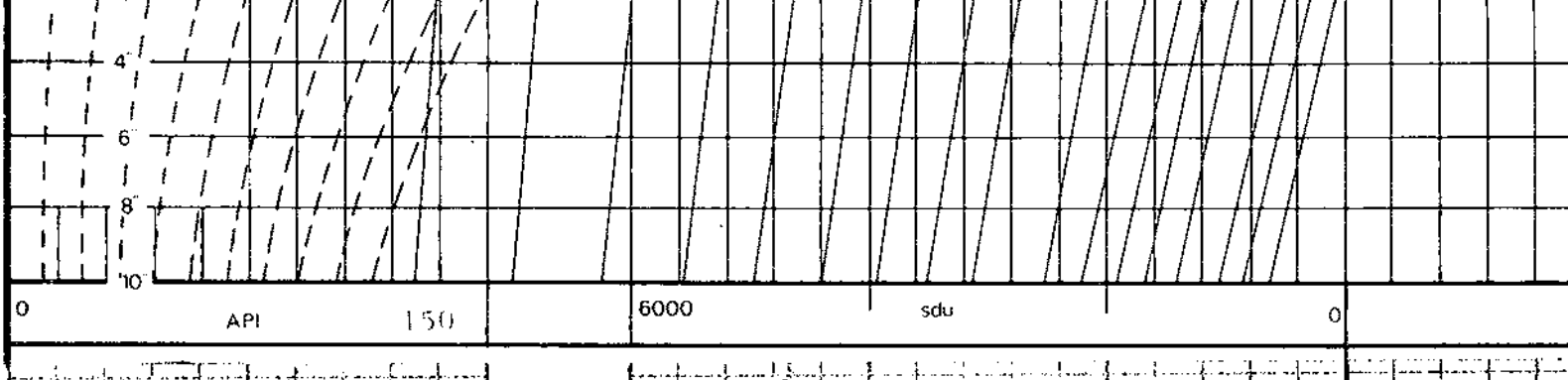
GAMMA RAY

DEPTH

BULK DENSITY g/cm³

CALIPER INCHES

HOLE SIZE CORRECTION DATA



GAMMA RAY

DEPTH

BULK DENSITY g/cm³

CALIPER INCHES



BOREHOLE QHR 87-045 AREA TRANSFER
CLIENT QUINTETTE COUNTRY CANADA

COAL LITHOLOGY LOG



NEUTRON-NEUTRON
GAMMA RAY

BOREHOLE QHR 87-045

CLIENT QUINTETTE

AREA TRANSFER

COUNTRY CANADA

DATE LOGGED 87 08 21

DEPTH SCALE
1:200

2 OF 2 LOGS

BOREHOLE DATA

REFER TO LITHOLOGY LOG

OPERATION DATA

REFER TO LITHOLOGY LOG

EQUIPMENT AND RECORDING DATA

| LOG | TAPING | PANEL | CAL | | | | |
|-------|-------------------------------------|-------|-------|---|---|------|---|
| | LOG RECORD DIRECTOR SPEED T.C. NORM | | COEFF | | | | |
| N-V | Y | 9 | D | 9 | 1 | 11.6 | - |
| GAMMA | Y | 9 | D | 9 | 1 | 1.4 | - |

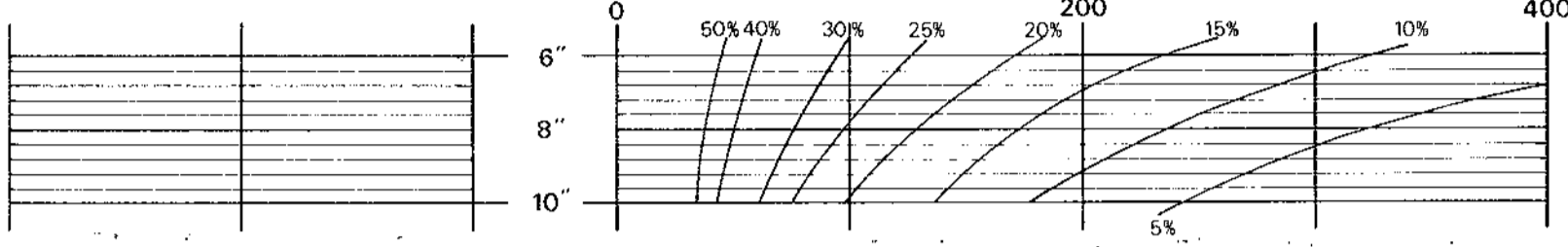
SOND: 215 SQRT 481

REMARKS

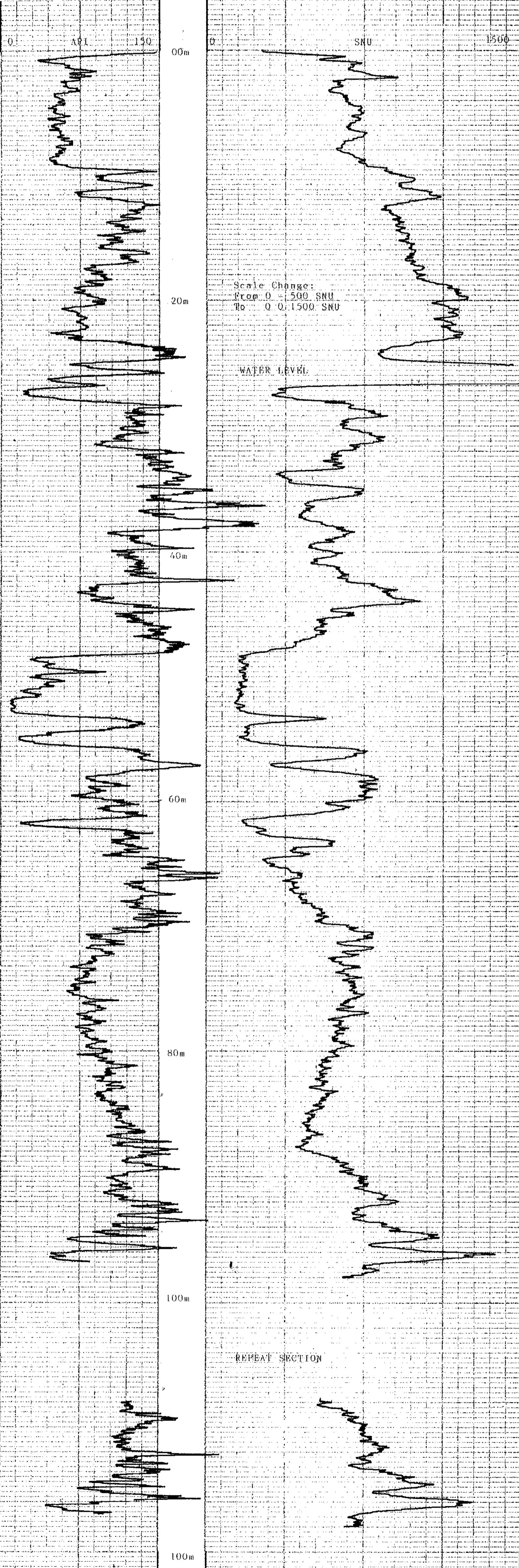
739

| | | | | | |
|-----------|-------|-----------------|---|-----|-----|
| GAMMA RAY | DEPTH | NEUTRON-NEUTRON | | | |
| 0 | API | 150 | 0 | SNU | 500 |

SANDSTONE POROSITY



MY (3) A58451 R



| | | | | | |
|-----------|-------|-----------------|---|-----|-----|
| GAMMA RAY | DEPTH | NEUTRON-NEUTRON | | | |
| 0 | API | 150 | 0 | SNU | 500 |

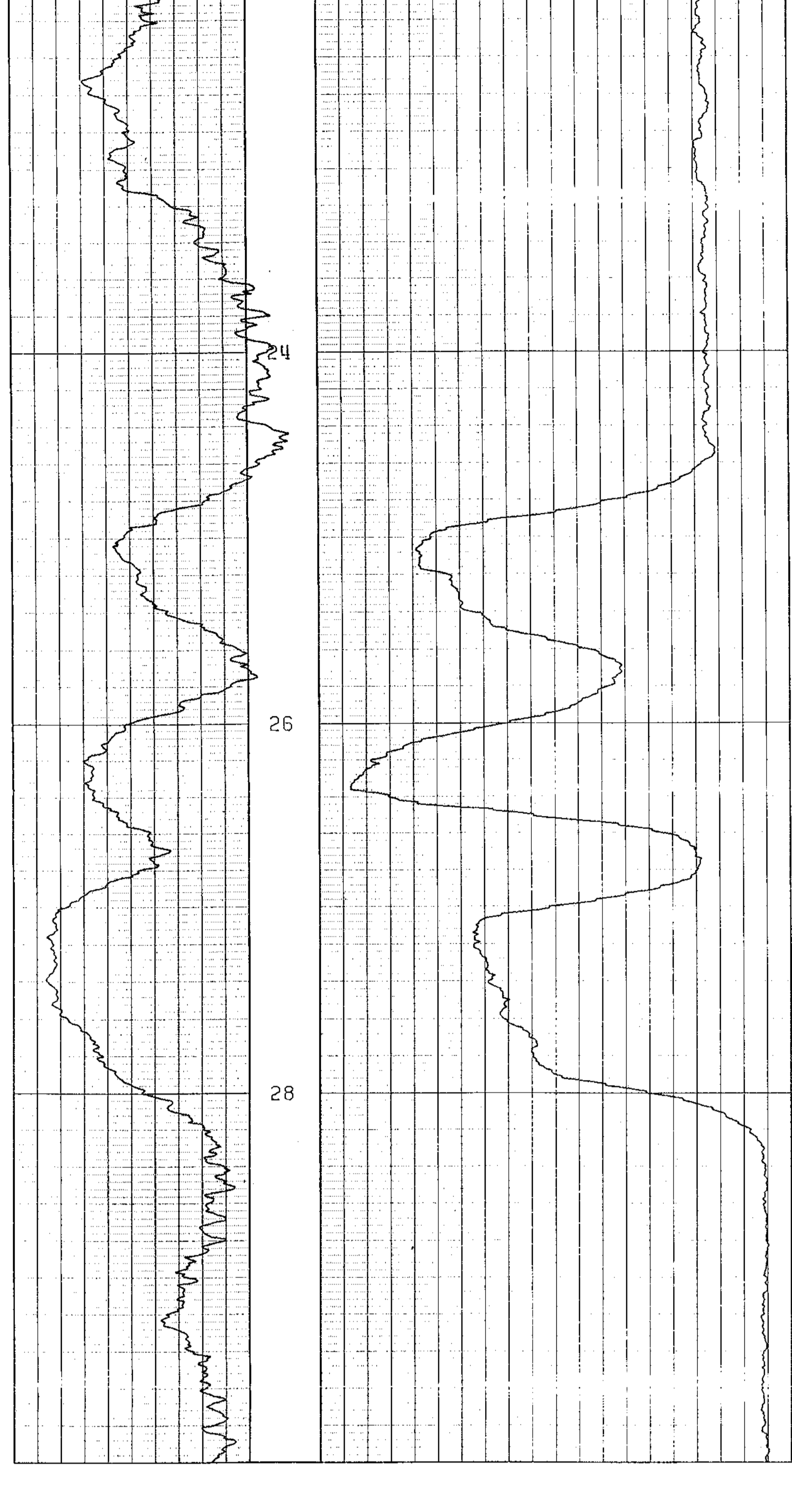
| | | | |
|----------|------------|---------|----------|
| BOREHOLE | QHR 87-045 | AREA | TRANSFER |
| CLIENT | QUINTETTE | COUNTRY | CANADA |



DETAIL LOGS

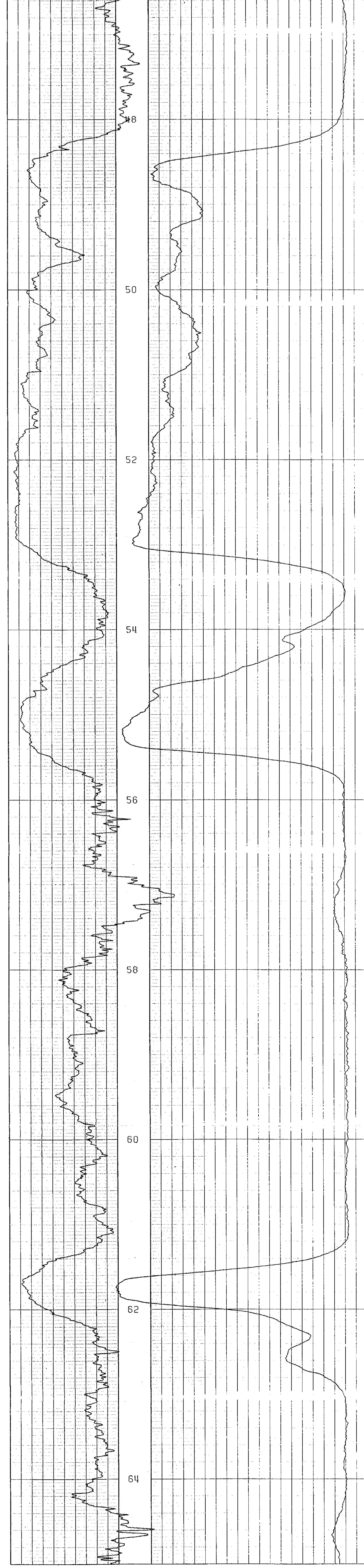
739

DEPTH SCALE 10000 L.S.D (CCS) 0
 20 CLIENT: QUINTETTE COFL
 WELL NO: OHR 87-045
 AREA: TRANSFER PIT
 CASING: 4.0M
 WATER: 30.0M
 DEPTH: 22.00-30.00
 DATE PROCESSED: 07-NOV-87



DETAIL LOGS

DEPTH SCALE 6000 L.S.D (CCS) 0
 20 CLIENT:
 WELL NO:
 AREA:
 CASING:
 WATER:
 DEPTH: 46.00-65.00
 DATE PROCESSED: 07-NOV-87

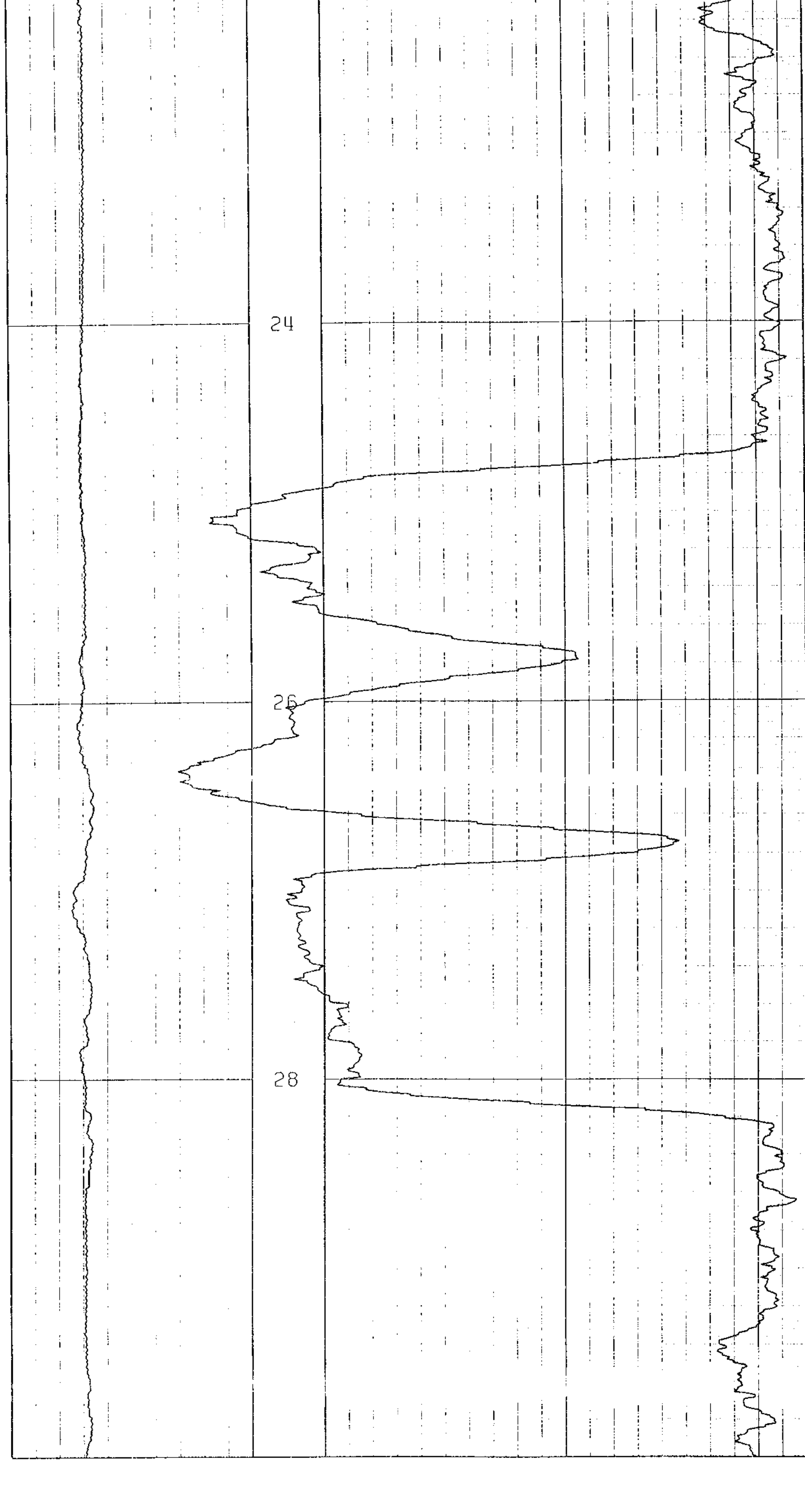


DETAIL LOGS

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DEPTH SCALE 25000 B.R.D (CCS) 15000
 20 CLIENT: QUINETTE COAL
 WELL NO: OHR 87-045
 AREA: TRANSFER PIT
 CASING: 8.0" V
 WATER: 30.0M
 DEPTH: 22.00-26.00
 DATE PROCESSED: 11-NOV-87

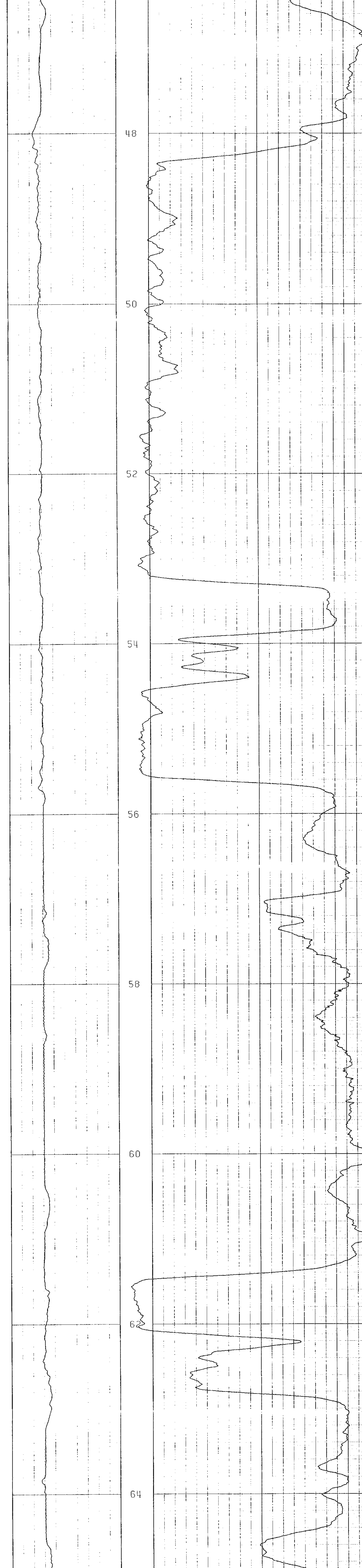
7 CALIPER 2



DETAIL LOGS

DEPTH SCALE 25000 B.R.D (CCS) 15000
 20 CLIENT: QUINETTE COAL
 WELL NO: OHR 87-045
 AREA: TRANSFER PIT
 CASING: 8.0" V
 WATER: 30.0 M
 DEPTH: 46.00-65.00
 DATE PROCESSED: 11-NOV-87

7 CALIPER 2





DIPMETER ANALYSIS

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CLIENT _____
BOREHOLE _____
AREA _____
COUNTRY _____

QUINETTE COAL LTD.
QHR 87045
TRANSFER PIT
CANADA

DATE LOGGED.....21-AUG-87
DATE PROCESSED..04-SEP-87

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COMMENTS.....

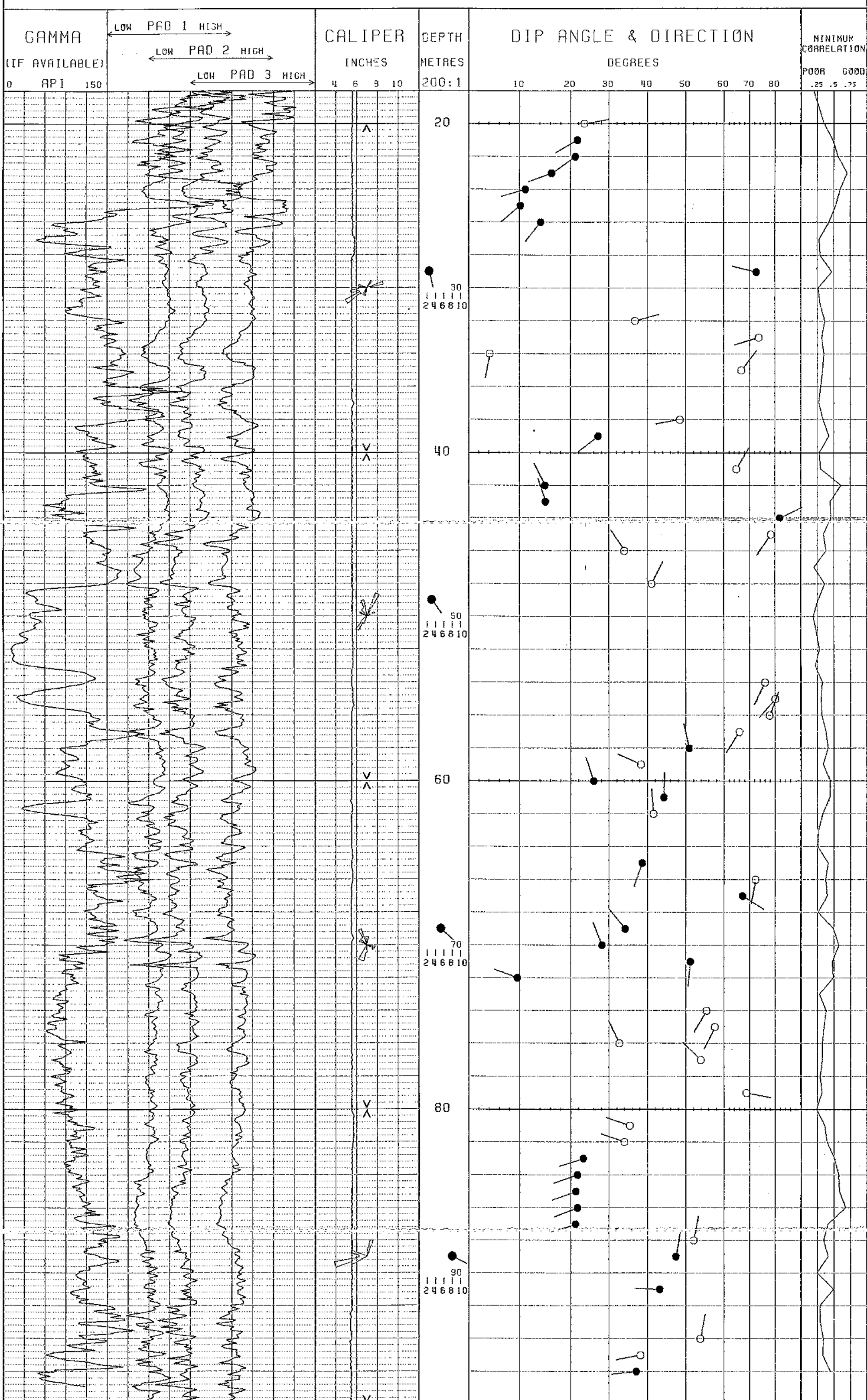
WATER LEVEL @ 18.0M

INTERPRETATION PARAMETERS

STEP 1.00M. DECLINATION 24.0 EAST
INTERVAL 2.00M. DEPTH RANGE 18.00 - 98.00M.
SEARCH ANGLE 80. DATE PROCESSED 04-SEP-87

AVERAGE BOREHOLE DEVIATION & DIRECTION
ANNOTATED EVERY 20.0M.
RISE DIAGRAMS SEGMENTED EVERY TEN DEGREES,
.1" RADIUS PER DIP MARKER DISPLAYED

LEGEND:
● GOOD (>0.40)
○ FAIR (>0.30)



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BPB DIPMETER ANALYSIS
INTERPRETATION NOTES

- All plots are correct to the resolution of the plotter used, i.e. one hundredth of an inch. Vertical resolution may vary by up to one percent but each plot is correct within itself, the plotted data being dynamically merged with its gridded background. Plots exceeding eight metres in length will be split into multiples thereof, however there is no data loss associated with this subdivision.
- Rose diagrams are plotted between every major division and are delimited by two bold arrows. For certain replay scales it may be desirable to plot these less frequently; this option is available on request.
- The borehole tilt and azimuth displayed on the plot are the average values over the whole major division.
- The replay scale for pads 1, 2 & 3 are designed to give the maximum visual effect over the plotted interval. Replaying shorter sections of the curve will enhance this display.
- The grid over which the computed dip information is displayed is locally linear. That is to say it is linear between 0 & 10, degrees, 10 & 20, 20 & 30 etc.
- The correlation value will vary depending upon the interval size selected. Generally speaking the larger the correlation interval, the lower the value becomes. For this reason a direct comparison of this value for differing correlation intervals is meaningless, quality control being exercised with an appreciation of this effect.
- For customised control of computed dipmeter analysis the following parameters must be specified:
 correlation step and interval(s)
 magnetic declination (i.e. the difference between true and magnetic North)
 search angle(s)
 depth range(s)
 replay scale(s)
 the frequency for rose diagrams
 (quality control is exercised in accordance with the correlation interval used, alternatively all correlations may be displayed on request)

The following information is a listing of ALL the output from BPB's dipmeter analysis. The data is subdivided into three consecutive sets of data readings, being read from left to right. Below is a full description of each data item:

| | |
|--------------|---|
| DEPTH | the depth corresponding to the centre of the correlation interval |
| CALIPER | the average borehole caliper recorded over the correlation interval |
| HOLE DRIFT | the average borehole deviation from vertical over the correlation interval |
| HOLE AZIMUTH | the average borehole azimuth over the correlation interval in degrees East of true North |
| DIP ANGLE | the computed formation dip in degrees, from the horizontal plane |
| DIP AZIMUTH | the formation azimuth in degrees East from true North |
| CORRELATION | a measure of the reliability of the computed result. This parameter is also used in the visual display to determine the quality of result |

Further recorrelations over any step & interval size are available on any scale over any section of the log. Alternative methods of presentation, or analysis may be made available on request.

03
11

QHR 87045

Magnetic declination 24.00 degrees East of North
Correlation step 1.00 metres, interval 2.00 metres Search angle 80, degrees

04-SEP-87
PAGE 1

| DEPTH metres | CAL. ins. | BOREHOLE TILT | FORMATION AZI | MIN. COR. | DEPTH metres | CAL. ins. | BOREHOLE TILT | FORMATION AZI | MIN. COR. | DEPTH metres | CAL. ins. | BOREHOLE TILT | FORMATION AZI | MIN. COR. | | | | | | |
|-----------------|--------------|------------------|------------------|--------------|-----------------|--------------|------------------|------------------|--------------|-----------------|--------------|------------------|------------------|--------------|-----|------|------|------|------|------|
| 18.00 | 5.6 | 2.6 | 177. | 72.5 | 217. | 0.19 | 19.00 | 5.6 | 2.6 | 178. | 78.5 | 337. | 0.27 | 20.00 | 5.6 | 2.7 | 175. | 24.1 | 79. | 0.35 |
| 21.00 | 5.5 | 2.7 | 172. | 21.9 | 240. | 0.48 | 22.00 | 5.5 | 2.7 | 170. | 21.3 | 233. | 0.57 | 23.00 | 5.6 | 2.8 | 166. | 16.3 | 250. | 0.70 |
| 24.00 | 5.6 | 2.9 | 163. | 11.1 | 254. | 0.59 | 25.00 | 5.6 | 2.9 | 158. | 10.1 | 230. | 0.53 | 26.00 | 5.6 | 2.9 | 154. | 14.2 | 218. | 0.42 |
| 27.00 | 5.7 | 2.9 | 150. | 39.5 | 55. | 0.28 | 28.00 | 5.7 | 3.0 | 146. | 16.9 | 234. | 0.29 | 29.00 | 5.5 | 3.1 | 144. | 72.6 | 283. | 0.47 |
| 30.00 | 5.5 | 3.2 | 143. | 79.2 | 88. | 0.26 | 31.00 | 5.5 | 3.2 | 142. | 76.6 | 99. | 0.29 | 32.00 | 5.5 | 3.3 | 141. | 37.6 | 74. | 0.36 |
| 33.00 | 5.5 | 3.4 | 139. | 73.5 | 253. | 0.32 | 34.00 | 5.5 | 3.4 | 137. | 4.2 | 191. | 0.35 | 35.00 | 5.5 | 3.5 | 136. | 66.8 | 37. | 0.33 |
| 36.00 | 5.5 | 3.6 | 135. | 55.4 | 260. | 0.30 | 37.00 | 5.6 | 3.7 | 136. | 53.2 | 264. | 0.28 | 38.00 | 5.6 | 3.7 | 136. | 49.5 | 260. | 0.34 |
| 39.00 | 5.5 | 3.8 | 136. | 28.0 | 232. | 0.43 | 40.00 | 5.5 | 3.9 | 137. | 58.9 | 228. | 0.28 | 41.00 | 5.5 | 3.9 | 137. | 64.8 | 30. | 0.30 |
| 42.00 | 5.5 | 4.0 | 136. | 15.0 | 333. | 0.61 | 43.00 | 5.5 | 4.2 | 136. | 15.1 | 342. | 0.44 | 44.00 | 5.5 | 4.3 | 135. | 81.8 | 64. | 0.46 |
| 45.00 | 5.5 | 4.4 | 134. | 78.3 | 214. | 0.35 | 46.00 | 5.6 | 4.6 | 133. | 34.5 | 327. | 0.38 | 47.00 | 5.6 | 4.7 | 133. | 32.8 | 302. | 0.20 |
| 48.00 | 5.6 | 4.7 | 135. | 41.2 | 27. | 0.36 | 49.00 | 5.6 | 4.8 | 137. | 39.3 | 176. | 0.26 | 50.00 | 5.6 | 4.9 | 138. | 79.4 | 254. | 0.19 |
| 51.00 | 5.6 | 5.0 | 137. | 80.6 | 293. | 0.24 | 52.00 | 5.6 | 5.2 | 134. | 76.6 | 74. | 0.20 | 53.00 | 5.6 | 5.3 | 132. | 42.7 | 164. | 0.22 |
| 54.00 | 5.6 | 5.4 | 131. | 76.0 | 205. | 0.32 | 55.00 | 5.6 | 5.5 | 131. | 80.1 | 221. | 0.30 | 56.00 | 5.6 | 5.6 | 131. | 77.8 | 21. | 0.32 |
| 57.00 | 5.5 | 5.6 | 130. | 65.9 | 212. | 0.38 | 58.00 | 5.5 | 5.8 | 128. | 50.9 | 348. | 0.41 | 59.00 | 5.5 | 5.9 | 127. | 39.3 | 295. | 0.34 |
| 60.00 | 5.5 | 6.1 | 127. | 26.6 | 342. | 0.44 | 61.00 | 5.5 | 6.3 | 127. | 44.8 | 0. | 0.44 | 62.00 | 5.5 | 6.5 | 126. | 41.7 | 356. | 0.33 |
| 63.00 | 5.5 | 6.6 | 126. | 15.8 | 243. | 0.27 | 64.00 | 5.5 | 6.8 | 125. | 35.3 | 198. | 0.26 | 65.00 | 5.6 | 6.9 | 123. | 39.7 | 199. | 0.41 |
| 66.00 | 5.5 | 7.2 | 122. | 72.3 | 190. | 0.38 | 67.00 | 5.5 | 7.4 | 120. | 67.2 | 122. | 0.40 | 68.00 | 5.5 | 7.6 | 118. | 47.1 | 236. | 0.26 |
| 69.00 | 5.5 | 7.8 | 115. | 34.7 | 321. | 0.49 | 70.00 | 5.5 | 8.0 | 113. | 29.1 | 339. | 0.58 | 71.00 | 5.5 | 8.2 | 113. | 51.3 | 185. | 0.48 |
| 72.00 | 5.5 | 8.4 | 113. | 9.5 | 290. | 0.49 | 73.00 | 5.5 | 8.6 | 113. | 68.5 | 61. | 0.28 | 74.00 | 5.5 | 8.7 | 113. | 56.0 | 209. | 0.38 |
| 75.00 | 5.5 | 8.6 | 112. | 58.6 | 206. | 0.35 | 76.00 | 5.5 | 8.7 | 111. | 33.0 | 335. | 0.32 | 77.00 | 5.5 | 8.8 | 111. | 54.4 | 315. | 0.33 |
| 78.00 | 5.5 | 8.9 | 111. | 73.4 | 192. | 0.29 | 79.00 | 5.5 | 9.0 | 110. | 68.7 | 100. | 0.32 | 80.00 | 5.6 | 9.0 | 110. | 71.8 | 338. | 0.24 |
| 81.00 | 5.6 | 9.0 | 109. | 36.0 | 289. | 0.36 | 82.00 | 5.6 | 9.1 | 108. | 34.5 | 290. | 0.39 | 83.00 | 5.6 | 9.2 | 107. | 23.6 | 251. | 0.51 |
| 84.00 | 5.5 | 9.4 | 106. | 21.9 | 250. | 0.57 | 85.00 | 5.5 | 9.7 | 106. | 21.5 | 249. | 0.58 | 86.00 | 5.5 | 9.9 | 105. | 21.9 | 249. | 0.68 |
| 87.00 | 5.5 | 10.2 | 104. | 21.3 | 251. | 0.42 | 88.00 | 5.5 | 10.5 | 103. | 52.3 | 11. | 0.35 | 89.00 | 5.5 | 10.8 | 103. | 48.4 | 9. | 0.41 |
| 90.00 | 5.5 | 11.1 | 102. | 71.5 | 32. | 0.25 | 91.00 | 5.5 | 11.3 | 101. | 43.6 | 273. | 0.50 | 92.00 | 5.5 | 11.4 | 100. | 83.7 | 360. | 0.29 |
| 93.00 | 5.4 | 11.5 | 99. | 71.2 | 28. | 0.29 | 94.00 | 5.4 | 11.7 | 98. | 54.3 | 11. | 0.34 | 95.00 | 5.4 | 12.0 | 98. | 39.2 | 260. | 0.33 |
| 96.00 | 5.4 | 12.2 | 98. | 37.9 | 264. | 0.44 | | | | | | | | | | | | | | |

739

739

QHR 87047
VALLEY ROAD

LOG DEPTH 0080.00
 TRUE DEPTH 0079.85
 TILT 4.88 DG
 BEARING 240.84 DG
 NORTHING -002.24
 EASTING -003.75

LOG DEPTH 0070.00
 TRUE DEPTH 0069.89
 TILT 3.97 DG
 BEARING 249.94 DG
 NORTHING -001.83
 EASTING -003.00

LOG DEPTH 0060.00
 TRUE DEPTH 0059.91
 TILT 3.61 DG
 BEARING 256.83 DG
 NORTHING -001.59
 EASTING -002.35

LOG DEPTH 0050.00
 TRUE DEPTH 0049.93
 TILT 3.64 DG
 BEARING 255.42 DG
 NORTHING -001.45
 EASTING -001.74

LOG DEPTH 0040.00
 TRUE DEPTH 0039.95
 TILT 3.71 DG
 BEARING 231.96 DG
 NORTHING -001.29
 EASTING -001.12

LOG DEPTH 0030.00
 TRUE DEPTH 0029.97
 TILT 3.25 DG
 BEARING 216.63 DG
 NORTHING -000.89
 EASTING -000.61

LOG DEPTH 0020.00
 TRUE DEPTH 0019.99
 TILT 2.19 DG
 BEARING 204.43 DG
 NORTHING -000.43
 EASTING -000.27

LOG DEPTH 0010.00
 TRUE DEPTH 0010.00
 TILT 1.68 DG
 BEARING 233.85 DG
 NORTHING -000.08
 EASTING -000.11

LOG DEPTH 0005.00
 TRUE DEPTH 0005.00
 TILT 1.87 DG
 BEARING 281.97 DG
 NORTHING +000.00
 EASTING +000.00

DEPTH = 0010.00
 TILT = 1.50 DG
 BEARING = 185.73 DG

DEPTH = 0020.00
 TILT = 2.88 DG
 BEARING = 223.12 DG

DEPTH = 0030.00
 TILT = 3.62 DG
 BEARING = 210.14 DG

DEPTH = 0040.00
 TILT = 3.81 DG
 BEARING = 253.78 DG

DEPTH = 0050.00
 TILT = 3.47 DG
 BEARING = 257.06 DG

DEPTH = 0060.00
 TILT = 3.75 DG
 BEARING = 256.59 DG

DEPTH = 0070.00
 TILT = 4.18 DG
 BEARING = 243.29 DG

DEPTH = 0080.00
 TILT = 5.58 DG
 BEARING = 238.38 DG

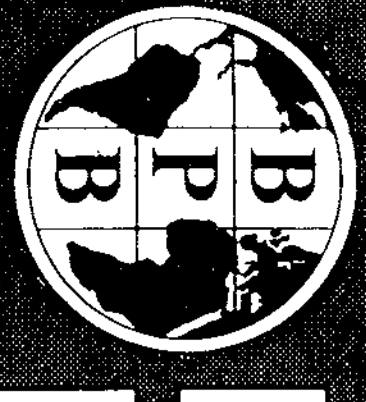
DATE 870822
 JOB NUMBER 0044
 LOG LABEL 026.1
 MAG 1 MAX 206
 MAG 1 MIN 150
 MAG 2 MAX 204
 MAG 2 MIN 156
 MAG 3 MAX 206
 MAG 3 MIN 156
 L. CELL 1 TILT 1 06
 L. CELL 1 CPS 1 250
 L. CELL 1 TILT 2 -06
 L. CELL 1 CPS 2 192
 L. CELL 2 TILT 1 06
 L. CELL 2 CPS 1 249
 L. CELL 2 TILT 2 -06
 L. CELL 2 CPS 2 192

MAG 1 CENTRE 178
 MAG 2 CENTRE 180
 MAG 3 CENTRE 181
 L. CELL 1 CENTRE 223
 L. CELL 2 CENTRE 220

MAG DECL 024
 STOP DEPTH 0005

QHR 87047
 VALLEY ROAD

- logged through rods only.
 - deviation is the only open hole log.



COAL

LITHOLOGY LOG

SONDE TYPE
COAL COMBINATION
SONDE

LOG SUITE
GAMMA RAY
L.S. DENSITY
CALIPER

BOREHOLE QHR 87-047
CLIENT QUINTECITE
AREA TRANSFER
COUNTRY CANADA
DATE LOGGED 87 08 22
DEPTH SCALE 1:200
LOGS

BOREHOLE DATA

PERMANENT DATUM GROUND LEVEL
ELEVATION OF P.O. BpB
MEASUREMENTS FROM G.L. G.L.
DEPTH REACHED 79.00m 80.00m
CASING SHOE 10.00m
BIT SIZES 1 8 1/4" TO 10m 2 5 3/4" TO 50m
3 TO TO
CASING SIZES 1 6 1/2" TO 11m 2 TO TO

FLUID DATA

NATURE WATER
SG 1.01 g/cc
LEVEL 26.00m
VISCOSITY N/A
Rm at meas temp N/A
BH # N/A

OPERATION DATA

FIRST READING 78.00m
LAST READING 0.00m
INTERVAL LOGGED 78m
UNIT-TRUCK No 46/V217
ENGINEER N. COX
WITNESS

739

EQUIPMENT AND RECORDING DATA

| COAL COMBINATION SONDE | | | | TAPING | | | | PANEL | | CAL COEFF | DEPTHS | | | SEAM LOG RUN |
|------------------------|-------|-------------------|------------|-----------|--------------|---------------|-------|---------|------|-----------|--------|----|----------|--------------|
| LOG | SONDE | EQUIPMENT SOURCE | CALIBRATOR | LOG TAPED | RECORD SPEED | DIRECT REPLAY | SPEED | FC SECS | NORM | | FROM | TO | INTERVAL | |
| GAMMA RAY | 153 | | 367 | Y | 9 | D | 9 | 1 | - | 1.4 | 78 | 0 | 78 | Y |
| L.S. DENSITY | | 5852 | 0041 | Y | 9 | D | 9 | 2 | - | | 79 | 1 | 78 | Y |
| CALIPER | | SIDEWALL POSITION | | Y | 9 | D | | 3 | - | 1.0 | 79 | 1 | 78 | Y |

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

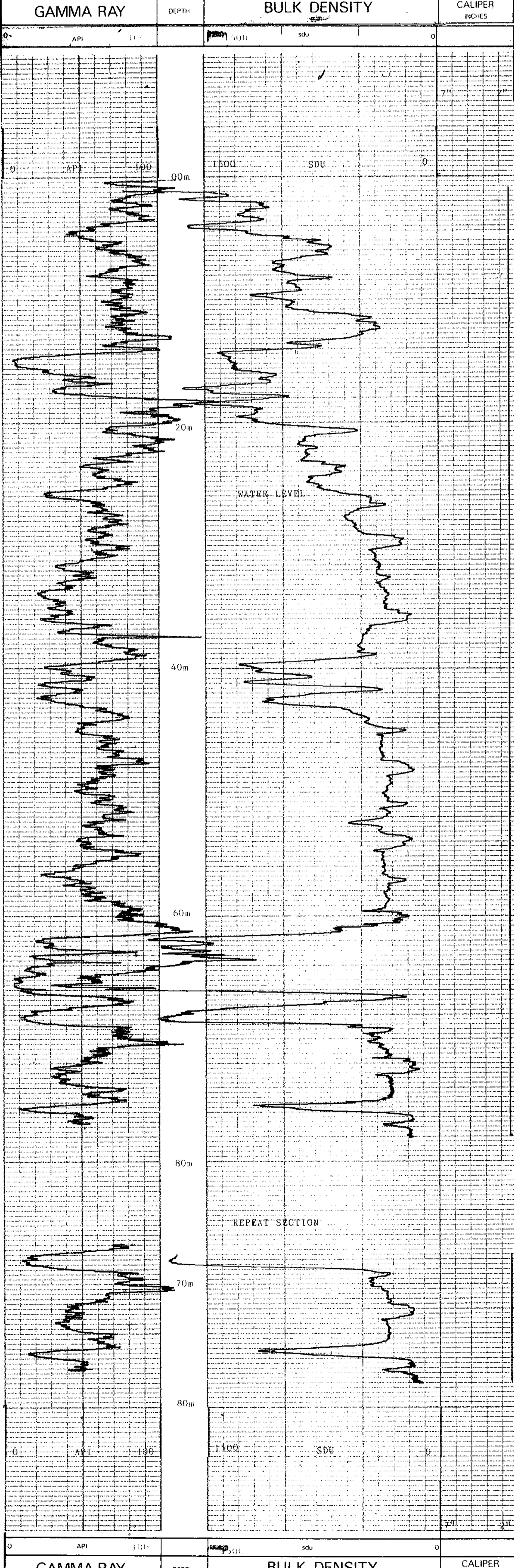
| FROM | TO | INTERVAL | SEAM THICKNESS | INTERVAL TOTAL |
|----------|-----|----------|----------------|----------------|
| 78m | 71m | 7m | 44 | 19m |
| 74m | 60m | 14m | 38m | 13m |
| Interval | 4m | 10m | 6m | 6m |
| | | | | 26m |

| ADDITIONAL SONDES RUN | | | | REFER TO ADDITIONAL HEADINGS | REMARKS |
|-----------------------|------|-------------------|------------------|------------------------------|--|
| SONDE | LOG | GENERAL SCALE LOG | DETAIL SCALE LOG | | |
| 213 | VERT | 1:200 | | | Logging was carried out through the drill rods (N-N and CCS). After the drill rods were pulled the VERTICALLY was run. This tool became stuck at approximately 36m. It was released, run to surface. No other runs were attempted. |
| 215 | N-N | | | | |

BPB COAL LITHOLOGY LOG

CALIBRATION DATA

| JIG No | VALUE @ 5 DIAM | JIG CAL DATE | JIG VALUE | SDU @ | g/cm ³ | ins | cps |
|---------------------------------|----------------|--------------|-----------|-------|-------------------|-----|-----|
| JIG MARK SHOWN AT ABOVE VALUE - | | JIG No | SPAN | NORM | SDU = CPS | ins | cps |



| GAMMA RAY | DEPTH | BULK DENSITY | CALIPER INCHES |
|-----------|-------|--------------|----------------|
| 0 | 0 | 0 | 0 |
| 100 | 100 | 1500 | 10 |



BOREHOLE QHR 87-047 AREA TRANSFER
CLIENT QUINTECITE COUNTRY CANADA
COAL LITHOLOGY LOG

720



NEUTRON-NEUTRON
GAMMA RAY

BOREHOLE QHR 87-047

CLIENT QUINTETTE

AREA TRANSFER

COUNTRY CANADA

DATE LOGGED 87 08 22

DEPTH SCALE
1:200

2 OF 4 LOGS

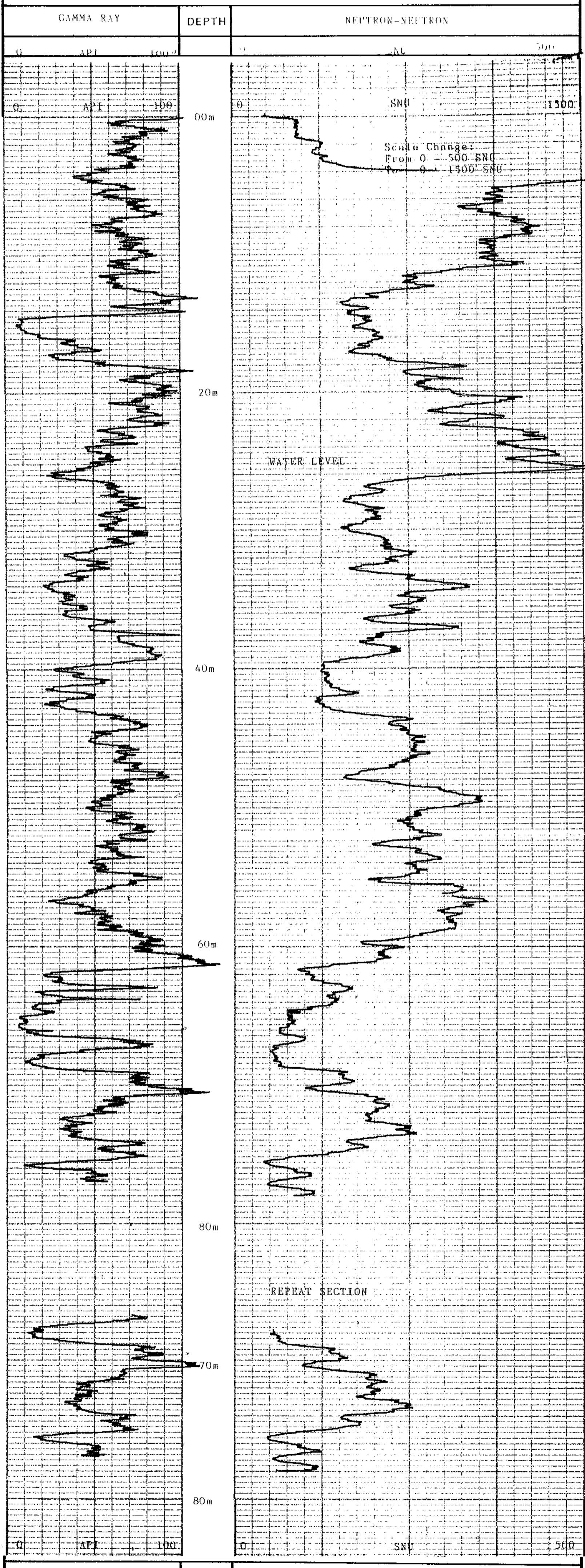
BOREHOLE DATA REFER TO LITHOLOGY LOG

OPERATION DATA REFER TO LITHOLOGY LOG

EQUIPMENT AND RECORDING DATA

| | | | |
|--------------------|---------------|-------|----------|
| LOG | TAPING | PANEL | CAL |
| LOG | RECORD/REPLAY | I.C. | COEFF |
| TABED | SPEED | SECS | NORM |
| Y | 9 | 9 | 11.6 |
| N-N | D | 1 | - |
| GAMMA ^a | Y | R | 9 |
| | | | 1 |
| | | | 1.44 |
| | SONDE | 215 | NO. 4812 |

REMARKS
Logging carried out through
drill rods. Log is therefore not
calibrated.



BOREHOLE QHR 87-047
CLIENT QUINTETTE
AREA TRANSFER
COUNTRY CANADA

DETAIL LOGS

739

DEPTH SCALE

1500
20

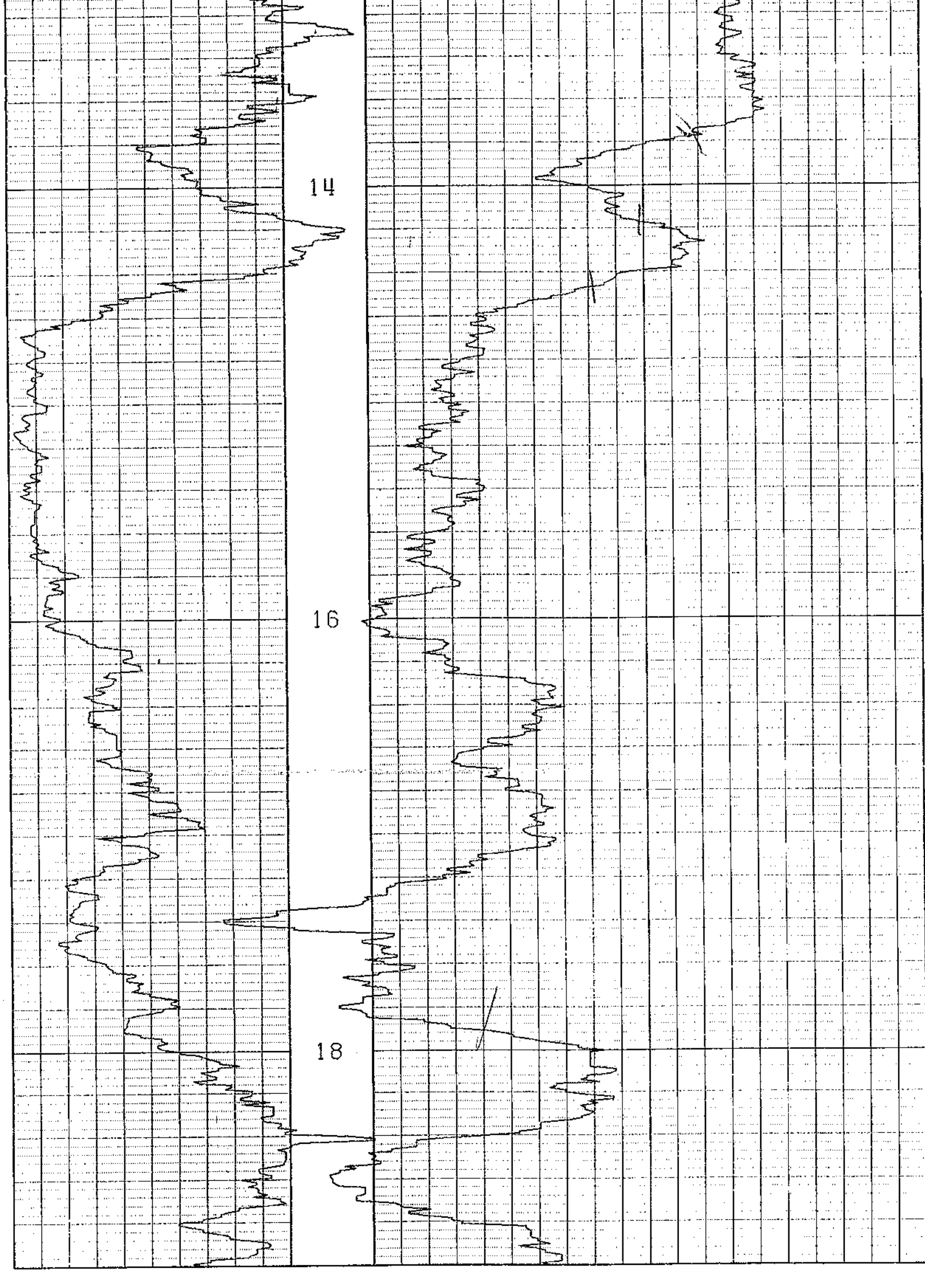
L.S.D (CCS)

0

CLIENT: QUINTETTE COAL
WELL NO: QHR 87047
AREA: TRANSFER PIT
CASING: RODS IN HOLE
WATER: 26.0M
DEPTH: 13.00-19.00

DATE PROCESSED: 10-SEP-87

GAMMA RAY



DETAIL LOGS

DEPTH SCALE

1500
20

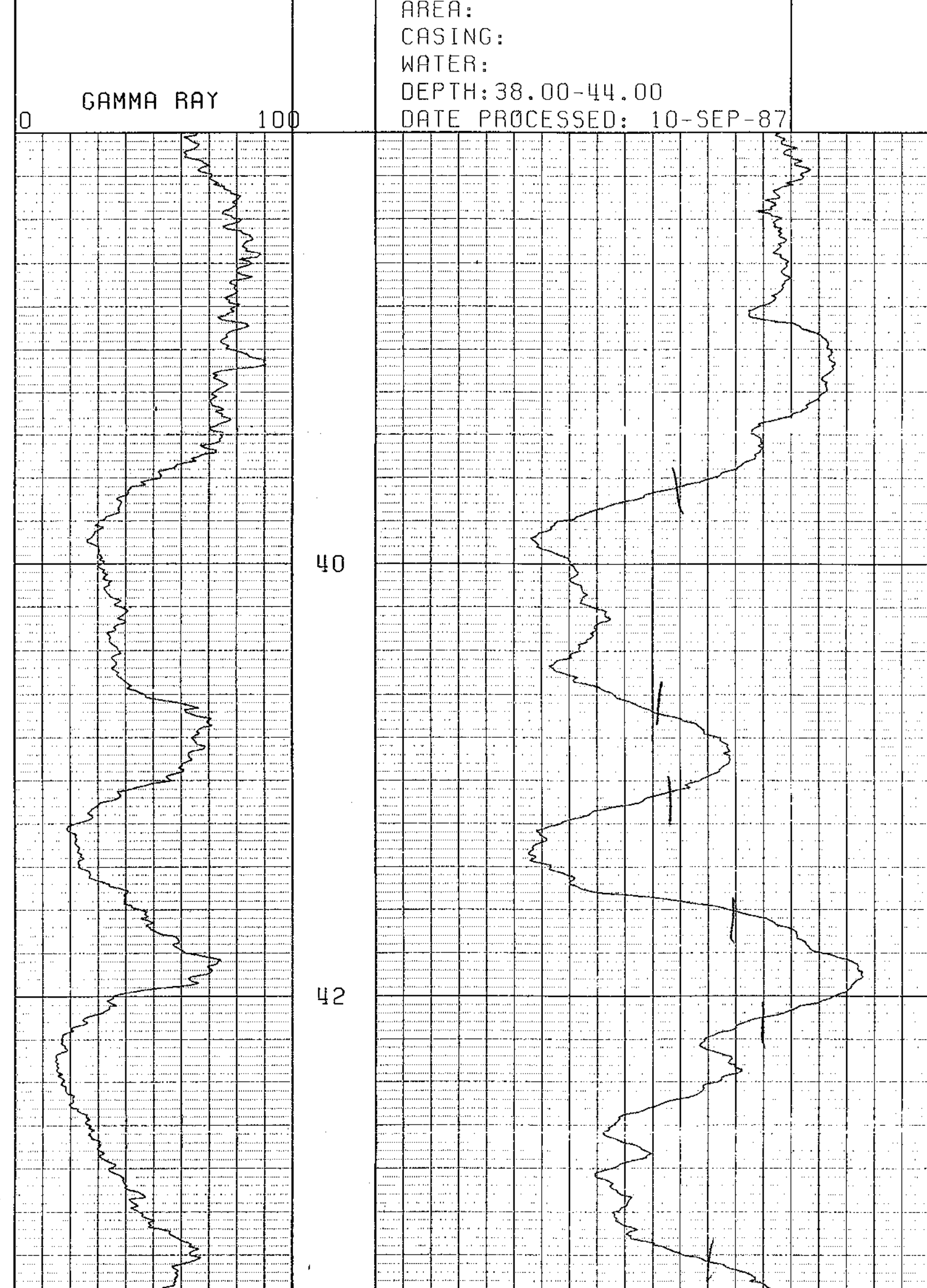
L.S.D (CCS)

0

CLIENT: QUINTETTE COAL
WELL NO: QHR 87047
AREA: TRANSFER PIT
CASING: RODS IN HOLE
WATER: 26.0M
DEPTH: 38.00-44.00

DATE PROCESSED: 10-SEP-87

GAMMA RAY



DETAIL LOGS

DEPTH SCALE

1500
20

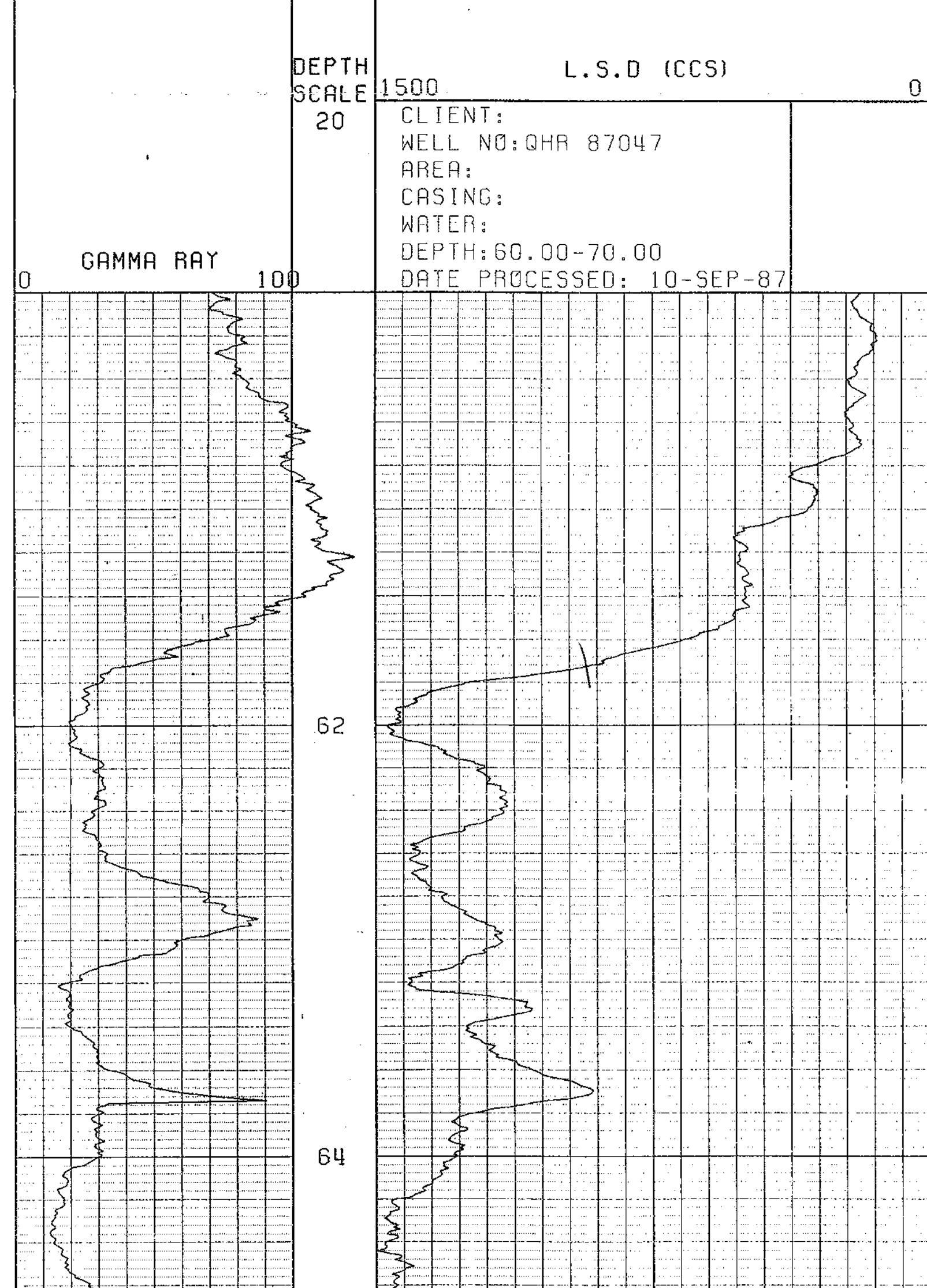
L.S.D (CCS)

0

CLIENT: QUINTETTE COAL
WELL NO: QHR 87047
AREA: TRANSFER PIT
CASING: RODS IN HOLE
WATER: 26.0M
DEPTH: 60.00-70.00

DATE PROCESSED: 10-SEP-87

GAMMA RAY



DETAIL LOGS

DEPTH SCALE

1500
20

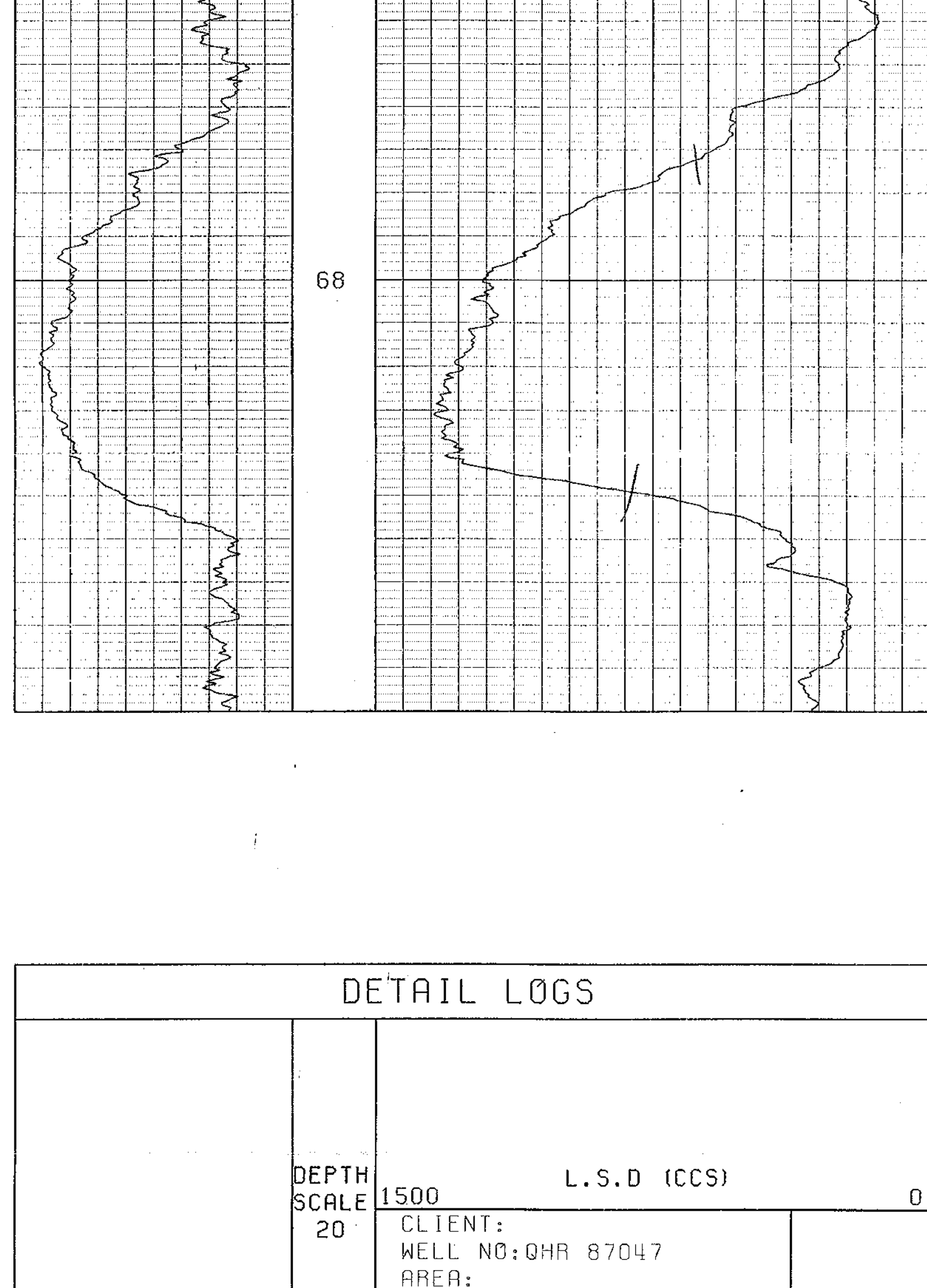
L.S.D (CCS)

0

CLIENT: QUINTETTE COAL
WELL NO: QHR 87047
AREA: TRANSFER PIT
CASING: RODS IN HOLE
WATER: 26.0M
DEPTH: 74.00-77.00

DATE PROCESSED: 10-SEP-87

GAMMA RAY



QHR87048
VALLEY ROAD

LOG DEPTH 0110.00
TRUE DEPTH 0109.07
TILT 9.90 DG
BEARING 242.33 DG
NORTHING -006.91
EASTING -011.05

LOG DEPTH 0100.00
TRUE DEPTH 0099.22
TILT 9.56 DG
BEARING 240.19 DG
NORTHING -006.11
EASTING -009.53

LOG DEPTH 0090.00
TRUE DEPTH 0089.36
TILT 9.01 DG
BEARING 240.33 DG
NORTHING -005.29
EASTING -008.09

LOG DEPTH 0080.00
TRUE DEPTH 0079.48
TILT 8.59 DG
BEARING 242.86 DG
NORTHING -004.51
EASTING -006.72

LOG DEPTH 0070.00
TRUE DEPTH 0069.59
TILT 8.31 DG
BEARING 244.57 DG
NORTHING -003.83
EASTING -005.39

LOG DEPTH 0060.00
TRUE DEPTH 0059.70
TILT 7.62 DG
BEARING 246.61 DG
NORTHING -003.21
EASTING -004.09

LOG DEPTH 0050.00
TRUE DEPTH 0049.79
TILT 7.27 DG
BEARING 239.54 DG
NORTHING -002.68
EASTING -002.87

LOG DEPTH 0040.00
TRUE DEPTH 0039.87
TILT 6.81 DG
BEARING 228.47 DG
NORTHING -002.04
EASTING -001.78

LOG DEPTH 0030.00
TRUE DEPTH 0029.94
TILT 4.81 DG
BEARING 215.89 DG
NORTHING -001.25
EASTING -000.89

LOG DEPTH 0020.00
TRUE DEPTH 0019.98
TILT 3.14 DG
BEARING 202.89 DG
NORTHING -000.57
EASTING -000.40

LOG DEPTH 0010.00
TRUE DEPTH 0010.00
TILT 2.35 DG
BEARING 248.92 DG
NORTHING -000.07
EASTING -000.19

LOG DEPTH 0005.00
TRUE DEPTH 0005.00
TILT 1.90 DG
BEARING 297.57 DG
NORTHING +000.00
EASTING +000.00

739

DEPTH = 0010.00
TILT = 2.80 DG
BEARING = 200.27 DG

DEPTH = 0020.00
TILT = 3.48 DG
BEARING = 205.52 DG

DEPTH = 0030.00
TILT = 6.13 DG
BEARING = 226.26 DG

DEPTH = 0040.00
TILT = 7.48 DG
BEARING = 230.69 DG

DEPTH = 0050.00
TILT = 7.06 DG
BEARING = 248.39 DG

DEPTH = 0060.00
TILT = 8.17 DG
BEARING = 244.83 DG

DEPTH = 0070.00
TILT = 8.44 DG
BEARING = 244.30 DG

DEPTH = 0080.00
TILT = 8.75 DG
BEARING = 241.42 DG

DEPTH = 0090.00
TILT = 9.28 DG
BEARING = 239.23 DG

DEPTH = 0100.00
TILT = 9.85 DG
BEARING = 241.15 DG

DEPTH = 0110.00
TILT = 9.96 DG
BEARING = 243.51 DG

DATE 870823
JOB NUMBER 0048
LOG LABEL 026.1
MAG 1 MAX 206
MAG 1 MIN 150
MAG 2 MAX 204
MAG 2 MIN 156
MAG 3 MAX 206
MAG 3 MIN 156
L. CELL 1 TILT 1 06
L. CELL 1 CPS 1 250
L. CELL 1 TILT 2 -06
L. CELL 1 CPS 2 192
L. CELL 2 TILT 1 6
L. CELL 2 CPS 1 249
L. CELL 2 TILT 2 -06
L. CELL 2 CPS 2 192
MAG 1 CENTRE 178
MAG 2 CENTRE 180
MAG 3 CENTRE -181
L. CELL 1 CENTRE 223
L. CELL 2 CENTRE 220
MAG DECL 024
STOP DEPTH 0005

QHR 87048
VALLEY ROAD



COAL LITHOLOGY LOG

SONDE TYPE
COAL COMBINATION SONDE

LOG SUITE
GAMMA RAY
L.S. DENSITY
CALIPER

BOREHOLE DATA

PERMANENT DATUM: GROUND LEVEL
ELEVATION OF P.O.: BPS
MEASUREMENTS FROM: G.L.
DEPTH REACHED: 111.70m
CASING SHOE: 8.70m
BIT SIZES: 1 8 1/4" TO 8.0m, 2 5 3/4" TO 111.5m
CASING SIZES: 1 4 1/2" TO 8.0m, 2 4 1/2" TO 111.5m

AREA: TRANSFER
COUNTRY: CANADA
DATE LOGGED: 87 JUN 23
DEPTH SCALE: 1:209
LOGS: 1 OF 3 LOGS

BOREHOLE DATA

BOREHOLE: QHR 87-048
CLIENT: QUINTEITE

FLUID DATA

NATURE: WATER
SG: 1.01 g/cc
LEVEL: 15.20m
VISCOSITY: N/A
PH: N/A
BHT: N/A

OPERATION DATA

FIRST READING: 109.00m
LAST READING: 0.0m
INTERVAL LOGGED: 109m
UNIT-TRUCK NO: 461217
ENGINEER: K. COX
WITNESS:

739

EQUIPMENT AND RECORDING DATA

| LOG | EQUIPMENT | | | TAPING | | PANEL | | CAL COEFF | DEPTHS | | | SEAM LOG RUN | | |
|--------------|-------------------|--------|------------|-----------|--------------|------------------|-------|-----------|---------|------|------|--------------|-----|----------|
| | SONDE | SOURCE | CALIBRATOR | LOG TAPED | RECORD SPEED | DIRECT or REPLAY | SPEED | | TC SECS | NORM | FROM | | TO | INTERVAL |
| GAMMA RAY | | | 367 | Y | 9 | D | 9 | 1 | - | 1.44 | 109 | 0 | 109 | Y |
| L.S. DENSITY | 153 | | 0041 | Y | 9 | D | 9 | 3 | 7.38 | - | 110 | 1 | 109 | Y |
| CALIPER | SIDEWALL POSITION | | | Y | 9 | D | 9 | 3 | - | 1.0 | 110 | 1 | 109 | Y |

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

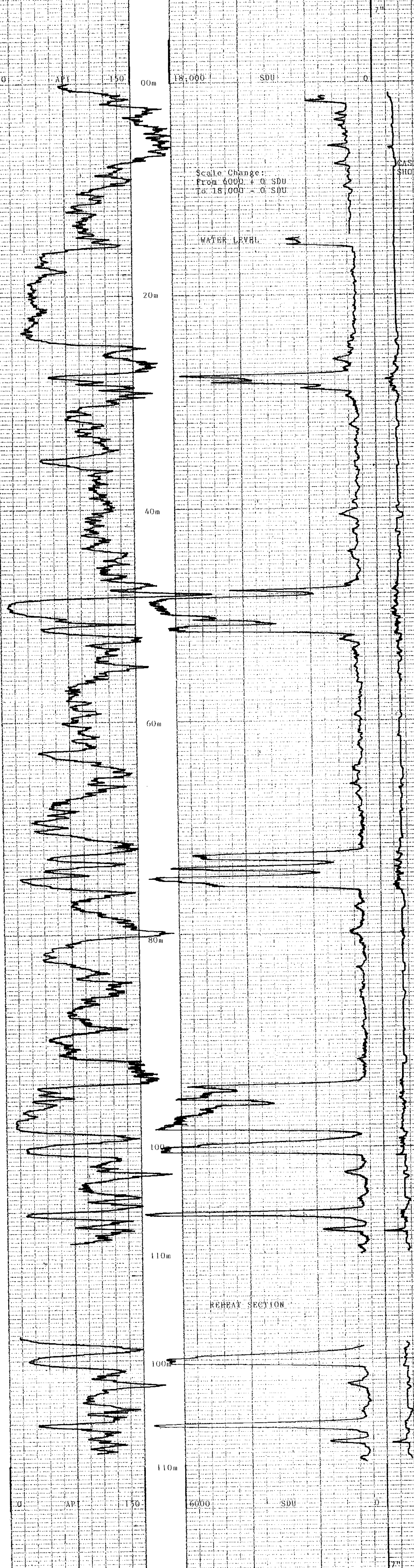
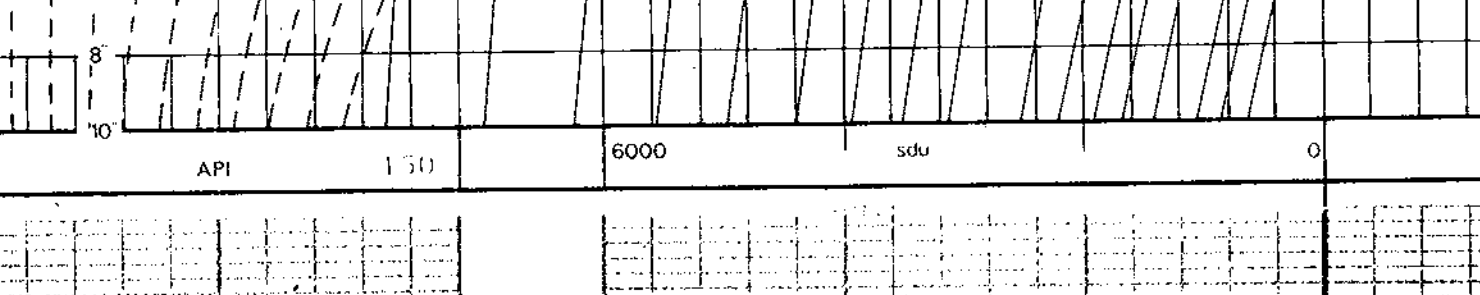
| FROM | 108m | 102m | 77m | 53m | 30m | INTERVAL TOTAL |
|----------|------|------|-----|-----|-----|----------------|
| TO | 105m | 93m | 71m | 46m | 26m | |
| INTERVAL | 3m | 9m | 6m | 7m | 4m | = 29m |

| SONDE | LOG | GENERAL SCALE LOG | DETAIL SCALE LOG | REFER TO ADDITIONAL HEADINGS | REMARKS |
|-------|------|-------------------|------------------|------------------------------|---------|
| 215 | N-N | 1:200 | | | |
| 213 | VERT | | | | |
| 204 | DIP | | | | |

BPB COAL LITHOLOGY LOG CALIBRATION DATA

| JIG No | VALUE @ 5 DIAM | JIG CAL DATE | JIG VALUE | SDU @ | g/cm ³ | ins | cps |
|---------------------------------|----------------|--------------|-----------|-------|-------------------|-----|-----|
| JIG MARK SHOWN AT ABOVE VALUE - | | JIG No | SPAN | NORM | SDU - CPS | ins | cps |

| GAMMA RAY | DEPTH | BULK DENSITY g/cm ³ | CALIPER INCHES |
|-----------|-------|--------------------------------|----------------|
|-----------|-------|--------------------------------|----------------|

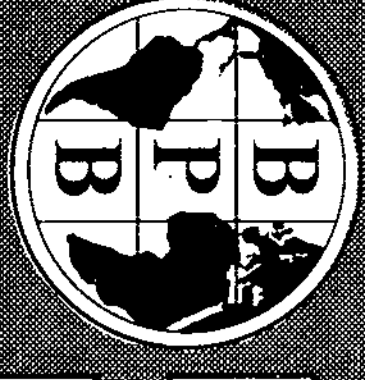


| GAMMA RAY | DEPTH | BULK DENSITY g/cm ³ | CALIPER INCHES |
|-----------|-------|--------------------------------|----------------|
|-----------|-------|--------------------------------|----------------|



BOREHOLE: QHR 87-048
CLIENT: QUINTEITE
AREA: TRANSFER
COUNTRY: CANADA

COAL LITHOLOGY LOG



NEUTRON-NEUTRON
GAMMA RAY

BOREHOLE QHR 87-048
CLIENT QUINTETTE

AREA TRANSFER
COUNTRY CANADA

DATE LOGGED 87 08 23

DEPTH SCALE 1:200
2 OF 5 LOGS

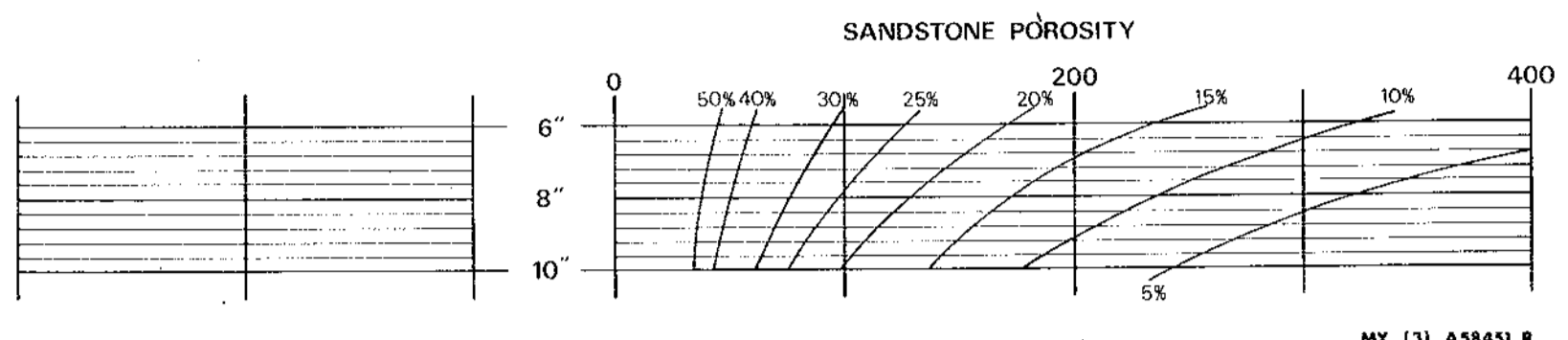
BOREHOLE DATA REFER TO LITHOLOGY LOG
OPERATION DATA REFER TO LITHOLOGY LOG

EQUIPMENT AND RECORDING DATA

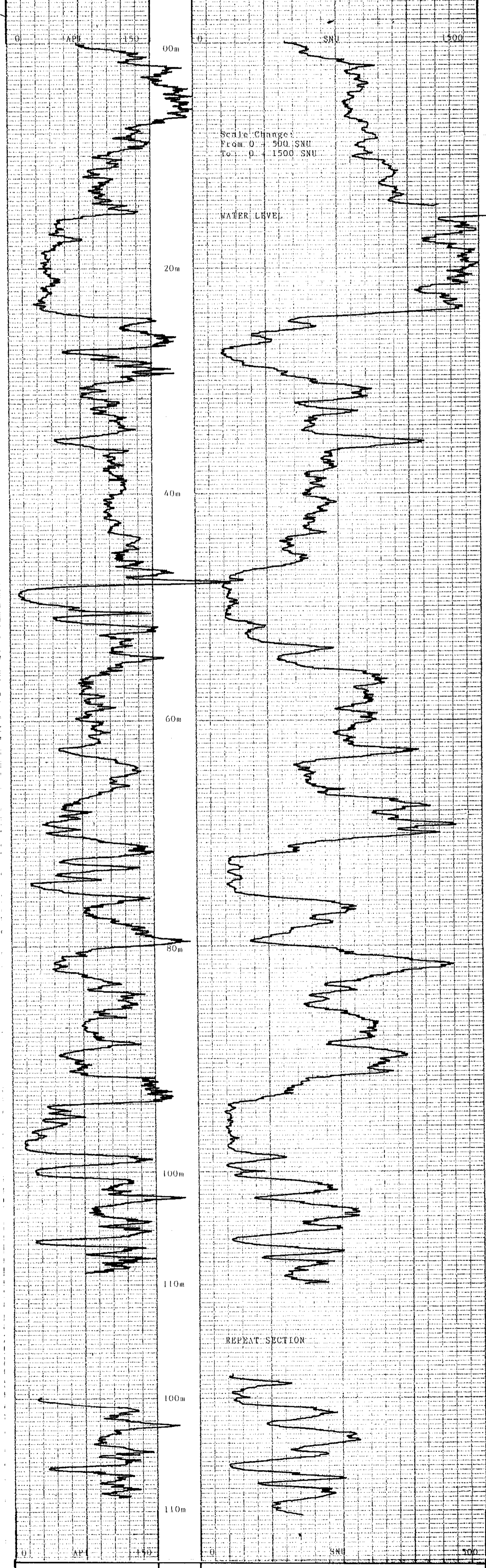
| LOG | TAPING | RECORDING | PANEL | CAL |
|------------------------|--------|-----------|-------|-------|
| | | SPEED | SECS | COEFF |
| N-N | Y | 9 | 1 | 11.6 |
| GAMMA | Y | 9 | 1 | 1.44 |
| SONDE 215 SOURCE 4.511 | | | | |

REMARKS
739

| | | |
|-----------|-------|-----------------|
| GAMMA RAY | DEPTH | NEUTRON-NEUTRON |
| 0 150 | | 0 500 |



MY (3) A58451 R



| | | |
|-----------|-------|-----------------|
| GAMMA RAY | DEPTH | NEUTRON-NEUTRON |
| 0 150 | | 0 500 |



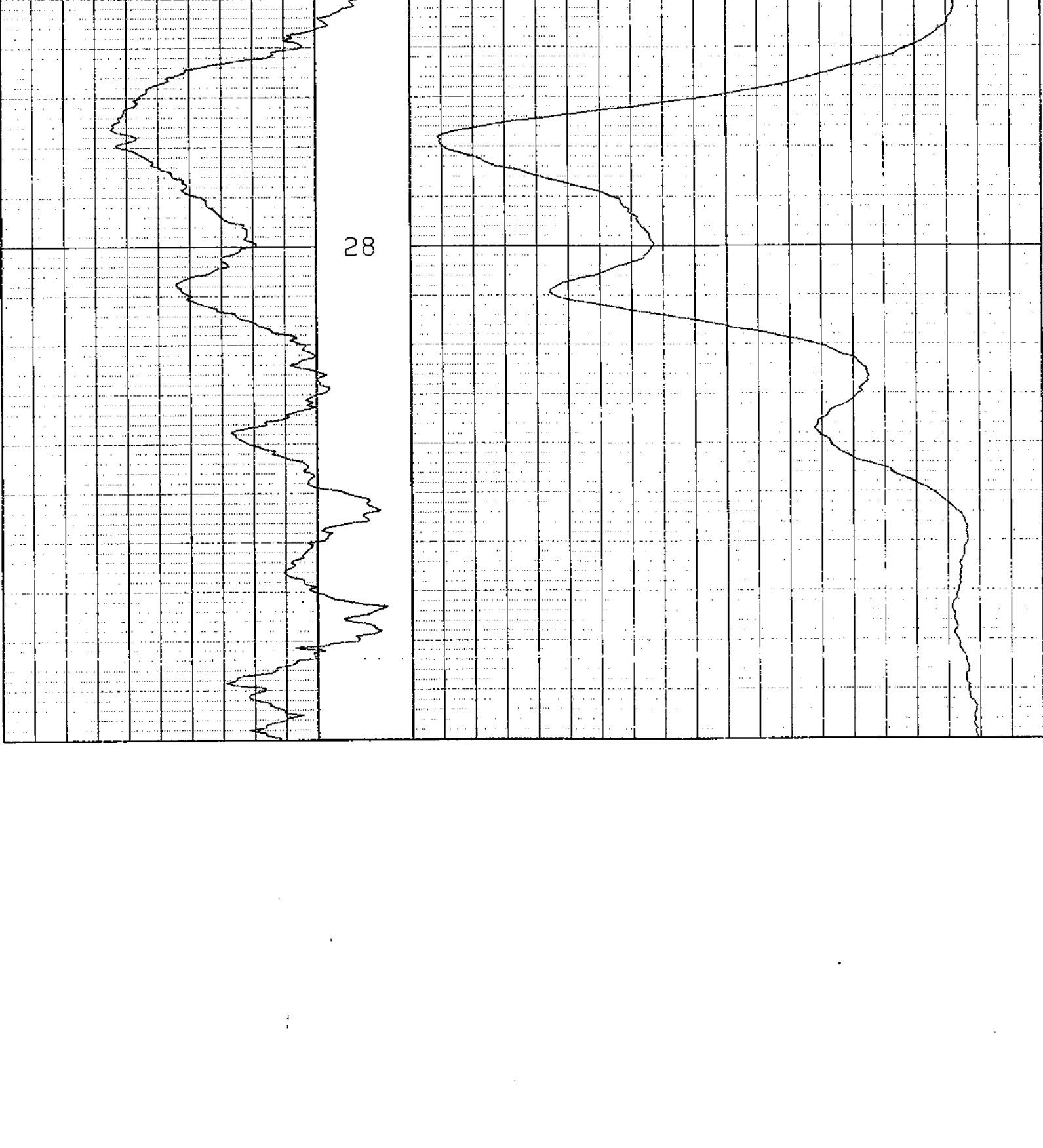
BOREHOLE QHR 87-048
CLIENT QUINTETTE
AREA TRANSFER
COUNTRY CANADA

DETAIL LOGS

739

DEPTH SCALE 6000 L.S.D (CCS) 0
 CLIENT: QUINTETTE COAL
 WELL NO: QHR 87048
 AREA: TRANSFER PIT
 CASING: 8.0M
 WATER: 15.2M
 DEPTH: 26.00-30.00
 DATE PROCESSED: 10-SEP-87

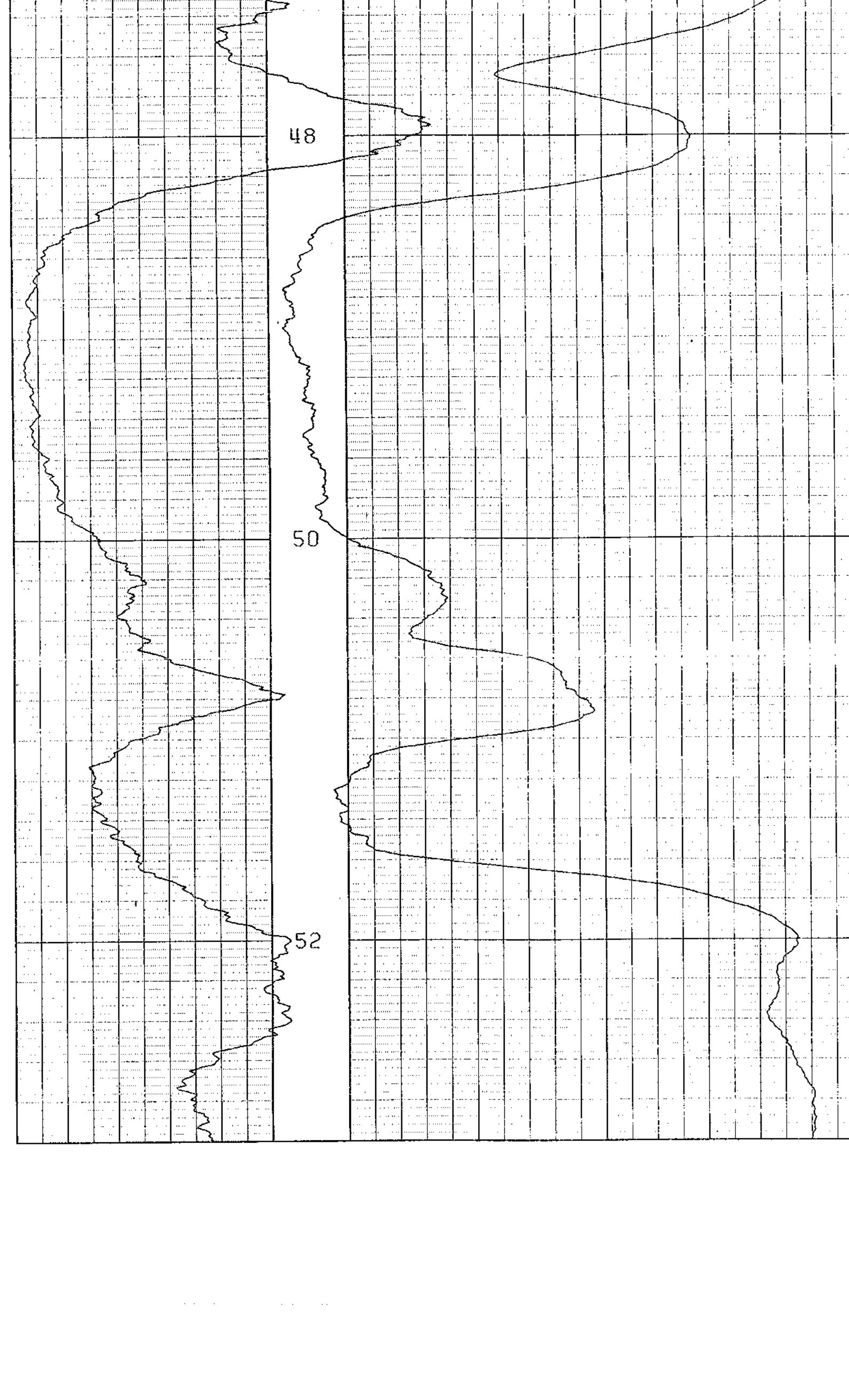
GAMMA RAY 0 150



DETAIL LOGS

DEPTH SCALE 6000 L.S.D (CCS) 0
 CLIENT: QUINTETTE COAL
 WELL NO: QHR 87048
 AREA: TRANSFER PIT
 CASING: 8.0M
 WATER: 15.2M
 DEPTH: 46.00-53.00
 DATE PROCESSED: 10-SEP-87

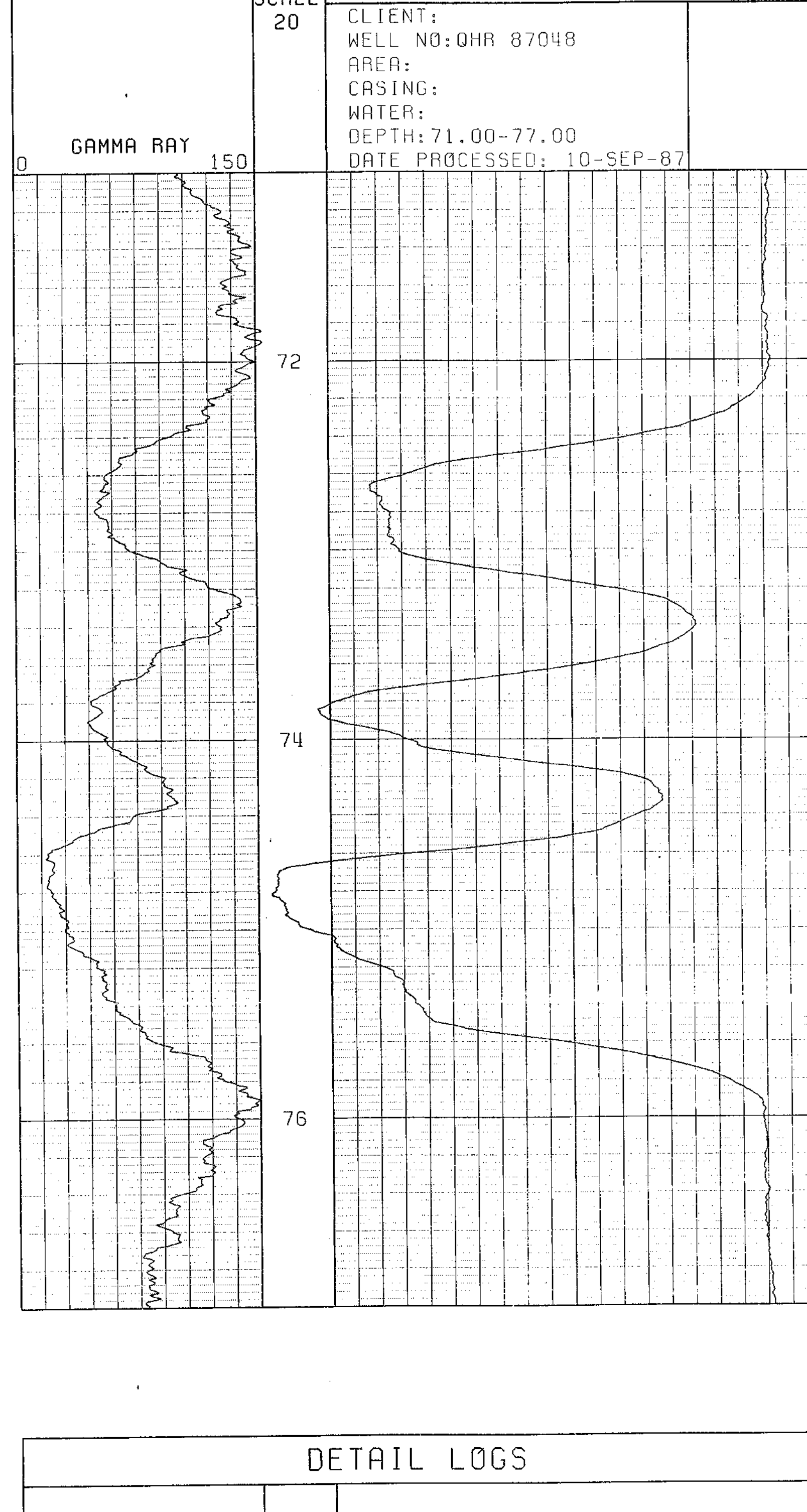
GAMMA RAY 0 150



DETAIL LOGS

DEPTH SCALE 6000 L.S.D (CCS) 0
 CLIENT: QUINTETTE COAL
 WELL NO: QHR 87048
 AREA: TRANSFER PIT
 CASING: 8.0M
 WATER: 15.2M
 DEPTH: 71.00-77.00
 DATE PROCESSED: 10-SEP-87

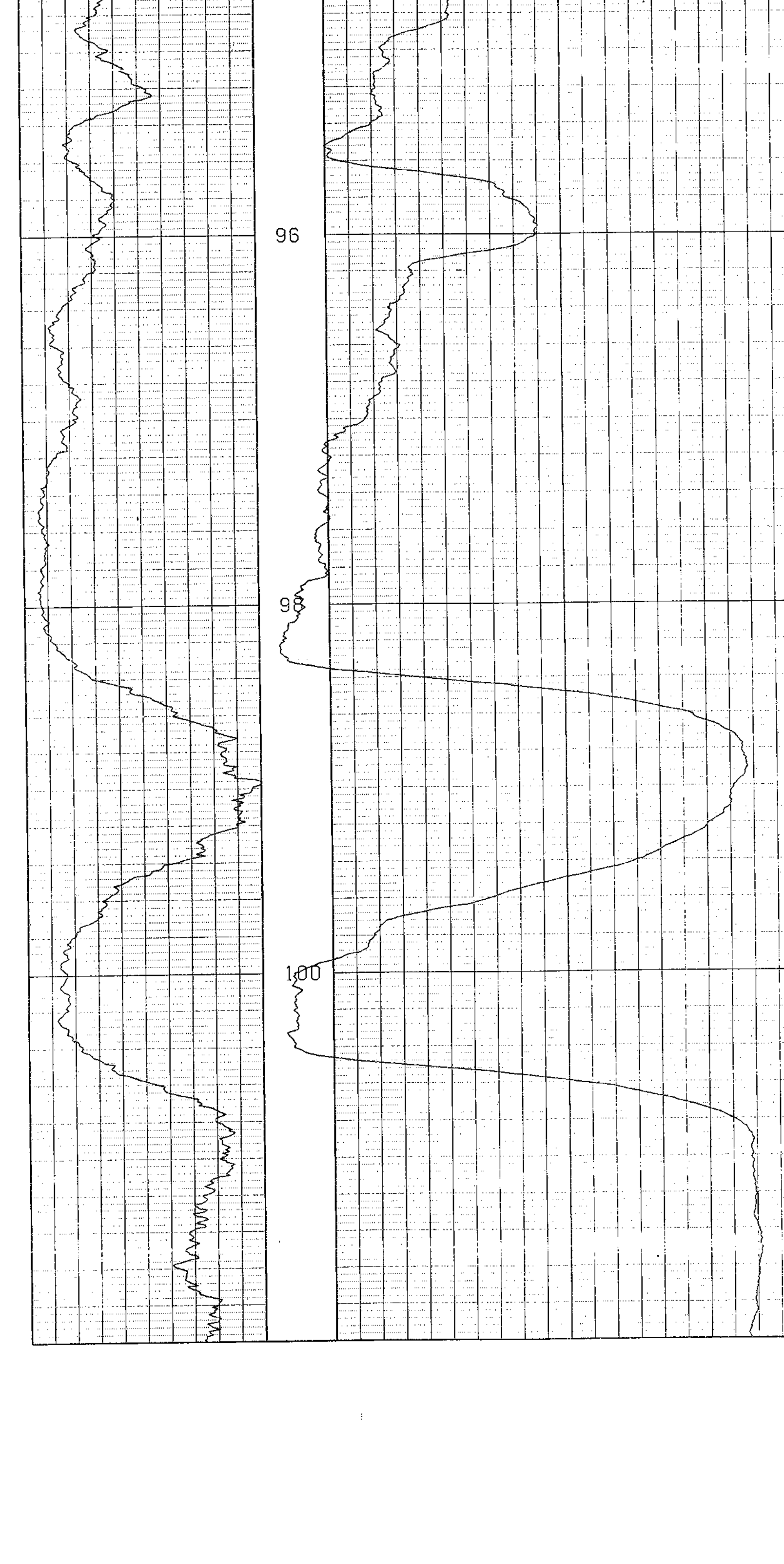
GAMMA RAY 0 150



DETAIL LOGS

DEPTH SCALE 6000 L.S.D (CCS) 0
 CLIENT: QUINTETTE COAL
 WELL NO: QHR 87048
 AREA: TRANSFER PIT
 CASING: 8.0M
 WATER: 15.2M
 DEPTH: 93.00-102.00
 DATE PROCESSED: 10-SEP-87

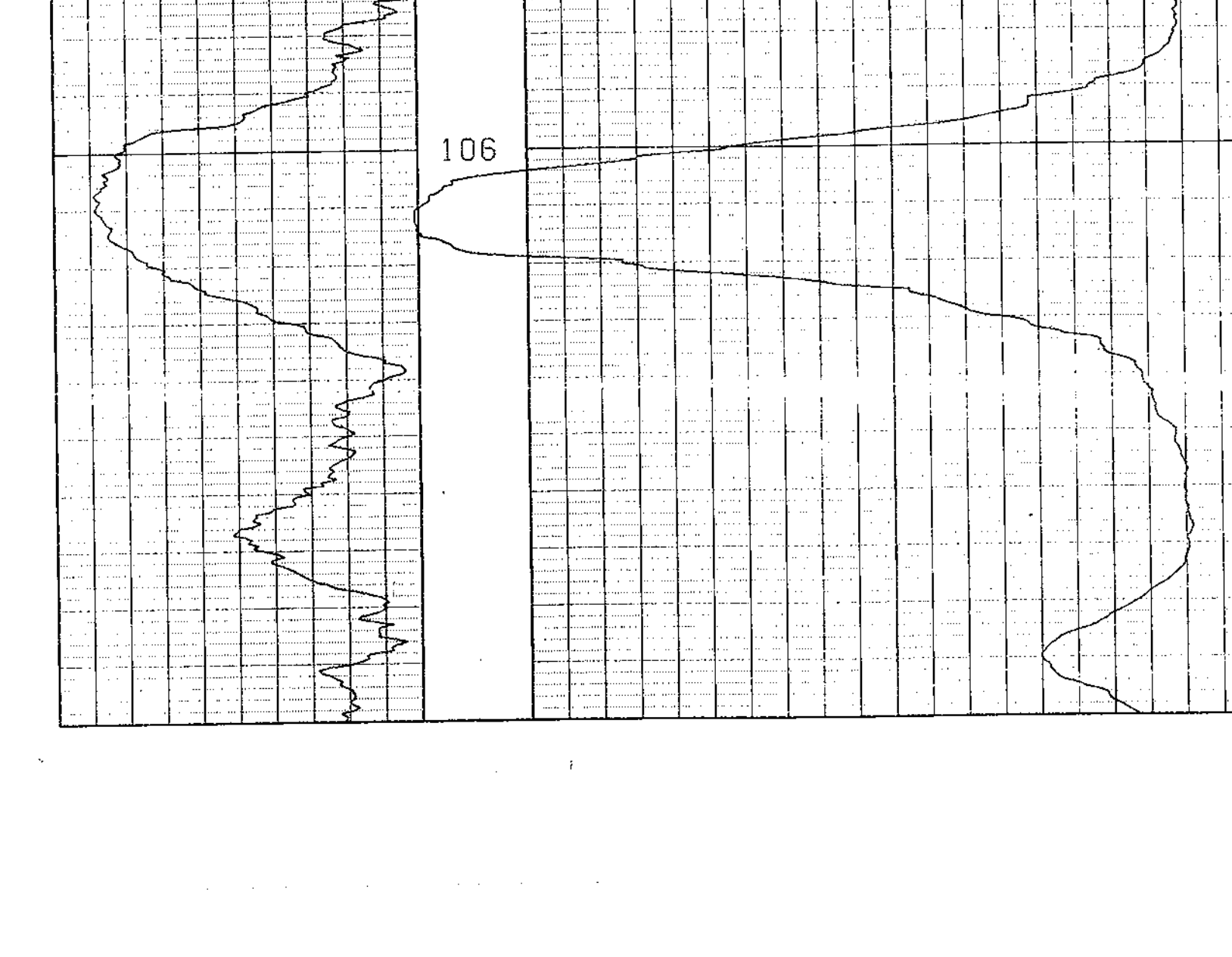
GAMMA RAY 0 150

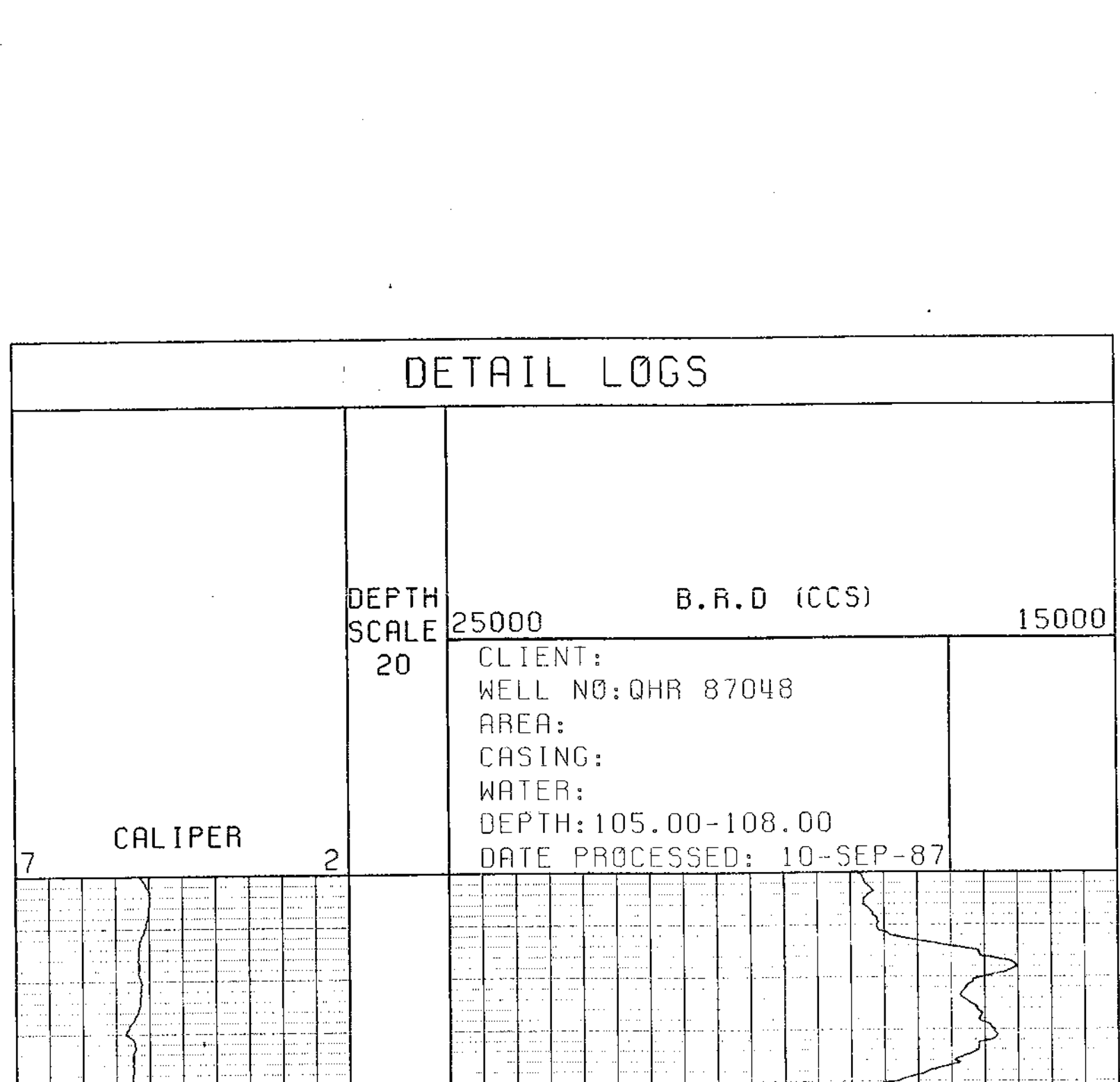
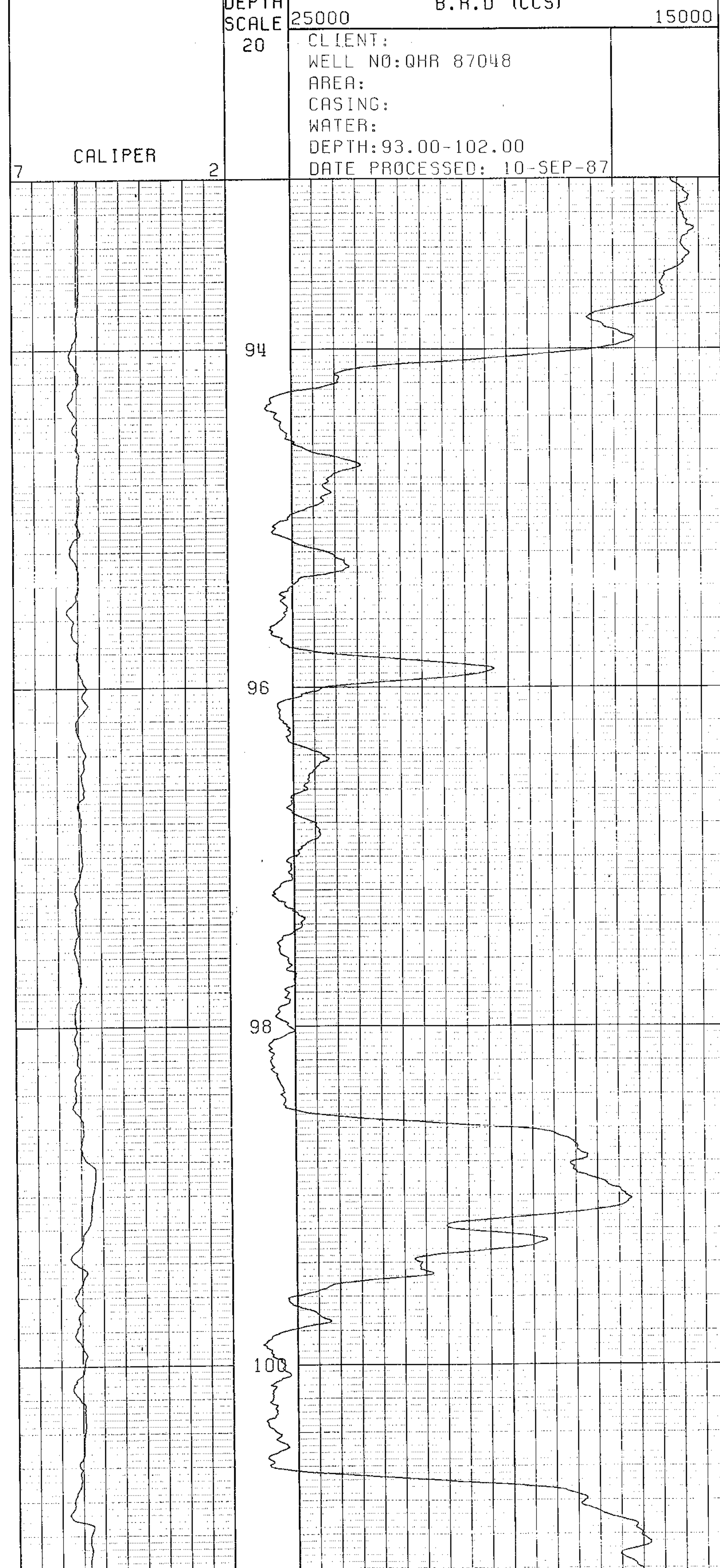
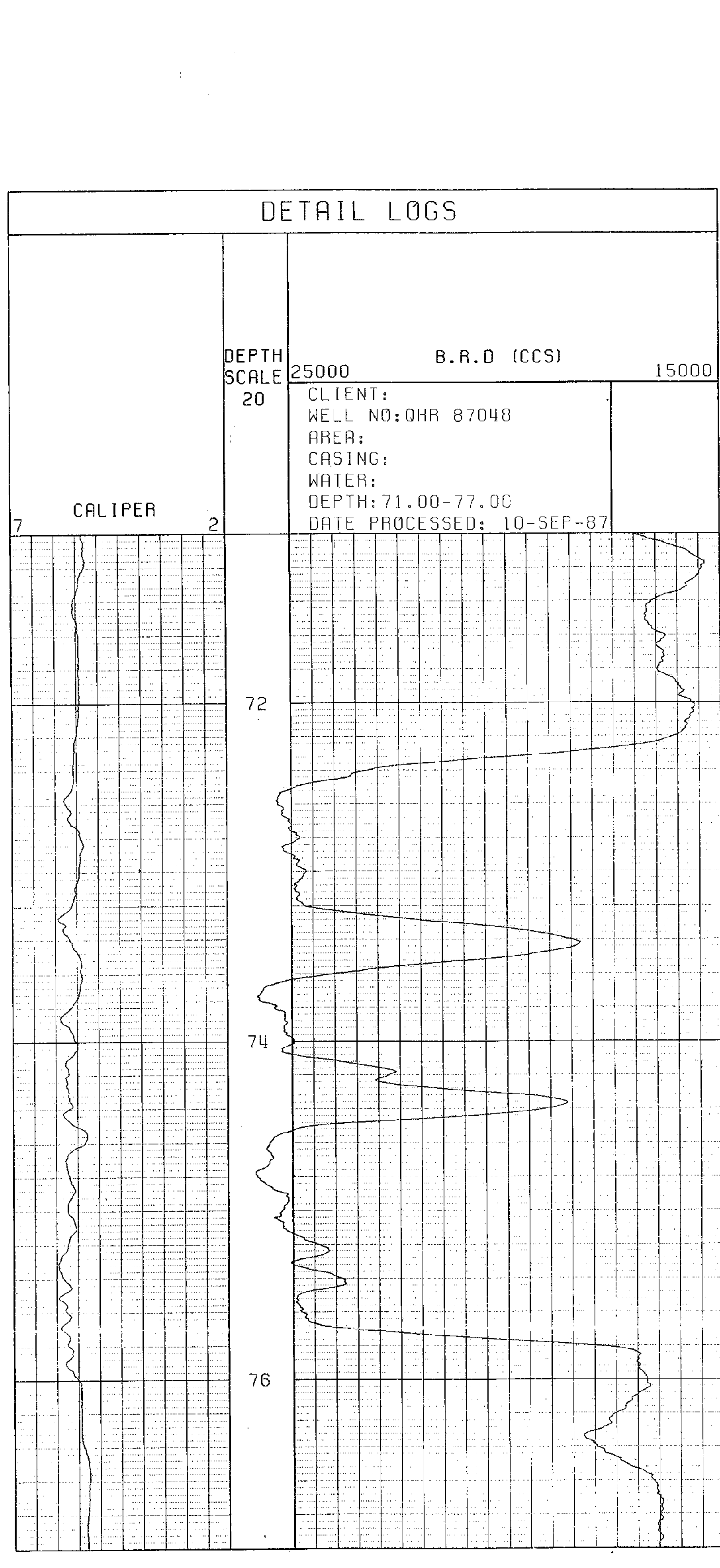
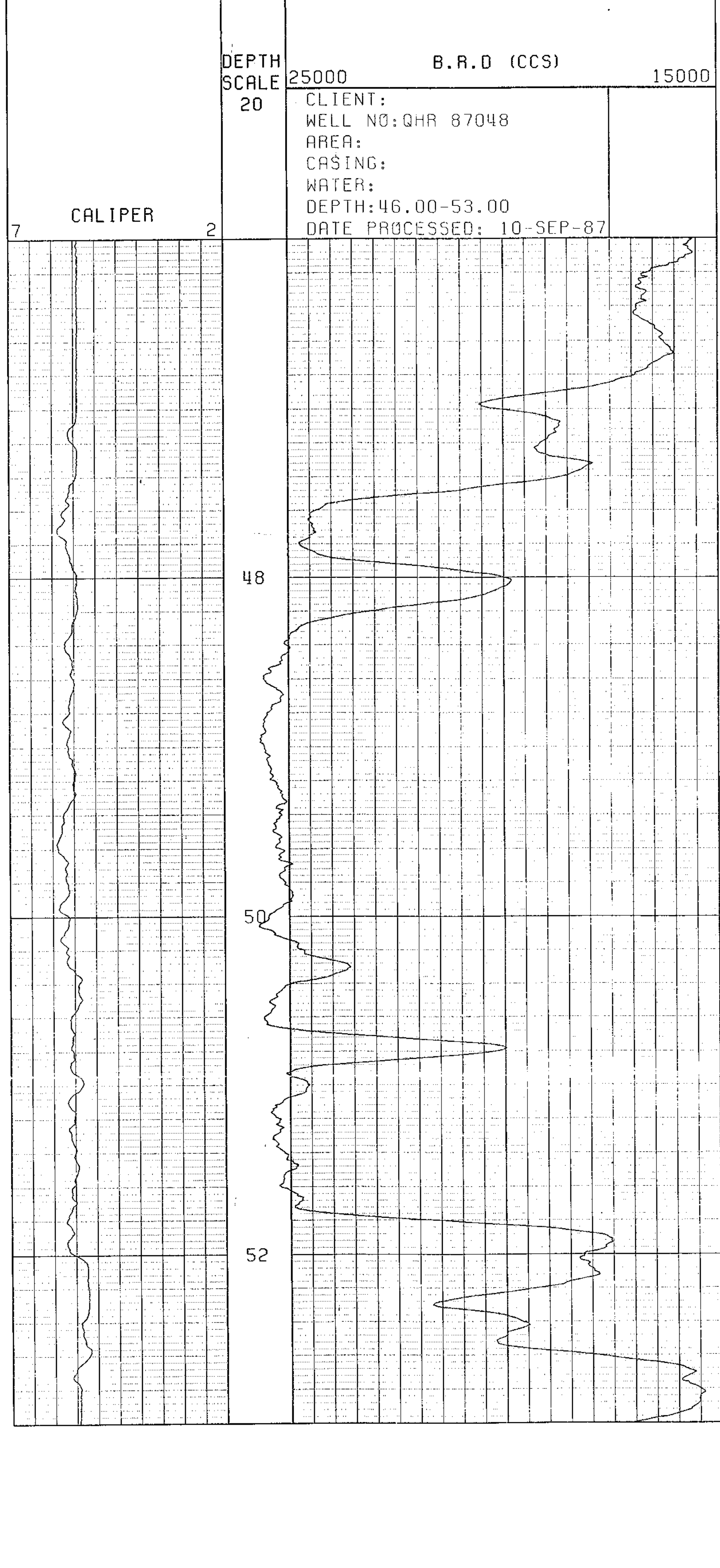
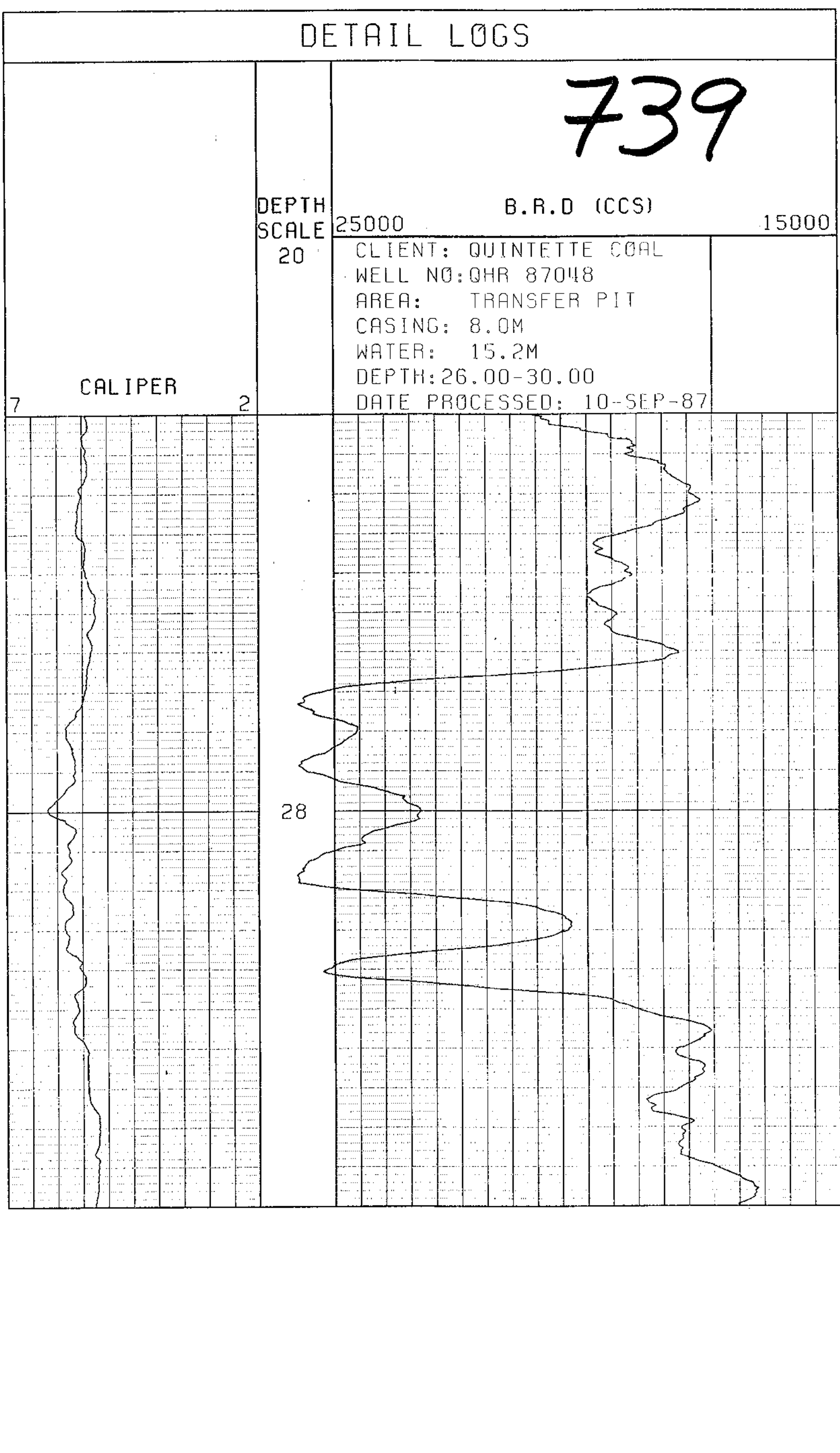


DETAIL LOGS

DEPTH SCALE 6000 L.S.D (CCS) 0
 CLIENT: QUINTETTE COAL
 WELL NO: QHR 87048
 AREA: TRANSFER PIT
 CASING: 8.0M
 WATER: 15.2M
 DEPTH: 105.00-108.00
 DATE PROCESSED: 10-SEP-87

GAMMA RAY 0 150







DIPMETER ANALYSIS

737

CLIENT _____
BOREHOLE _____
AREA _____
COUNTRY _____

QUINTETTE COAL LTD.
QHR 87048
TRANSFER PIT
CANADA

DATE LOGGED.....23-AUG-87
DATE PROCESSED..04-SEP-87



COMMENTS.....

WATER LEVEL @ 15.2M

NO GAMMA AVAILABLE

XXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXX

INTERPRETATION PARAMETERS

STEP 1.00M.

INTERVAL 2.00M.

SEARCH ANGLE 80.

DECLINATION 24.0 EAST

DEPTH RANGE 15.00 - 109.93M.

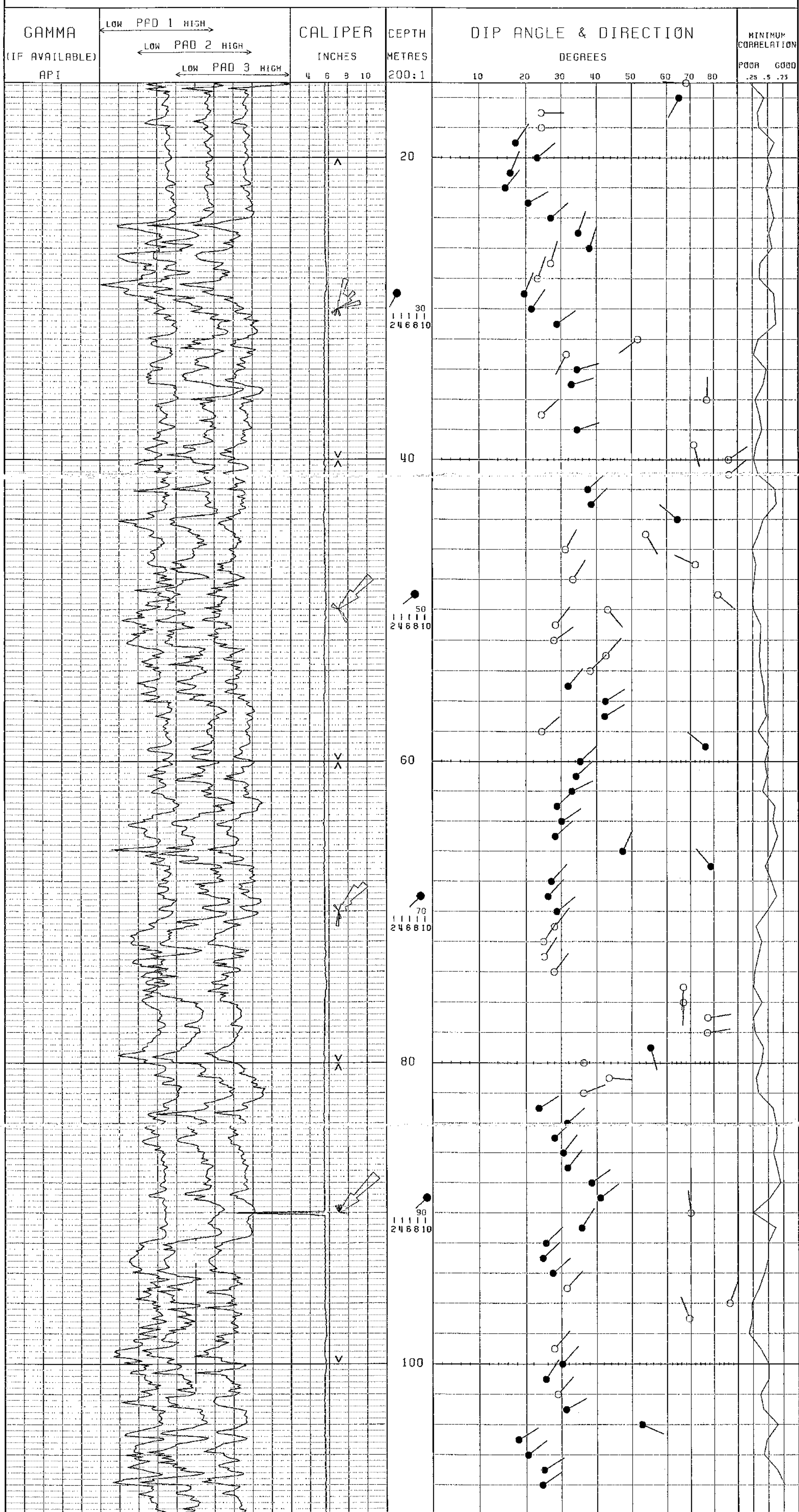
DATE PROCESSED 04-SEP-87

AVERAGE BOREHOLE DEVIATION & DIRECTION
ANNOTATED EVERY 20.0M.

RDSE DIAGRAMS SEGMENTED EVERY TEN DEGREES,
.1" RADIUS PER DIP MARKER DISPLAYED

LEGEND:

● GOOD (>0.40)
○ FAIR (>0.20)



109

110

111

**BPB DIPMETER ANALYSIS
INTERPRETATION NOTES**

1. All plots are correct to the resolution of the plotter used, i.e. one hundredth of an inch. Vertical resolution may vary by up to one percent but each plot is correct within itself, the plotted data being dynamically merged with its gridded background. Plots exceeding eight metres in length will be split into multiples thereof, however there is no data loss associated with this subdivision.
2. Rose diagrams are plotted between every major division and are delimited by two bold arrows. For certain replay scales it may be desirable to plot these less frequently; this option is available on request.
3. The borehole tilt and azimuth displayed on the plot are the average values over the whole major division.
4. The replay scale for pads 1, 2 & 3 are designed to give the maximum visual effect over the plotted interval. Replaying shorter sections of the curve will enhance this display.
5. The grid over which the computed dip information is displayed is locally linear. That is to say it is linear between 0 & 10, degrees, 10 & 20, 20 & 30 etc.
6. The correlation value will vary depending upon the interval size selected. Generally speaking the larger the correlation interval, the lower the value becomes. For this reason a direct comparison of this value for differing correlation intervals is meaningless, quality control being exercised with an appreciation of this effect.
7. For customised control of computed dipmeter analysis the following parameters must be specified:
 - correlation step and interval(s)
 - magnetic declination (i.e. the difference between true and magnetic North)
 - search angle(s)
 - depth range(s)
 - replay scale(s)
 - the frequency for rose diagrams
 - (quality control is exercised in accordance with the correlation interval used, alternatively all correlations may be displayed on request)

The following information is a listing of ALL the output from BPB's dipmeter analysis. The data is subdivided into three consecutive sets of data readings, being read from left to right. Below is a full description of each data item:

| | |
|--------------|---|
| DEPTH | the depth corresponding to the centre of the correlation interval |
| CALIPER | the average borehole caliper recorded over the correlation interval |
| HOLE DRIFT | the average borehole deviation from vertical over the correlation interval |
| HOLE AZIMUTH | the average borehole azimuth over the correlation interval in degrees East of true North |
| DIP ANGLE | the computed formation dip in degrees, from the horizontal plane |
| DIP AZIMUTH | the formation azimuth in degrees East from true North |
| CORRELATION | a measure of the reliability of the computed result. This parameter is also used in the visual display to determine the quality of result |

Further recorrelations over any step & interval size are available on any scale over any section of the log. Alternative methods of presentation, or analysis may be made available on request.

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QHR 87048

Magnetic declination 24.00 degrees East of North
Correlation step 1.00 metres , interval 2.00 metres Search angle 80. degrees

04-SEP-87
PAGE 1

| DEPTH metres | CAL. ins. | BOREHOLE TILT | FORMATION AZI | MIN. COR. | DEPTH metres | CAL. ins. | BOREHOLE TILT | FORMATION AZI | MIN. COR. | DEPTH metres | CAL. ins. | BOREHOLE TILT | FORMATION AZI | MIN. COR. | | | | | | |
|-----------------|--------------|------------------|------------------|--------------|-----------------|--------------|------------------|------------------|--------------|-----------------|--------------|------------------|------------------|--------------|-----|------|------|------|------|------|
| 8.00 | 5.6 | 2.6 | 205. | 69.7 | 163. | 0.27 | 9.00 | 5.6 | 2.9 | 210. | 72.7 | 271. | 0.30 | 10.00 | 5.6 | 3.1 | 214. | 66.9 | 255. | 0.20 |
| 11.00 | 5.6 | 3.3 | 217. | 65.5 | 259. | 0.37 | 12.00 | 5.6 | 3.5 | 219. | 25.9 | 55. | 0.26 | 13.00 | 5.6 | 3.7 | 222. | 73.1 | 267. | 0.20 |
| 14.00 | 5.6 | 3.9 | 224. | 55.5 | 291. | 0.16 | 15.00 | 5.6 | 4.1 | 225. | 68.2 | 273. | 0.21 | 16.00 | 5.6 | 4.2 | 224. | 65.2 | 208. | 0.44 |
| 17.00 | 5.6 | 4.4 | 224. | 24.9 | 90. | 0.33 | 18.00 | 5.6 | 4.5 | 223. | 25.0 | 89. | 0.35 | 19.00 | 5.6 | 4.6 | 223. | 17.8 | 34. | 0.61 |
| 20.00 | 5.6 | 4.6 | 223. | 23.7 | 50. | 0.49 | 21.00 | 5.6 | 4.8 | 222. | 16.7 | 22. | 0.56 | 22.00 | 5.6 | 5.0 | 223. | 15.6 | 39. | 0.47 |
| 23.00 | 5.6 | 5.2 | 224. | 20.7 | 60. | 0.54 | 24.00 | 5.6 | 5.4 | 225. | 27.9 | 48. | 0.60 | 25.00 | 5.6 | 5.7 | 225. | 35.4 | 19. | 0.52 |
| 26.00 | 5.6 | 5.9 | 224. | 39.0 | 18. | 0.57 | 27.00 | 5.7 | 6.1 | 224. | 27.9 | 17. | 0.37 | 28.00 | 5.8 | 6.4 | 226. | 23.8 | 19. | 0.36 |
| 29.00 | 5.7 | 6.7 | 228. | 19.6 | 23. | 0.60 | 30.00 | 5.6 | 6.9 | 229. | 21.8 | 34. | 0.62 | 31.00 | 5.6 | 7.2 | 230. | 29.9 | 54. | 0.63 |
| 32.00 | 5.6 | 7.4 | 230. | 51.9 | 233. | 0.35 | 33.00 | 5.5 | 7.6 | 230. | 31.6 | 208. | 0.27 | 34.00 | 5.5 | 7.8 | 230. | 35.0 | 75. | 0.40 |
| 35.00 | 5.5 | 7.9 | 230. | 33.2 | 74. | 0.43 | 36.00 | 5.5 | 8.0 | 230. | 77.1 | 2. | 0.29 | 37.00 | 5.5 | 8.1 | 229. | 24.9 | 47. | 0.36 |
| 38.00 | 5.5 | 8.2 | 229. | 35.1 | 72. | 0.41 | 39.00 | 5.5 | 8.3 | 229. | 71.5 | 167. | 0.31 | 40.00 | 5.5 | 8.3 | 228. | 86.3 | 54. | 0.27 |
| 41.00 | 5.5 | 8.5 | 227. | 86.4 | 49. | 0.34 | 42.00 | 5.5 | 8.6 | 226. | 38.4 | 47. | 0.62 | 43.00 | 5.5 | 8.6 | 226. | 39.5 | 44. | 0.63 |
| 44.00 | 5.5 | 8.5 | 225. | 64.5 | 310. | 0.43 | 45.00 | 5.5 | 8.5 | 225. | 54.5 | 150. | 0.35 | 46.00 | 5.5 | 8.6 | 224. | 31.2 | 29. | 0.25 |
| 47.00 | 5.6 | 8.8 | 224. | 72.2 | 295. | 0.31 | 48.00 | 5.6 | 9.0 | 225. | 33.7 | 32. | 0.27 | 49.00 | 5.6 | 9.1 | 225. | 81.7 | 131. | 0.25 |
| 50.00 | 5.6 | 9.0 | 223. | 43.6 | 141. | 0.26 | 51.00 | 5.6 | 9.0 | 223. | 29.4 | 38. | 0.38 | 52.00 | 5.5 | 9.0 | 224. | 28.9 | 56. | 0.38 |
| 53.00 | 5.5 | 9.2 | 225. | 43.0 | 41. | 0.36 | 54.00 | 5.5 | 9.3 | 226. | 39.2 | 45. | 0.38 | 55.00 | 5.6 | 9.5 | 226. | 32.2 | 40. | 0.43 |
| 56.00 | 5.5 | 9.6 | 226. | 42.8 | 57. | 0.44 | 57.00 | 5.5 | 9.5 | 227. | 42.5 | 59. | 0.48 | 58.00 | 5.5 | 9.5 | 227. | 25.0 | 50. | 0.33 |
| 59.00 | 5.5 | 9.5 | 227. | 76.4 | 309. | 0.51 | 60.00 | 5.5 | 9.6 | 227. | 36.1 | 45. | 0.45 | 61.00 | 5.5 | 9.7 | 227. | 34.6 | 47. | 0.49 |
| 62.00 | 5.5 | 9.9 | 226. | 33.4 | 63. | 0.41 | 63.00 | 5.5 | 9.9 | 226. | 29.8 | 45. | 0.61 | 64.00 | 5.5 | 10.0 | 227. | 30.1 | 57. | 0.58 |
| 65.00 | 5.5 | 10.0 | 227. | 29.3 | 48. | 0.66 | 66.00 | 5.5 | 10.1 | 228. | 48.3 | 24. | 0.57 | 67.00 | 5.5 | 10.1 | 228. | 78.6 | 320. | 0.45 |
| 68.00 | 5.5 | 10.2 | 228. | 28.0 | 42. | 0.56 | 69.00 | 5.5 | 10.3 | 227. | 26.9 | 43. | 0.64 | 70.00 | 5.5 | 10.4 | 227. | 29.8 | 50. | 0.48 |
| 71.00 | 5.6 | 10.5 | 226. | 29.1 | 37. | 0.30 | 72.00 | 5.6 | 10.6 | 226. | 25.5 | 34. | 0.39 | 73.00 | 5.6 | 10.5 | 227. | 25.7 | 32. | 0.34 |
| 74.00 | 5.6 | 10.5 | 227. | 28.9 | 36. | 0.28 | 75.00 | 5.6 | 10.5 | 227. | 66.9 | 184. | 0.26 | 76.00 | 5.6 | 10.4 | 226. | 67.0 | 182. | 0.40 |
| 77.00 | 5.5 | 10.4 | 226. | 77.4 | 81. | 0.26 | 78.00 | 5.5 | 10.5 | 225. | 77.1 | 80. | 0.29 | 79.00 | 5.5 | 10.6 | 225. | 56.0 | 165. | 0.42 |
| 80.00 | 5.5 | 10.7 | 225. | 37.1 | 90. | 0.39 | 81.00 | 5.5 | 10.8 | 226. | 44.0 | 94. | 0.31 | 82.00 | 5.5 | 10.7 | 226. | 37.0 | 69. | 0.34 |
| 83.00 | 5.5 | 10.8 | 226. | 24.0 | 57. | 0.58 | 84.00 | 5.5 | 10.9 | 226. | 31.8 | 49. | 0.63 | 85.00 | 5.5 | 10.9 | 226. | 29.0 | 45. | 0.64 |
| 86.00 | 5.5 | 11.0 | 226. | 30.5 | 37. | 0.59 | 87.00 | 5.5 | 11.1 | 226. | 31.9 | 39. | 0.65 | 88.00 | 5.5 | 11.2 | 226. | 39.5 | 54. | 0.70 |
| 89.00 | 5.5 | 11.3 | 226. | 41.1 | 52. | 0.53 | 90.00 | 4.9 | 14.4 | 232. | 70.0 | 352. | 0.25 | 91.00 | 4.9 | 14.4 | 231. | 36.4 | 31. | 0.62 |
| 92.00 | 5.5 | 11.5 | 225. | 26.2 | 45. | 0.50 | 93.00 | 5.5 | 11.6 | 224. | 25.3 | 45. | 0.50 | 94.00 | 5.6 | 11.7 | 225. | 28.3 | 49. | 0.44 |
| 95.00 | 5.6 | 11.7 | 226. | 31.7 | 42. | 0.35 | 96.00 | 5.6 | 11.6 | 227. | 86.5 | 19. | 0.23 | 97.00 | 5.6 | 11.5 | 226. | 69.4 | 338. | 0.24 |
| 98.00 | 5.6 | 11.5 | 226. | 74.5 | 313. | 0.18 | 99.00 | 5.6 | 11.5 | 226. | 28.9 | 40. | 0.37 | 100.00 | 5.6 | 11.6 | 226. | 30.2 | 42. | 0.51 |
| 101.00 | 5.6 | 11.5 | 226. | 26.1 | 33. | 0.50 | 102.00 | 5.5 | 11.5 | 227. | 29.9 | 41. | 0.37 | 103.00 | 5.5 | 11.5 | 227. | 31.4 | 61. | 0.42 |
| 104.00 | 5.5 | 11.6 | 227. | 53.1 | 113. | 0.65 | 105.00 | 5.5 | 11.6 | 227. | 18.3 | 58. | 0.48 | 106.00 | 5.6 | 11.6 | 226. | 20.5 | 52. | 0.43 |
| 107.00 | 5.6 | 11.5 | 227. | 25.6 | 57. | 0.64 | 108.00 | 5.6 | 11.4 | 227. | 25.1 | 55. | 0.76 | | | | | | | |



BOREHOLE QHR 87-049
CLIENT QUINTEITE

AREA TRANSFER
COUNTRY CANADA

DATE LOGGED 87 08 23

DEPTH SCALE 1:200

1 OF 4 LOSS

COAL

LITHOLOGY LOG

LOG

SONDE TYPE

COMBINATION SONDE

LOG SUITE
GAMMA RAY
L.S. DENSITY
CALIPER

| BOREHOLE DATA | |
|-------------------|---------------------------------------|
| PERMANENT DATUM | GROUND LEVEL |
| ELEVATION OF P.D. | 898 |
| MASUREMENTS FROM | G.L. 5.1 |
| DEPTH REACHED | 90.80m 92.00m |
| CASING SHOE | 16.00m |
| BIT SIZES | 1 8.4" TO 14m 2 5.1" TO 92m |
| CASING SIZES | 3 TO 4 TO 1 6.4" TO 14m 2 TO |
| FLUID DATA | |
| NATURE | WATER |
| SG | 1.01 g/cc |
| LEVEL | 23.60m |
| VISCOSITY | N/A |
| PH at meas temp | N/A |
| PH | N/A |
| OPERATION DATA | |
| FIRST READING | 89.00m |
| LAST READING | 90m |
| INTERVAL LOGGED | 59m |
| UNIT-TRUCK No | 46/V217 |
| ENGINEER | M. COX |
| WITNESS | |

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EQUIPMENT AND RECORDING DATA

| COAL COMBINATION SONDE | | | | | | | | | | | | | | |
|------------------------|-------------------|--------|------------|-----------|--------------|------------------|-------|---------|------|-----------|--------|----|--------------|----------|
| LOG | EQUIPMENT | | | TAPING | | | PANEL | | | CAL COEFF | DEPTHS | | SEAM LOG RUN | |
| | SONDE | SOURCE | CALIBRATOR | LOG TAPED | RECORD SPEED | DIRECT or REPLAY | SPEED | TC SECS | NORM | | FROM | TO | | INTERVAL |
| GAMMA RAY | 153 | | 367 | Y | 9 | D | 9 | 1 | - | 1.44 | 89 | 0 | 89 | Y |
| L.S. DENSITY | | 5852 | 0041 | Y | 9 | D | 9 | 3 | - | - | 90 | 1 | 89 | Y |
| CALIPER | SIDEWALL POSITION | | | Y | 9 | D | 9 | 3 | - | 1.0 | 90 | 1 | 89 | Y |

| COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log) | | | | | INTERVAL TOTAL |
|---|-----|-----|-----|-----|----------------|
| FROM | 85m | 78m | 54m | 27m | |
| TO | 83m | 69m | 48m | 25m | |
| INTERVAL | 2m | 9m | 6m | 2m | 19m |

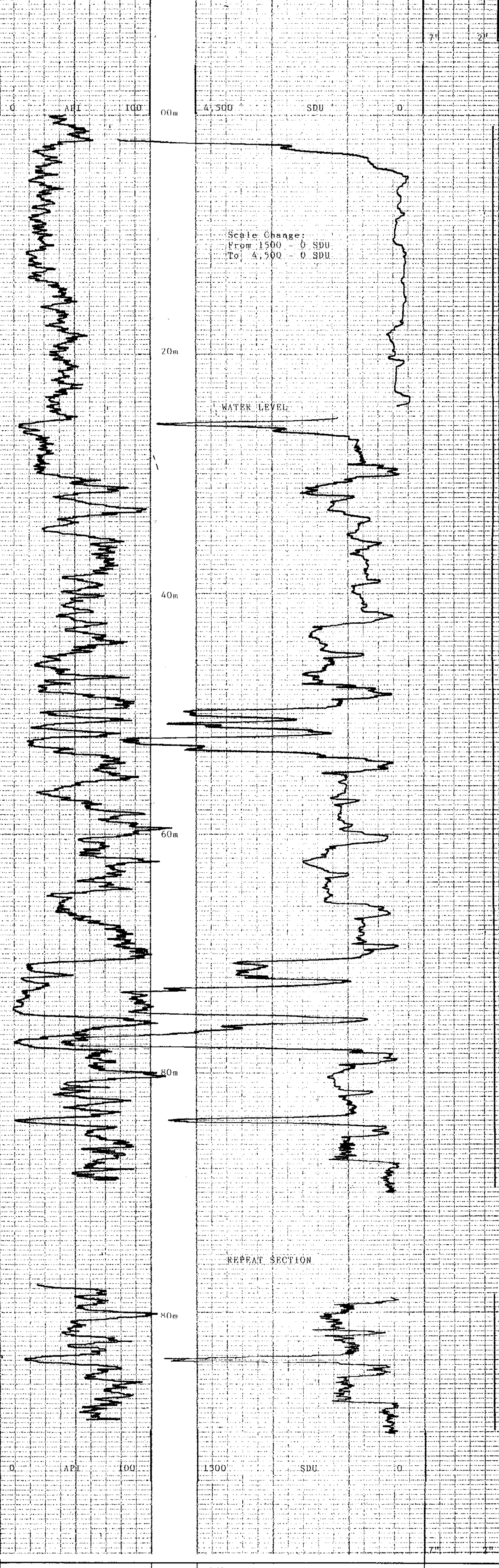
| ADDITIONAL SONDES RUN | | | | REFER TO ADDITIONAL HEADINGS | REMARKS |
|-----------------------|-----|-------------------|------------------|------------------------------|--|
| SONDE | LOG | GENERAL SCALE LOG | DETAIL SCALE LOG | | |
| 215 | N-N | 1:200 | | | Due to poor hole conditions found during drilling, logging was not carried out in open hole. |

BPB COAL LITHOLOGY LOG

CALIBRATION DATA

| | | | | | | | |
|---------------------------------|-----------------|--------------|-----------|-------|-------------------|-----|-----|
| JIG No | VALUE @ 5' DIAM | JIG CAL DATE | JIG VALUE | SDU @ | g/cm ³ | ins | cps |
| JIG MARK SHOWN AT ABOVE VALUE - | | JIG No | SPAN | NORM | SDU - CPS | ins | cps |

| GAMMA RAY | DEPTH | BULK DENSITY g/cm ³ | CALIPER INCHES |
|-----------|---------|--------------------------------|----------------|
| 0 | API 100 | 1500 | 0 |



| GAMMA RAY | DEPTH | BULK DENSITY g/cm ³ | CALIPER INCHES |
|-----------|---------|--------------------------------|----------------|
| 0 | API 100 | 1500 | 0 |



BOREHOLE QHR 87-049 AREA TRANSFER
CLIENT QUINTEITE COUNTRY CANADA

COAL LITHOLOGY LOG



NEUTRON-NEUTRON
GAMMA RAY

BOREHOLE QHR 87-049
CLIENT QUINTETTE

AREA TRANSFER
COUNTRY CANADA
DATE LOGGED 87 08 23

DEPTH SCALE
1:200

2 OF 4 LOGS

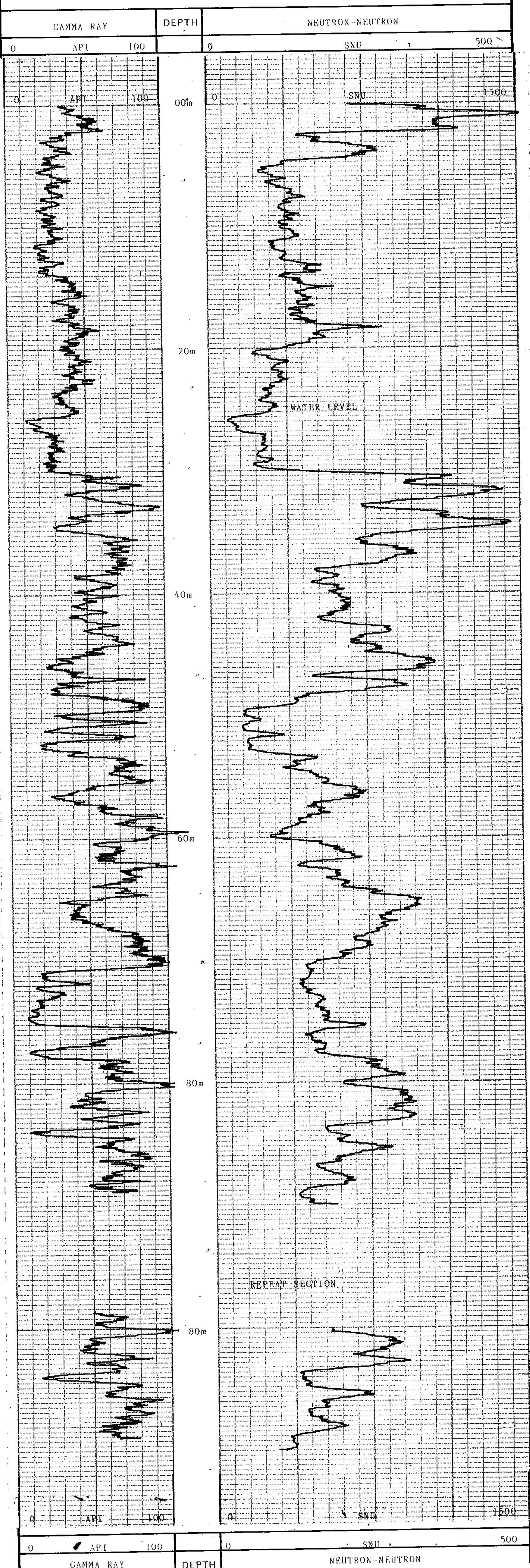
BOREHOLE DATA REFER TO LITHOLOGY LOG

OPERATION DATA REFER TO LITHOLOGY LOG

EQUIPMENT AND RECORDING DATA

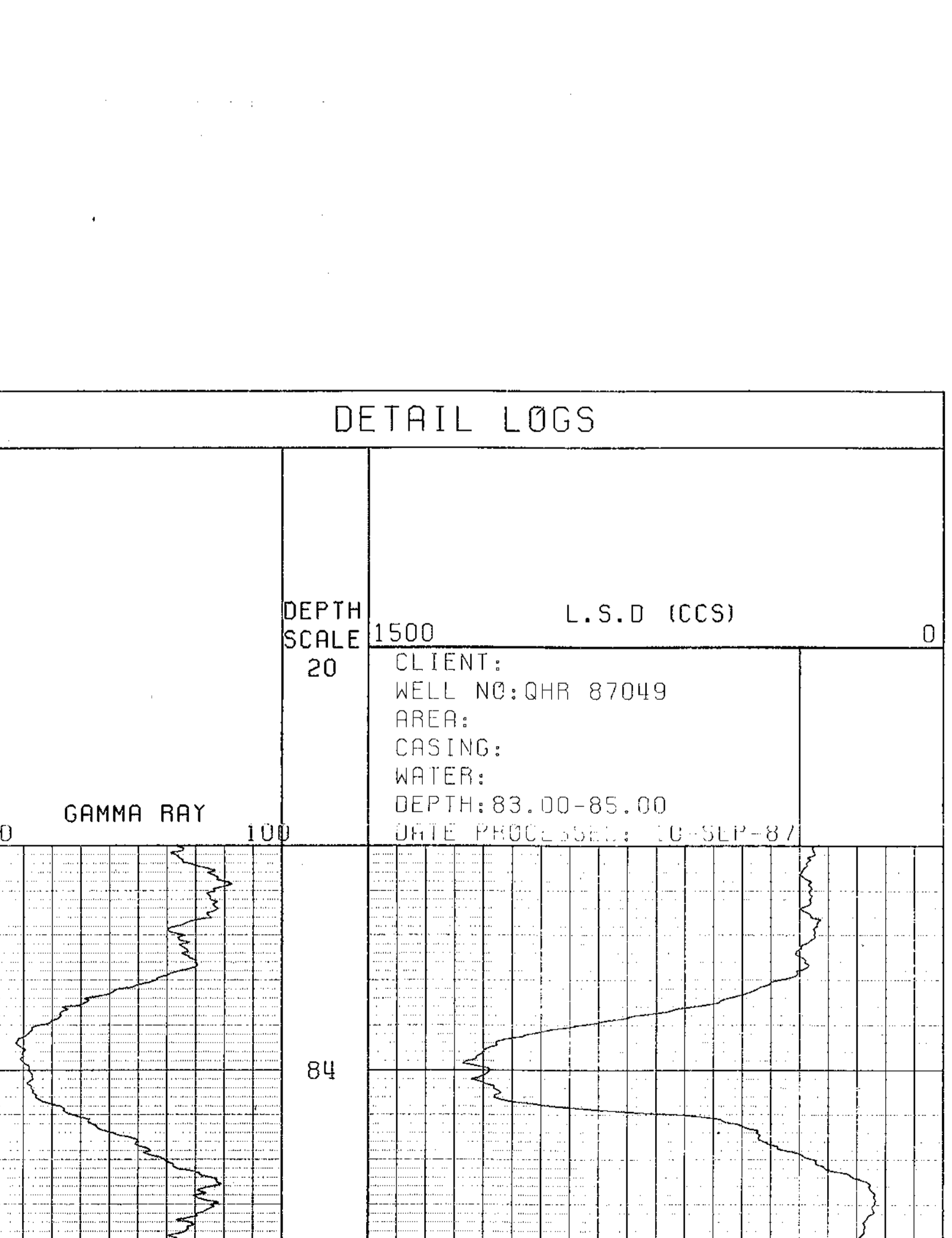
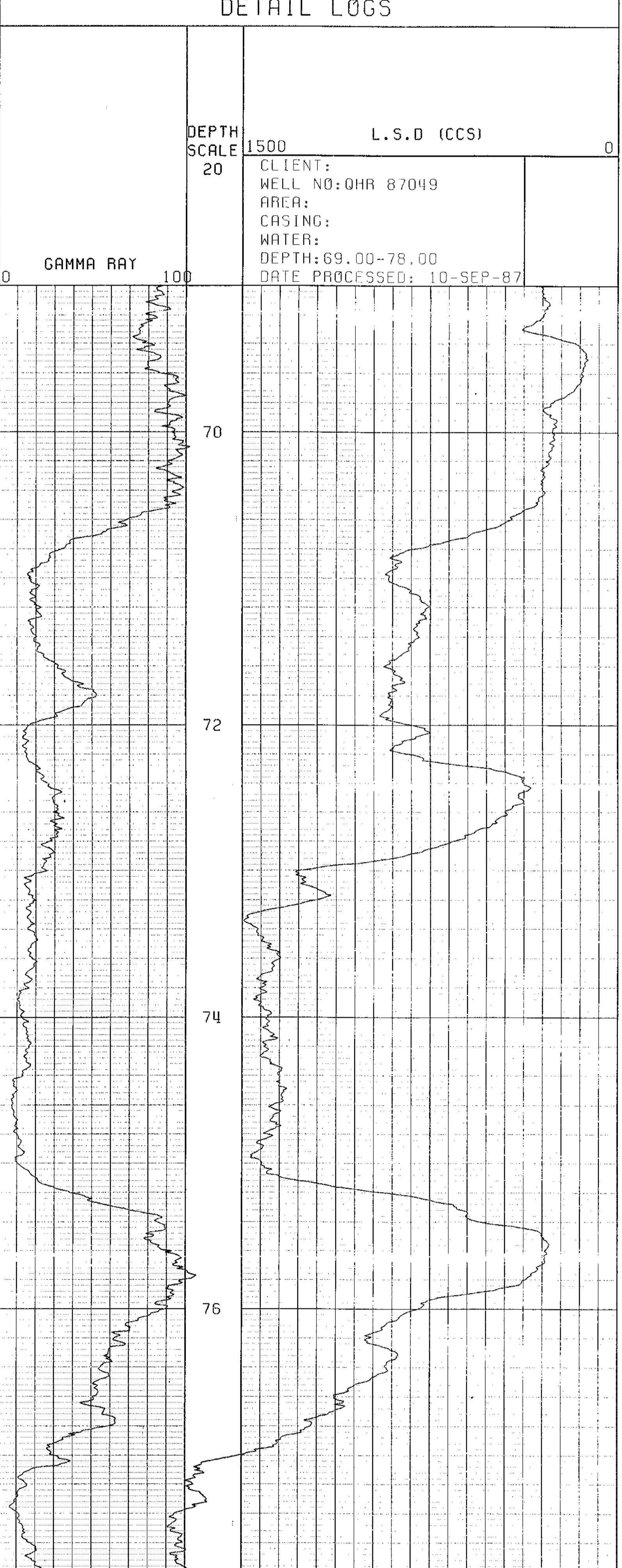
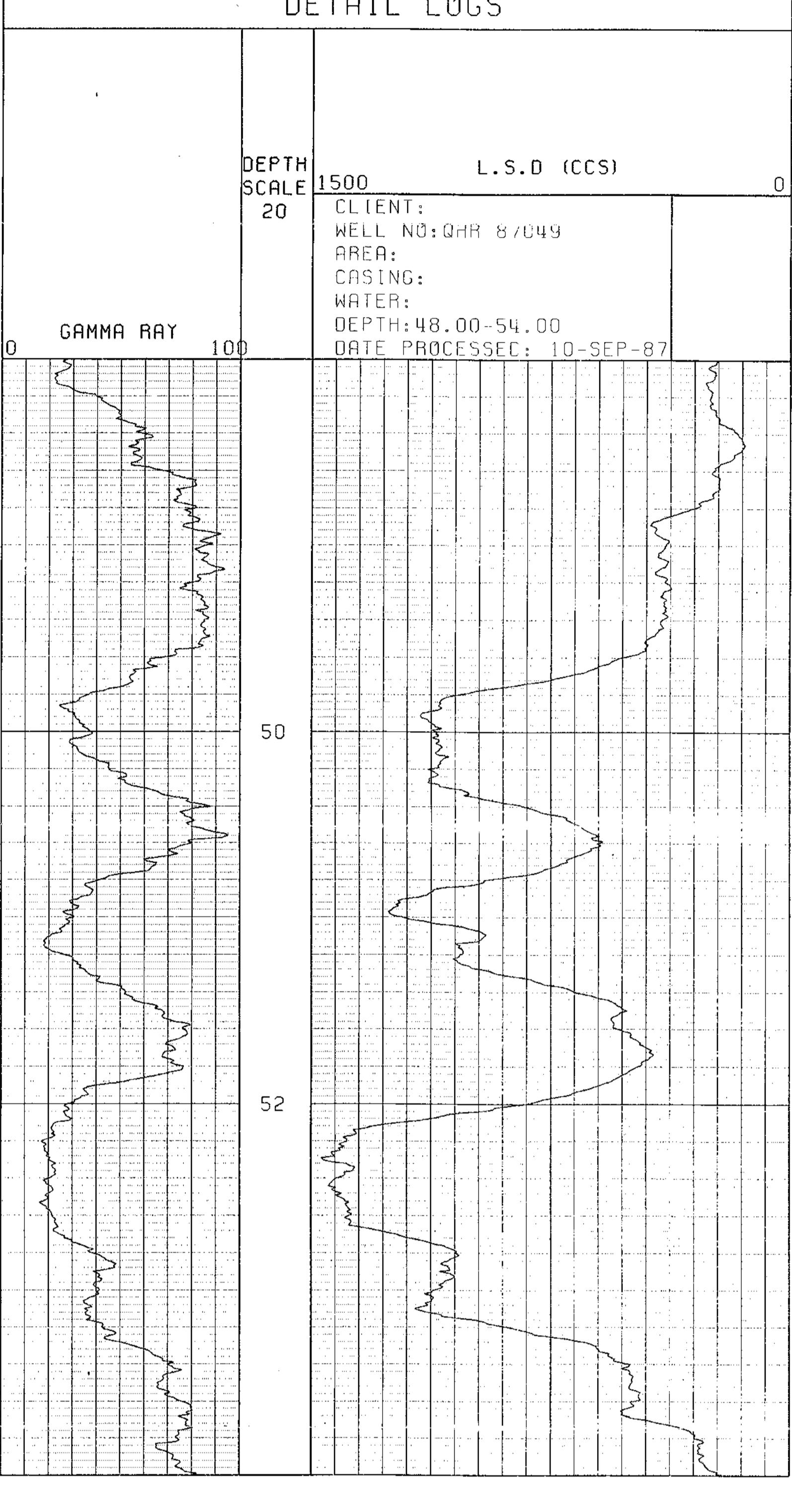
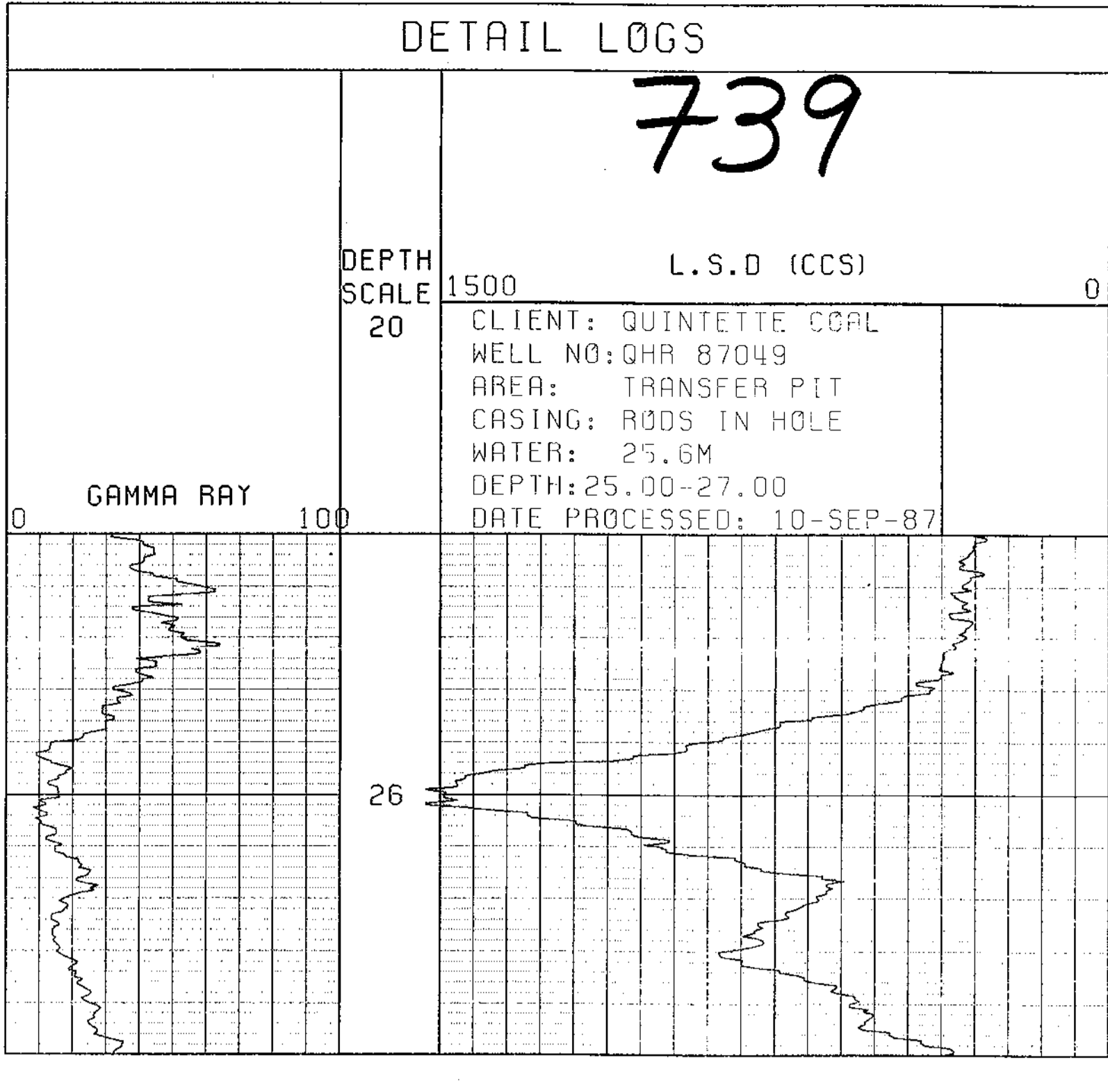
| LOG | TAPING | PANEL | DATE |
|----------------------|--------|-------|-----------|
| N-N | Y | D | 9 1 11 8 |
| GAMMA | Y | R | 9 1 11 44 |
| SONDE 215 NO. 781 | | | |

REMARKS
Logging carried out through
drill rods. Log uncalibrated.



BOREHOLE QHR 87-049
CLIENT QUINTETTE

AREA TRANSFER
COUNTRY CANADA





BOREHOLE QHR 87-050
CLIENT QUINTETTE

AREA TRANSFER
COUNTRY CANADA
DATE LOGGED 27.08.24

DEPTH SCALE
1:200

1 OF 4 LOGS

COAL

LITHOLOGY

LOG

BOREHOLE DATA

PERMANENT DATUM GROUND LEVEL

ELEVATION OF P.D. 998

MEASUREMENTS FROM G.L. DRILLER

DEPTH REACHED 91.80m 92.00m

CASING SHOE 5.00m

BIT SIZES 1 8 1/2" TO 5.0m 2 5 3/4" TO 9.2m

3 TO TO

4 TO TO

CASING SIZES 1 6 3/4" TO 5.0m 2 TO TO

FLUID DATA

NATURE WATER

SG 1.01 g/cc

LEVEL 11.20m

VISCOSITY N/A

Rate of Inflow N/A

BHT N/A

OPERATION DATA

FIRST READING 89.00m

LAST READING 00m

INTERVAL LOGGED 89m

UNIT-TRUCK No 461/217

ENGINEER M. COX

WITNESS

LOG SUITE:
GAMMA RAY
L.S. DENSITY
CALIPER

739

EQUIPMENT AND RECORDING DATA

| LOG | EQUIPMENT | | | TAPING | | | PANEL | | | CAL COEFF | DEPTHS | | | SEAM LOG RUN |
|--------------|-------------------|--------|------------|----------|--------------|------------------|-------|---------|------|-----------|--------|----|----------|--------------|
| | SONDE | SOURCE | CALIBRATOR | LOG TAPE | RECORD SPEED | DIRECT or REPLAY | SPEED | TC SECS | NORM | | FROM | TO | INTERVAL | |
| GAMMA RAY | | | 367 | Y | 9 | D | 9 | 1 | - | 1.44 | 89 | 0 | 89 | Y |
| L.S. DENSITY | 153 | 5852 | 0041 | Y | 9 | D | 9 | .3 | - | - | 90 | 1 | 89 | Y |
| CALIPER | SIDEWALL POSITION | | | Y | 9 | D | 9 | .3 | - | 1.0 | 90 | 1 | 89 | Y |

| COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log) | | | | INTERVAL TOTAL |
|---|-----|----------|----------|----------------|
| FROM | TO | INTERVAL | INTERVAL | |
| 81m | 52m | 21m | | 16m |
| 75m | 48m | 15m | | |
| 6m | 4m | 6m | | |

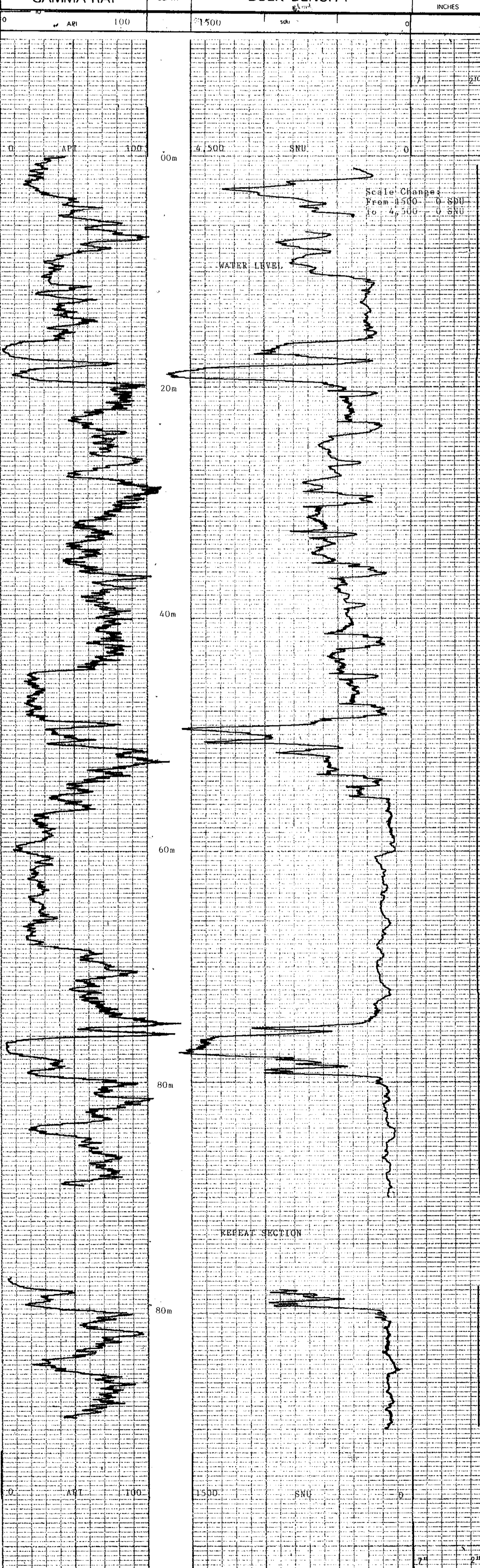
| ADDITIONAL SONDES RUN | | | | REFER TO ADDITIONAL HEADINGS | REMARKS |
|-----------------------|-----|-------------------|------------------|------------------------------|---|
| SONDE | LOG | GENERAL SCALE LOG | DETAIL SCALE LOG | | |
| 215 | N-N | 1:200 | | | Due to poor hole conditions encountered during drilling logging was not carried out in open hole. |

BPB COAL LITHOLOGY LOG

CALIBRATION DATA

| JIG No | VALUE @ 5" DIAM | JIG CAL DATE | JIG VALUE | SOU @ | g/cm ³ | ms | cps |
|--------|-----------------|--------------|-----------|-------|-------------------|----|-----|
| | | | | | | | |

| JIG No | SPAN | NORM | SOU = | ms | cps |
|--------|------|------|-------|----|-----|
| | | | | | |



| GAMMA RAY | DEPTH | BULK DENSITY | CALIPER |
|-----------|-------|-------------------------|----------|
| API 100 | | g/cm ³ 1.500 | INCHES 0 |

| | |
|---------------------|----------------|
| BOREHOLE QHR 87-050 | AREA TRANSFER |
| CLIENT QUINTETTE | COUNTRY CANADA |

COAL LITHOLOGY LOG

729



NEUTRON-NEUTRON
GAMMA RAY

BOREHOLE QHR 87-050
CLIENT QUINTETTE

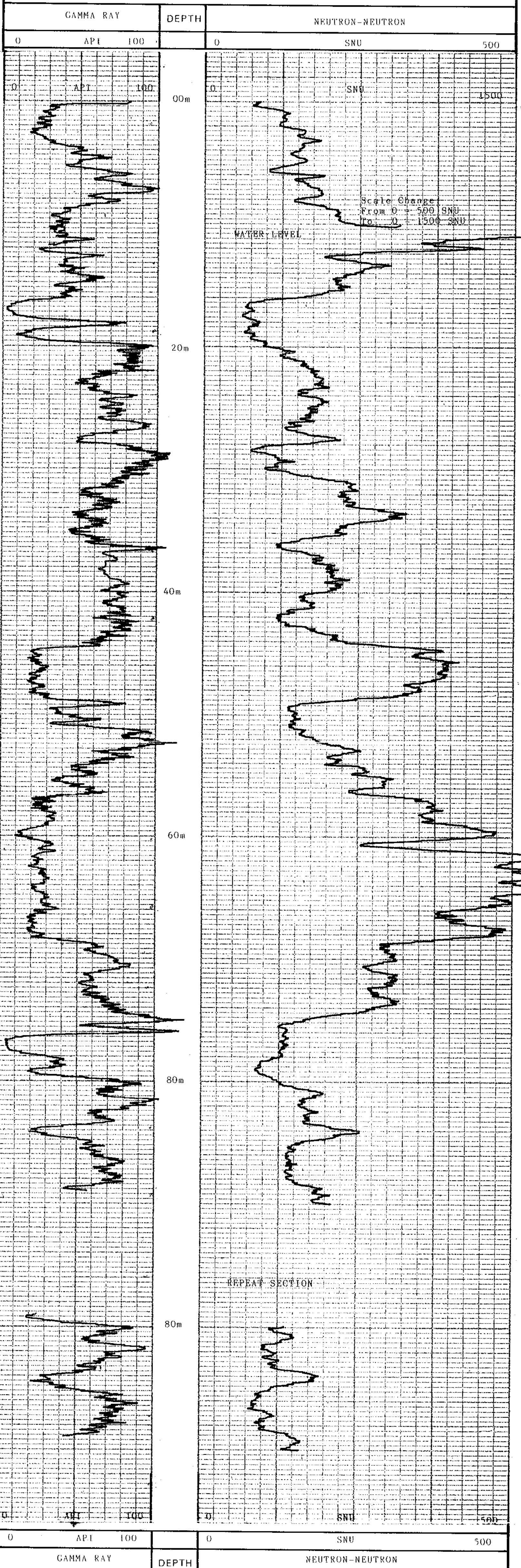
AREA TRANSFER
COUNTRY CANADA
DATE LOGGED 87 08 24

DEPTH SCALE
1:200
2 OF 4 LOGS

BOREHOLE DATA REFER TO LITHOLOGY LOG
OPERATION DATA REFER TO LITHOLOGY LOG
EQUIPMENT AND RECORDING DATA

| LOG | TAPING | PANEL | COEF |
|-------|-----------|----------------|-----------------------|
| N-N | LOG TAPED | REGOR/DIRECTOR | T.C. SPEED SECS. NORM |
| GAMMA | Y | 9 | D 9 1 11.6 - |
| | Y | 9 | R 9 1 - 1.44 |
| | | SOURCE 215 | SOURCE 1862 |

REMARKS
Due to poor hole conditions logging was carried out through drill rods. log uncalibrated



| GAMMA RAY | DEPTH | NEUTRON-NEUTRON |
|-----------|-------|-----------------|
| 0 | | 0 |
| 100 | | 500 |

BOREHOLE QHR 87-050
CLIENT QUINTETTE
AREA TRANSFER
COUNTRY CANADA

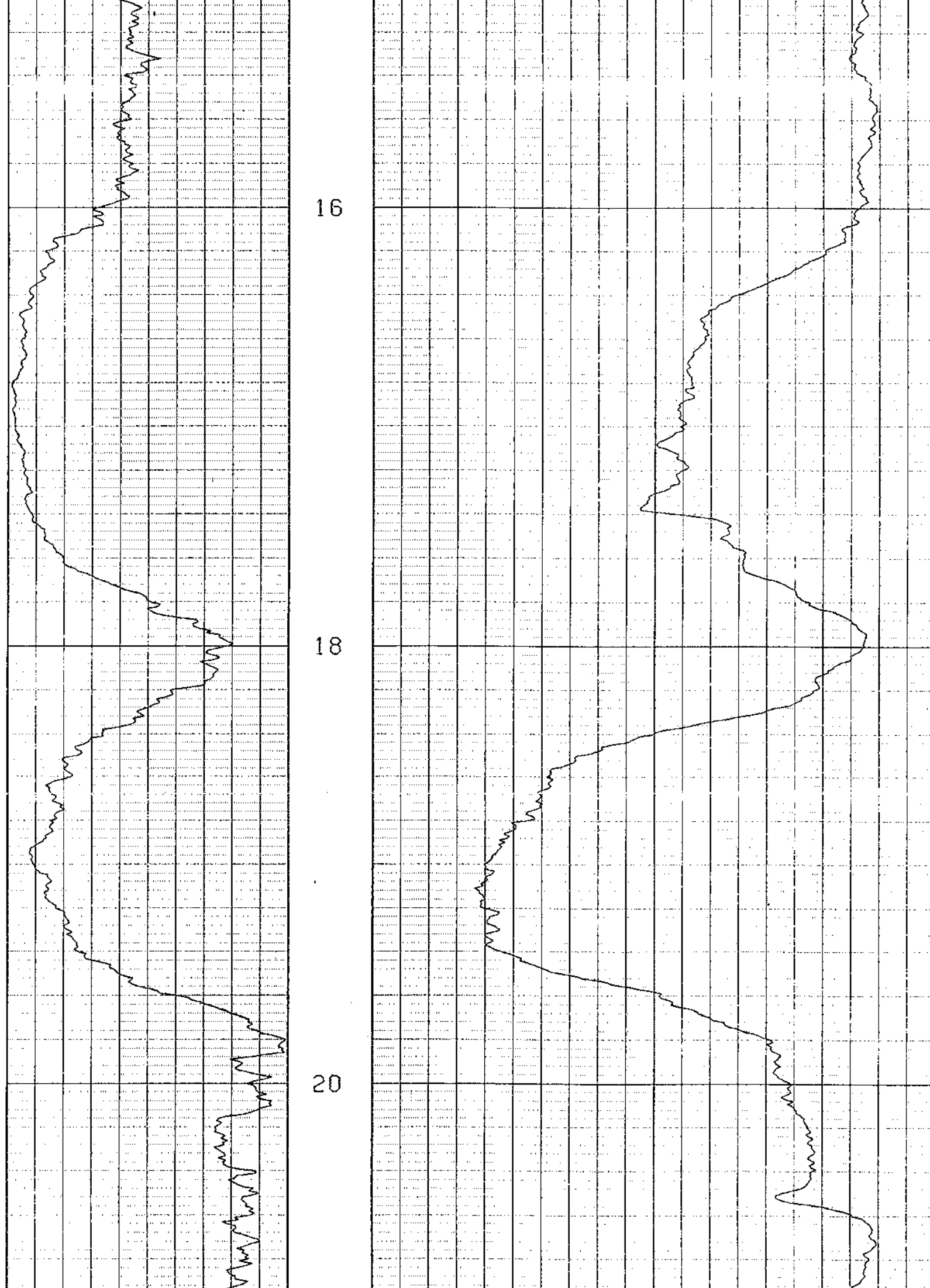


DETAIL LOGS

739

DEPTH SCALE 1500 L.S.D (CCS) 0
 20
 CLIENT: QUINTETTE COAL
 WELL NO: QHR 87050
 AREA: TRANSFER PIT
 CASING: RODS IN HOLE.
 WATER: 11.2M
 DEPTH: 15.00-21.00
 DATE PROCESSED: 10-SEP-87

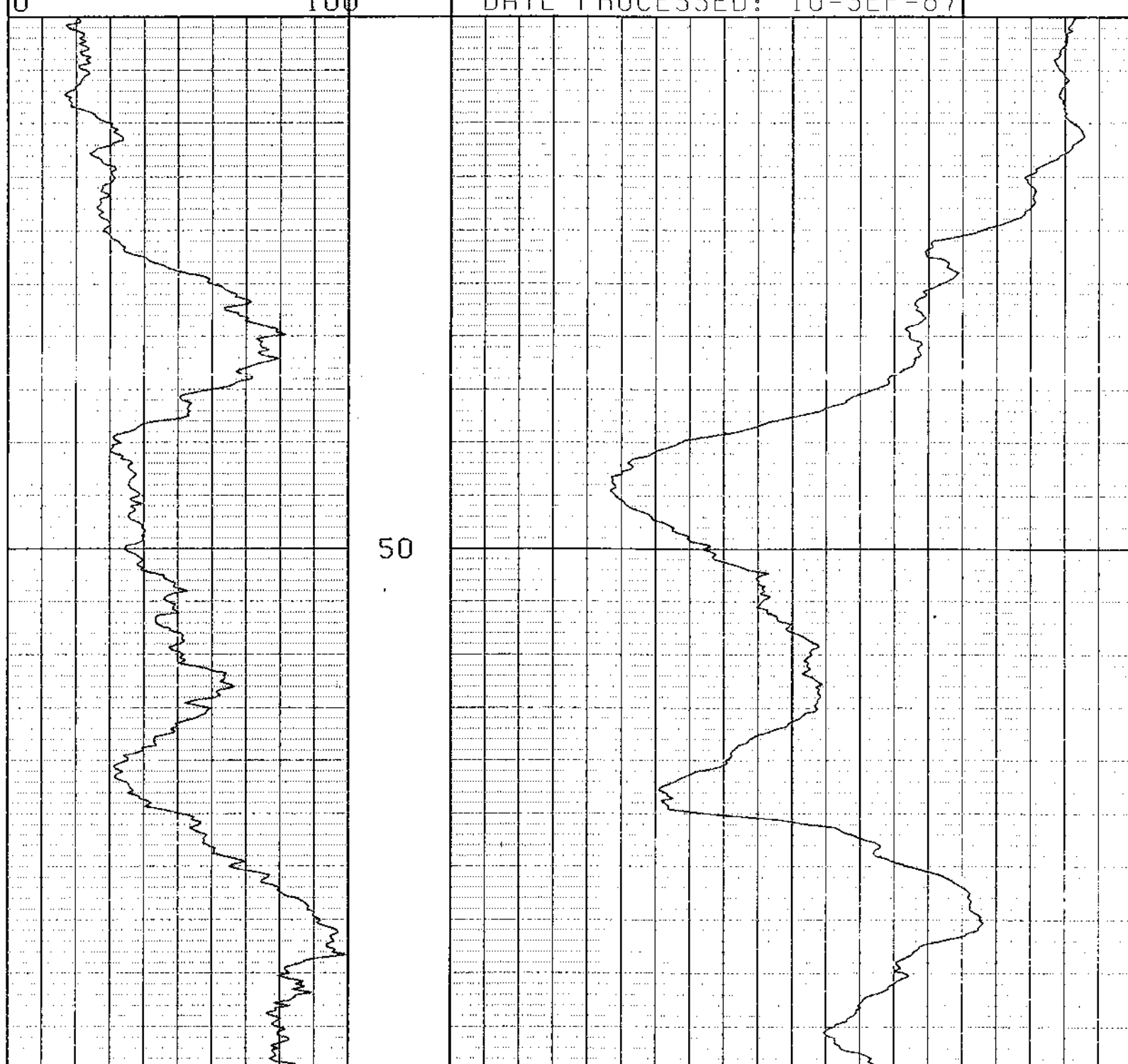
GAMMA RAY 0 100



DETAIL LOGS

DEPTH SCALE 1500 L.S.D (CCS) 0
 20
 CLIENT:
 WELL NO: QHR 87050
 AREA:
 CASING:
 WATER:
 DEPTH: 48.00-52.00
 DATE PROCESSED: 10-SEP-87

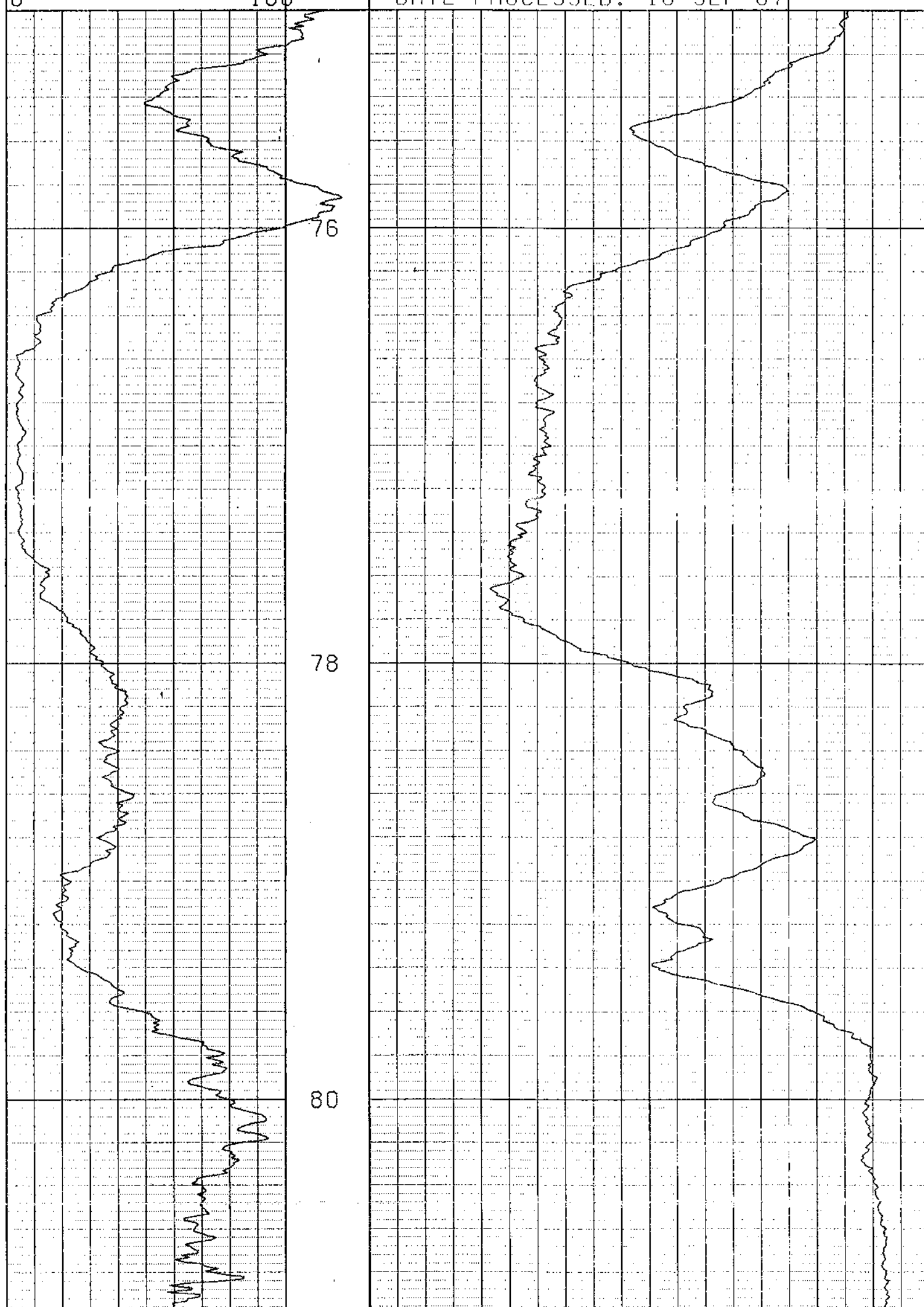
GAMMA RAY 0 100



DETAIL LOGS

DEPTH SCALE 1500 L.S.D (CCS) 0
 20
 CLIENT:
 WELL NO: QHR 87050
 AREA:
 CASING:
 WATER:
 DEPTH: 75.00-81.00
 DATE PROCESSED: 10-SEP-87

GAMMA RAY 0 100



***** VERTICAL DEVIATION *****

COMPU-LOG V8L1 DEVIATION

CLIENT : GAMMA NEUTRON DEV.

HOLE ID : GHR87051

LOCATION : TRANSFER

DATE OF LOG : 10-03-80

DATA FROM : V8L2

PROBE : 9055A 0079

739

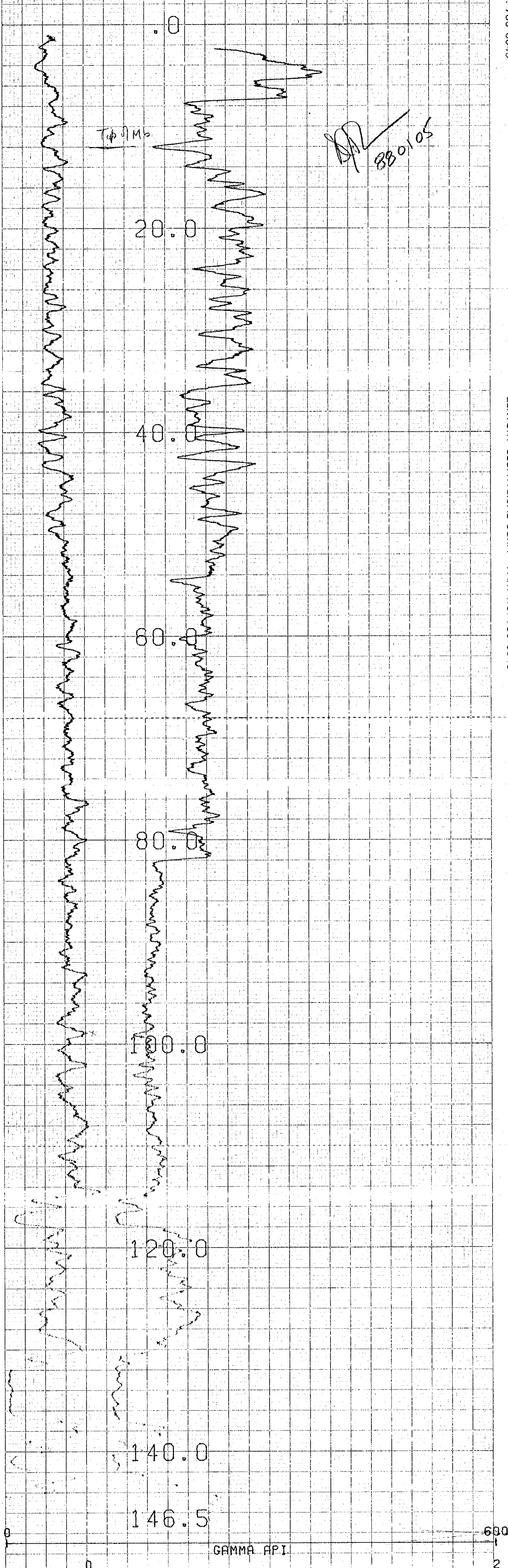
TD = TOTAL DEPTH
T = TOP OF ZONE
B = BOTTOM OF ZONE

| DEPTH | TRUE DEPTH | NORTH DEV | EAST DEV | DISTANCE | AZIMUTH | SA | SAB |
|-----------|------------|-----------|----------|----------|---------|------|-------|
| .00 | .00 | .00 | .00 | .00 | .0 | .0 | .0 |
| 5.00 | 4.99 | -.05 | .03 | .06 | 151.9 | .7 | 151.8 |
| 10.00 | 9.99 | -.01 | .00 | .01 | 162.1 | .5 | 328.0 |
| 15.00 | 14.99 | .11 | .04 | .12 | 22.2 | 1.5 | 17.3 |
| 20.00 | 19.99 | .26 | .13 | .29 | 26.6 | 1.9 | 29.6 |
| 25.00 | 24.98 | .43 | .25 | .50 | 30.2 | 2.4 | 35.3 |
| 30.00 | 29.97 | .68 | .42 | .80 | 32.0 | 3.4 | 34.8 |
| 35.00 | 34.96 | .96 | .54 | 1.10 | 29.5 | 3.4 | 22.8 |
| 40.00 | 39.95 | 1.20 | .69 | 1.39 | 29.9 | 3.2 | 31.4 |
| 45.00 | 44.94 | 1.50 | .82 | 1.71 | 28.7 | 3.7 | 23.7 |
| 50.00 | 49.93 | 1.81 | .99 | 2.07 | 28.7 | 4.0 | 28.7 |
| 55.00 | 54.91 | 2.16 | 1.15 | 2.45 | 28.2 | 4.3 | 25.4 |
| 60.00 | 59.90 | 2.53 | 1.36 | 2.87 | 28.2 | 4.8 | 28.3 |
| 65.00 | 64.87 | 2.93 | 1.60 | 3.34 | 28.7 | 5.3 | 31.2 |
| 70.00 | 69.85 | 3.34 | 1.89 | 3.84 | 29.5 | 5.8 | 34.9 |
| 75.00 | 74.82 | 3.79 | 2.21 | 4.39 | 30.3 | 6.3 | 35.8 |
| 80.00 | 79.78 | 4.31 | 2.52 | 5.00 | 30.4 | 6.9 | 31.0 |
| 85.00 | 84.74 | 4.81 | 2.85 | 5.59 | 30.6 | 6.8 | 32.5 |
| 90.00 | 89.70 | 5.38 | 3.18 | 6.25 | 30.7 | 7.5 | 31.0 |
| 95.00 | 94.65 | 5.96 | 3.56 | 6.95 | 30.9 | 8.0 | 32.5 |
| 100.00 | 99.60 | 6.60 | 3.94 | 7.69 | 30.9 | 8.5 | 30.8 |
| 105.00 | 104.54 | 7.26 | 4.33 | 8.45 | 30.8 | 8.7 | 30.6 |
| 110.00 | 109.47 | 7.95 | 4.77 | 9.28 | 31.0 | 9.5 | 32.5 |
| 115.00 | 114.39 | 8.69 | 5.25 | 10.15 | 31.2 | 10.0 | 33.2 |
| 120.00 | 119.32 | 9.40 | 5.71 | 11.00 | 31.3 | 9.7 | 32.4 |
| 125.00 | 124.25 | 10.10 | 6.15 | 11.83 | 31.3 | 9.4 | 32.0 |
| 130.00 | 129.18 | 10.82 | 6.59 | 12.68 | 31.4 | 9.8 | 31.7 |
| 135.00 | 134.10 | 11.58 | 7.05 | 13.56 | 31.3 | 10.2 | 31.0 |
| 140.00 | 139.01 | 12.35 | 7.52 | 14.46 | 31.4 | 10.3 | 31.6 |
| 145.00 | 143.94 | 13.08 | 8.00 | 15.33 | 31.5 | 10.0 | 32.9 |
| TD 147.80 | 146.70 | 13.47 | 8.26 | 15.80 | 31.5 | 9.6 | 33.9 |

315

313

311



COMPU-LOG V8L2 PLOT 10-03-80

QHR87051
GAMMA NEUTRON RODS
TRANSFER

739

HOLE DIAMETER = 13.1
 PROBE # 9055A - 079
 SENSOR #4 CAL STD CPS = 152
 SENSOR #4 CAL RUN CPS = 186
 SENSOR #4 CAL BIAS = 0
 DATA V8L2* TRUCK # 604
 M. HEALY APPL. #7 LI

VERTICAL DEVIATION

COMPU-LOG V8L1 DEVIATION
DATA FROM : V8L2*

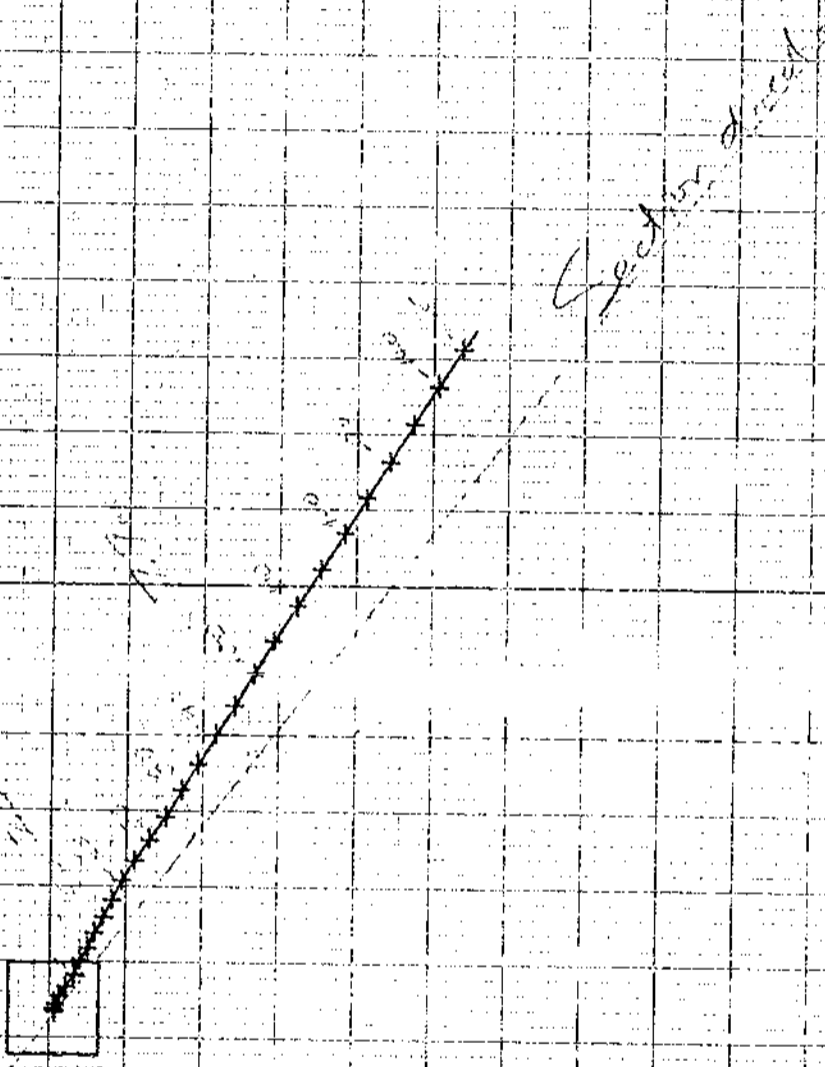
739

CLIENT : GAMMA NEUTRON DEV.
LOCATION : TRANSFER
HOLE ID : QHR87051
DATE OF LOG : 10-03-80
PROBE : 9055A 0079

SCALE: 1.50 M/DIV
MAG DECL: 24.5
TRUE DEPTH: 146.7 M
AZIMUTH: 31.5
DISTANCE: 15.80 M

+ = 5.0 M INCR
Δ = TOP OF ZONE
◇ = BOTTOM OF ZONE

TRUE NORTH ↑

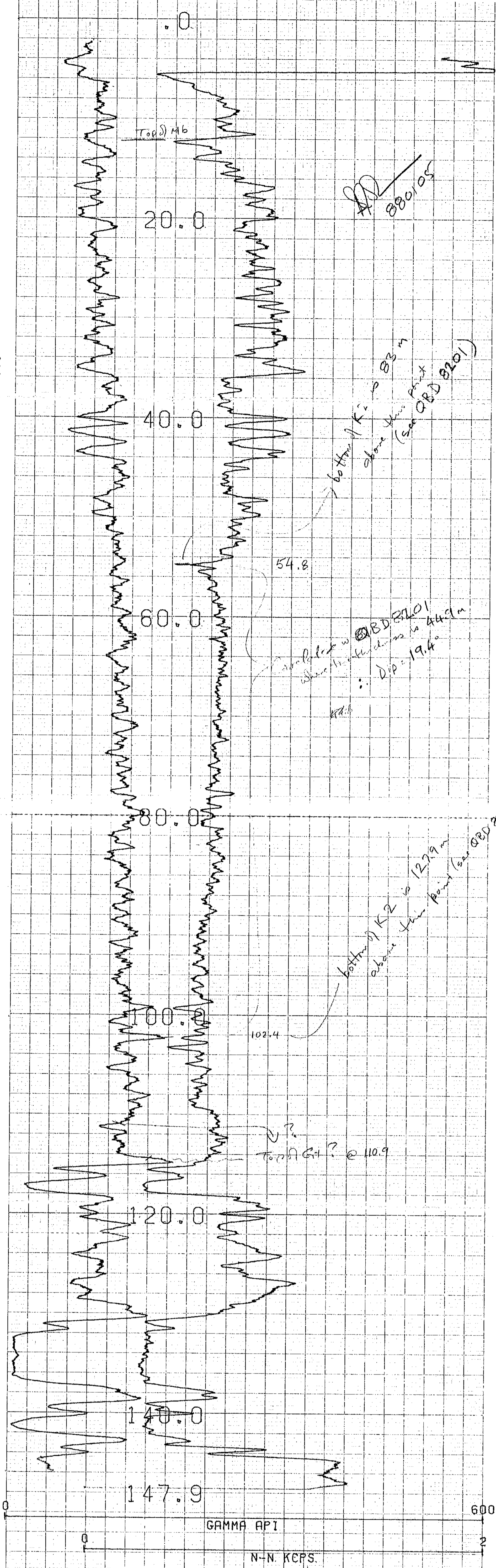


275

309

307

305



COMPU-LOG V8L2 PLOT 10-03-80

739

QHR87051
GAMMA NEUTRON DEV.
TRANSFER

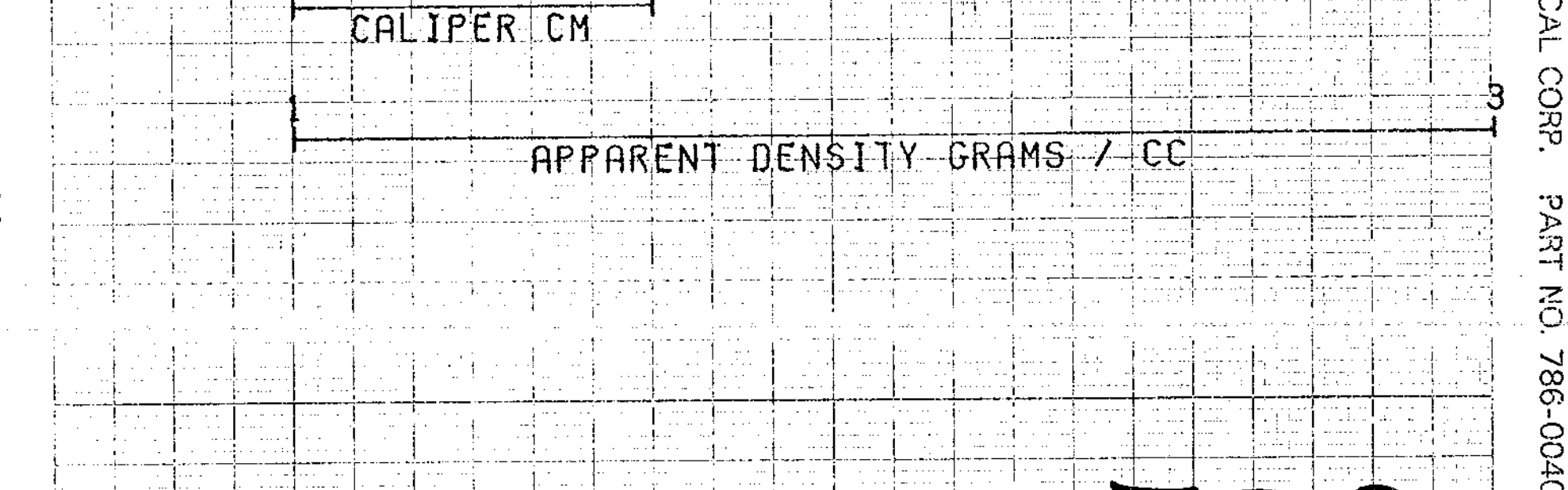
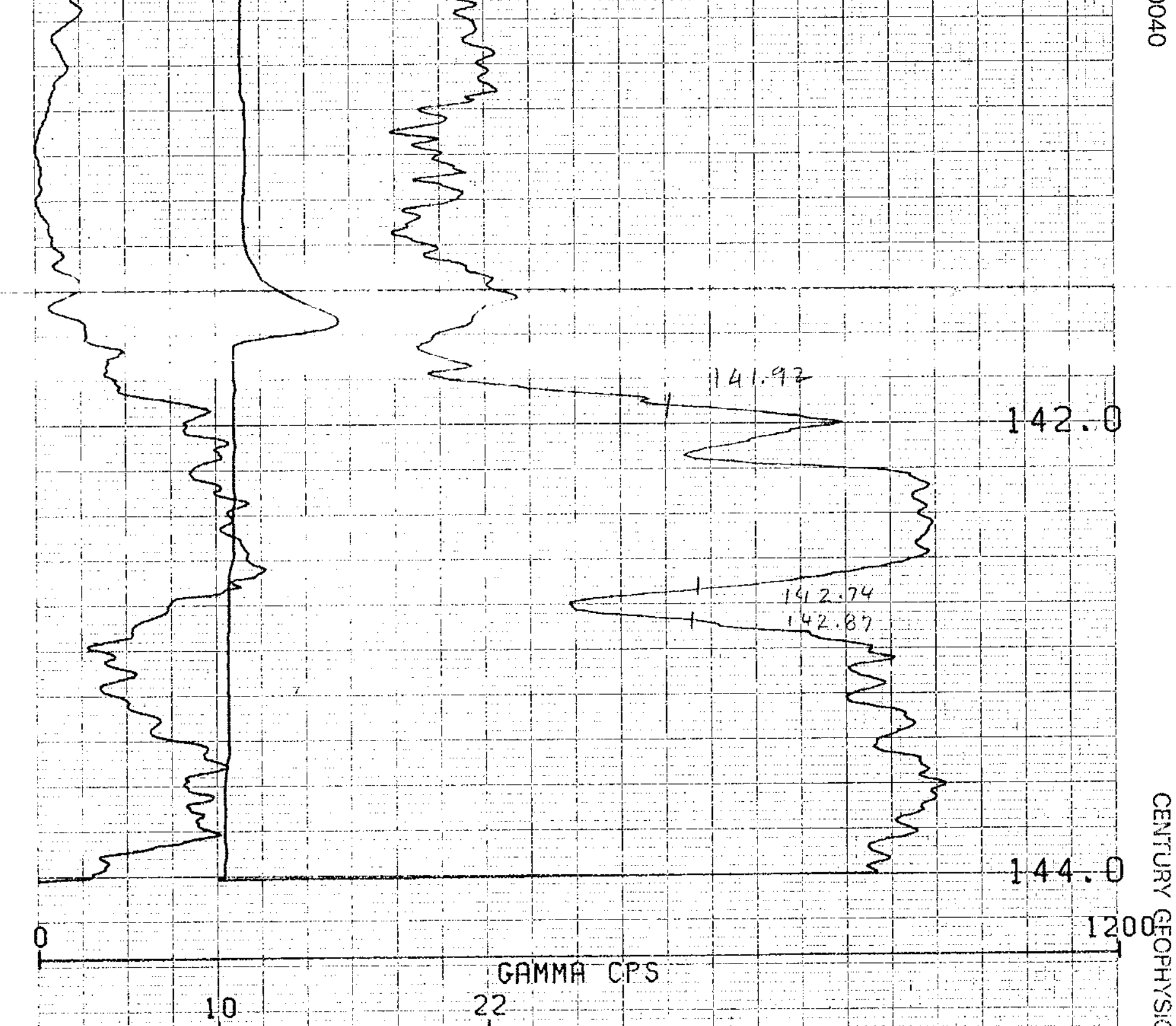
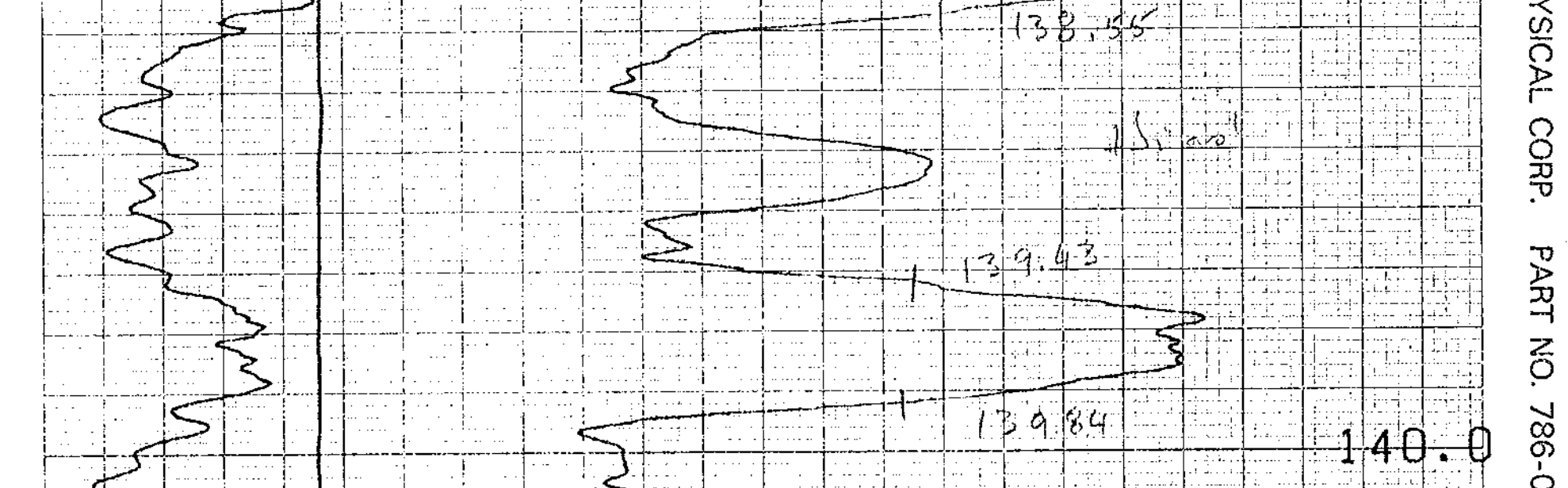
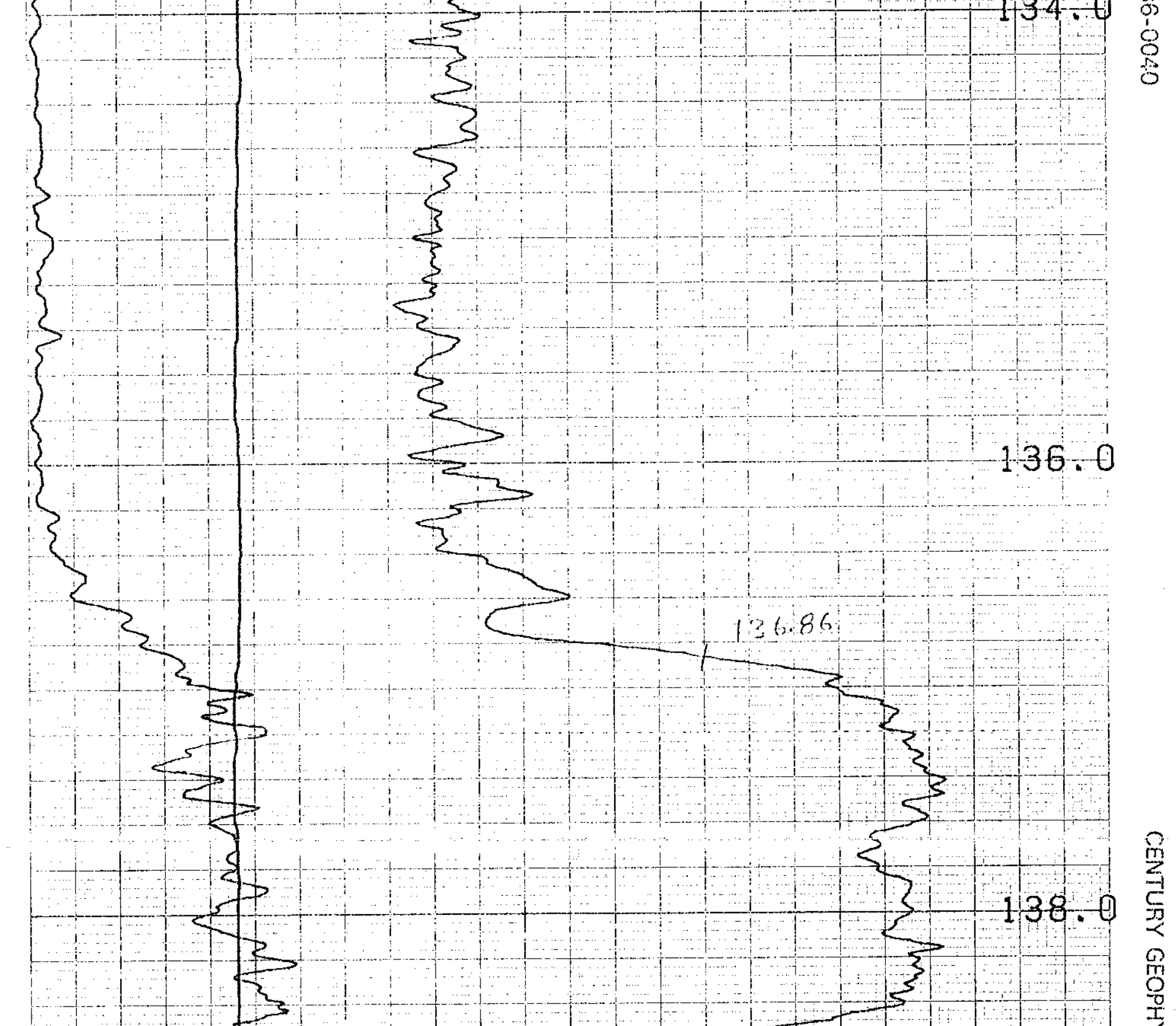
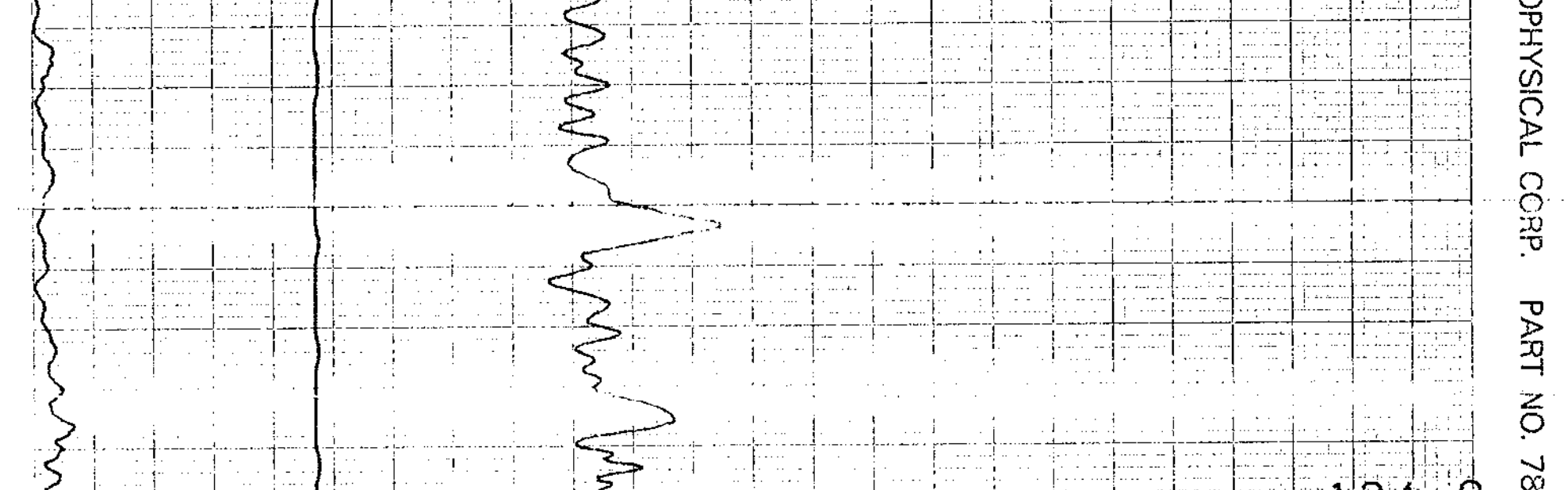
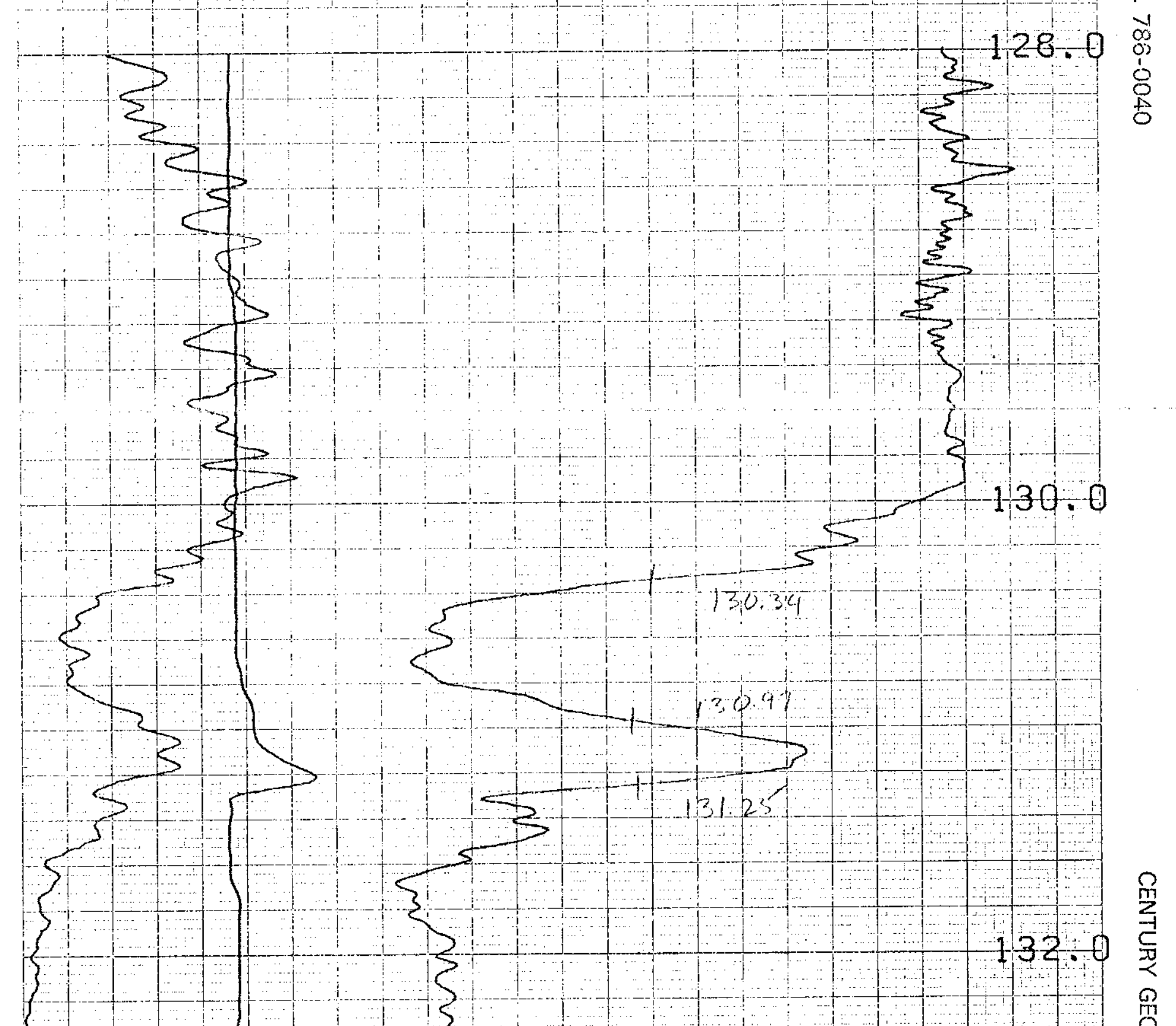
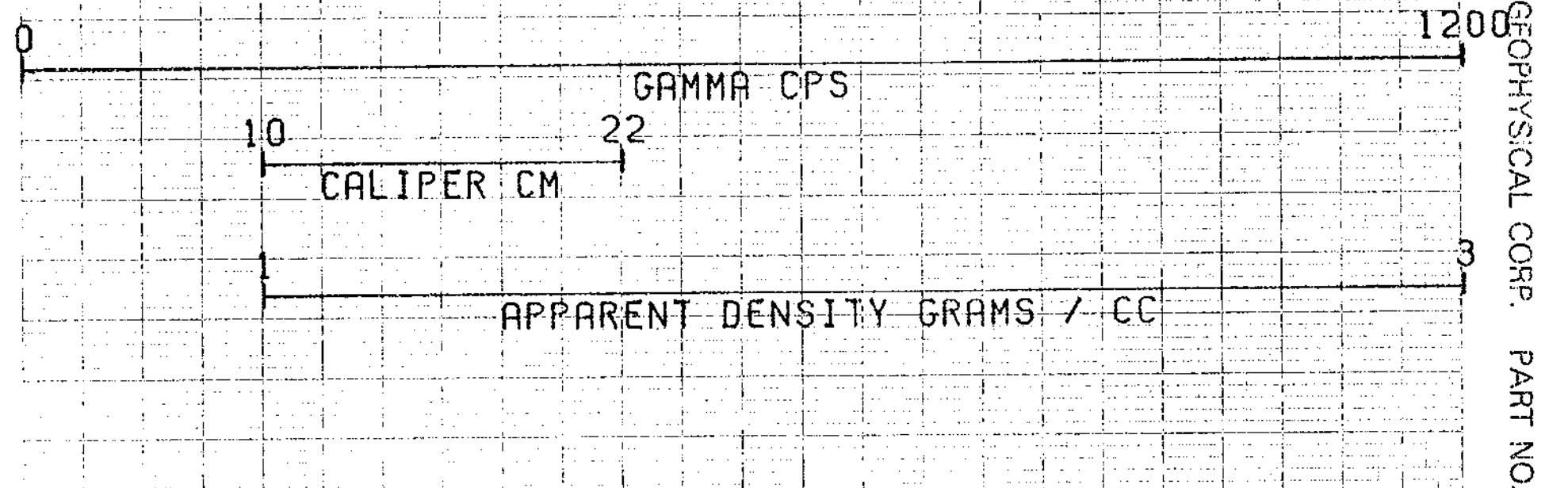
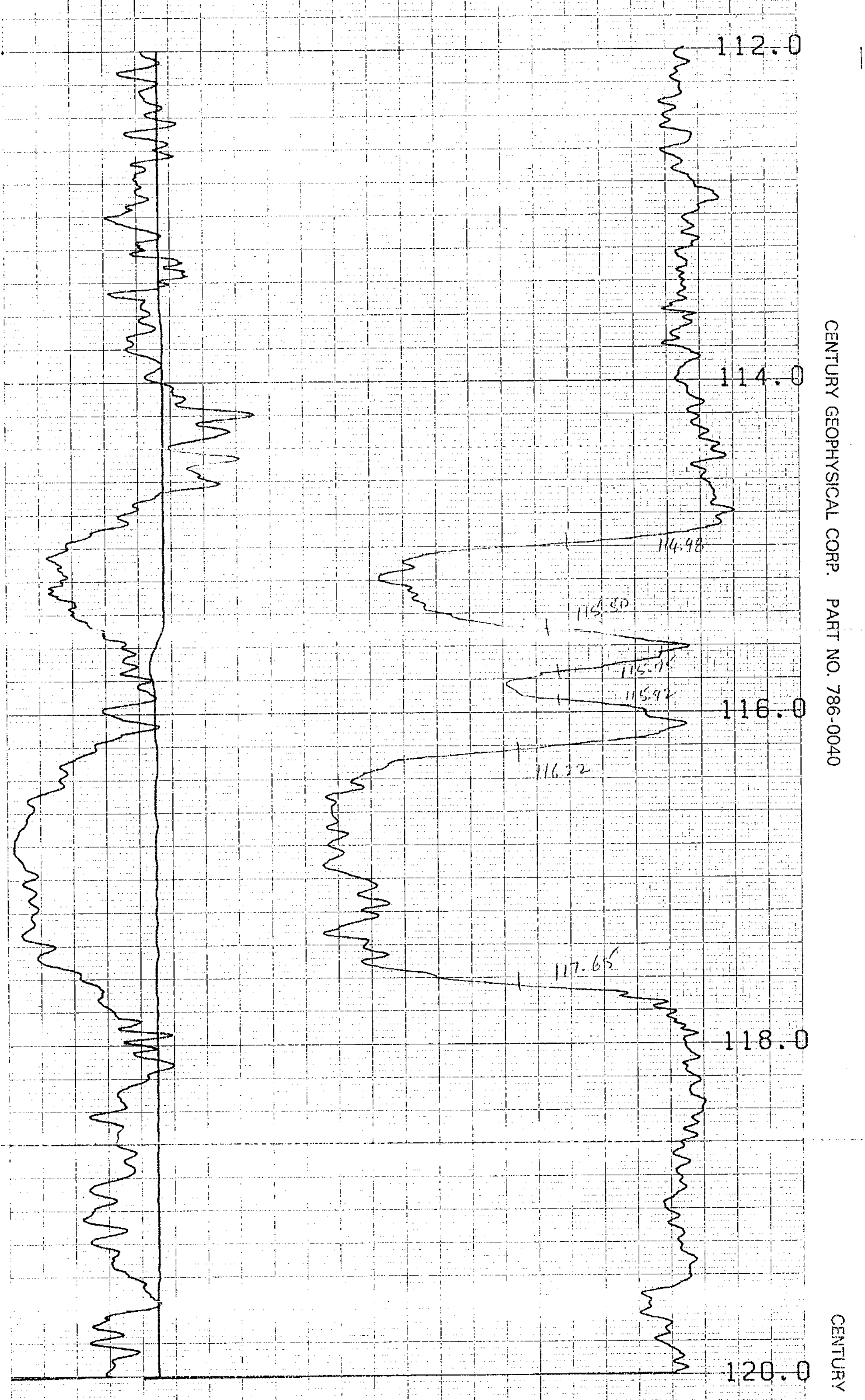
HOLE DIAMETER = 13.1
 PROBE # 9055A - 079
 SENSOR #4 CAL STD CPS = 152
 SENSOR #4 CAL RUN CPS = 186
 SENSOR #4 CAL BIAS = 0
 DATA V8L2* TRUCK # 604
 M. HEALY APPL. #7 - L1

185

191

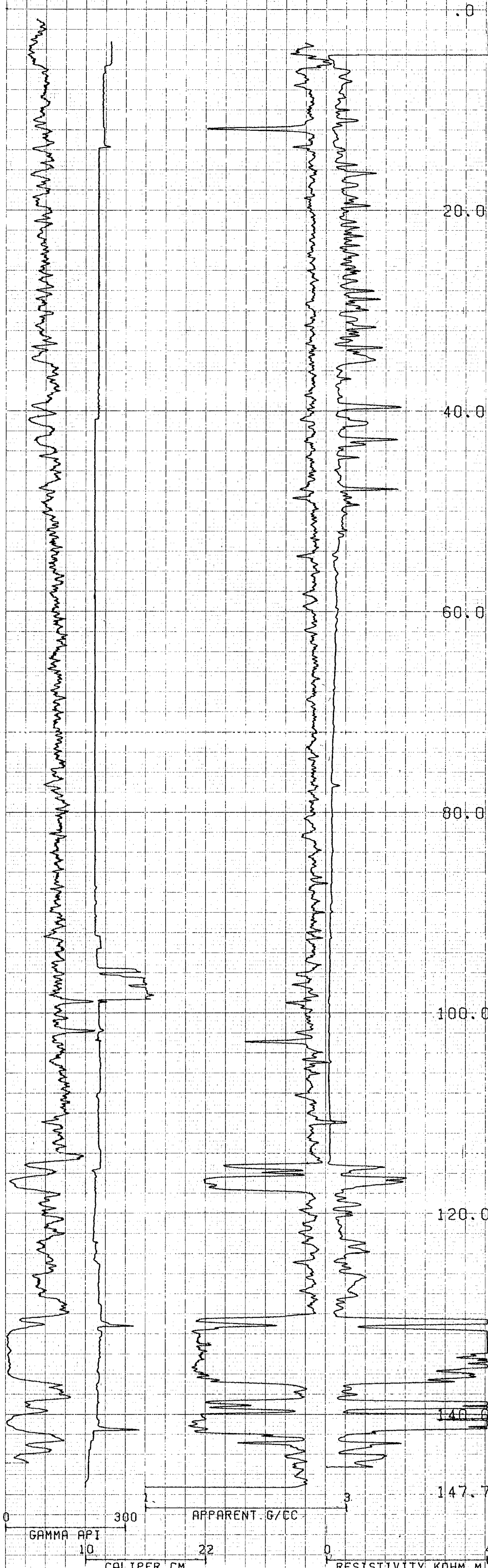
183

187



COMPU-LOG V8L2 PLOT 10-03-80
 QHR87051
 GAMMA DENSITY CALIPR
 TRANSFER
 HDLE DIAMETER : 13.1
 PROBE # 9030A1-403
 SENSOR #4 CAL STD CRS = 6588
 SENSOR #4 CAL RUN CRS = 7500
 SENSOR #4 CAL BIAS = 98
 DATA V8L2* TRUCK # 604
 M. HEALY APPL. #1708L1

739



303

301

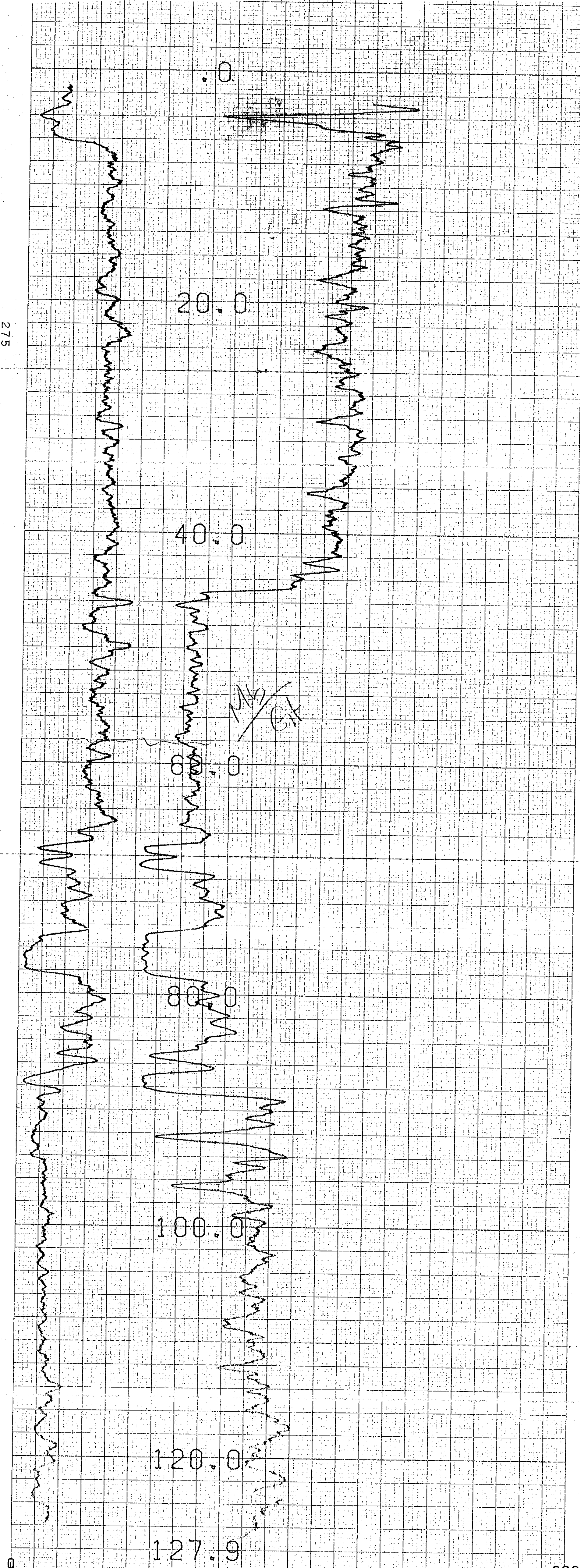
299

COMPU-LOG V8L2 PLOT 10-03-80

739

QHR87051
GAMMA DENSITY CALIPR
TRANSFER

HOLE DIAMETER = 13.1
 PROBE # 8030A1- 403
 SENSOR #4 CAL STD CPS = 6588
 SENSOR #4 CAL RUN CPS = 7500
 SENSOR #4 CAL BIAS = 98
 DATA V8L2 TRUCK # 604
 M. HEALY APPL. #30 L1



275

273

271

COMPU-LOG V8L2 PLOT 10-05-80

739

QHR87052
GAMMA NEUTRON RODS
TRANSFER

HOLE DIAMETER = 13.1
 PROBE # 0056A - 079
 SENSOR #1 CAL STD CPS = 152
 SENSOR #4 CAL RUN CPS = 186
 SENSOR #4 CAL BIAS = 0
 DATA V8L2WA TRUCK # 604
 HIKEY APPL. #7 11

739

CENTURY GEOPHYSICAL CORPORATION

***** VERTICAL DEVIATION *****

COMPU-LOG V8L1 DEVIATION

CLIENT : GAMMA NEUTRON DEV.

HOLE ID : QHR87053

LOCATION : TRANSFER

DATE OF LOG : 10-07-80

DATA FROM : V8L2*A

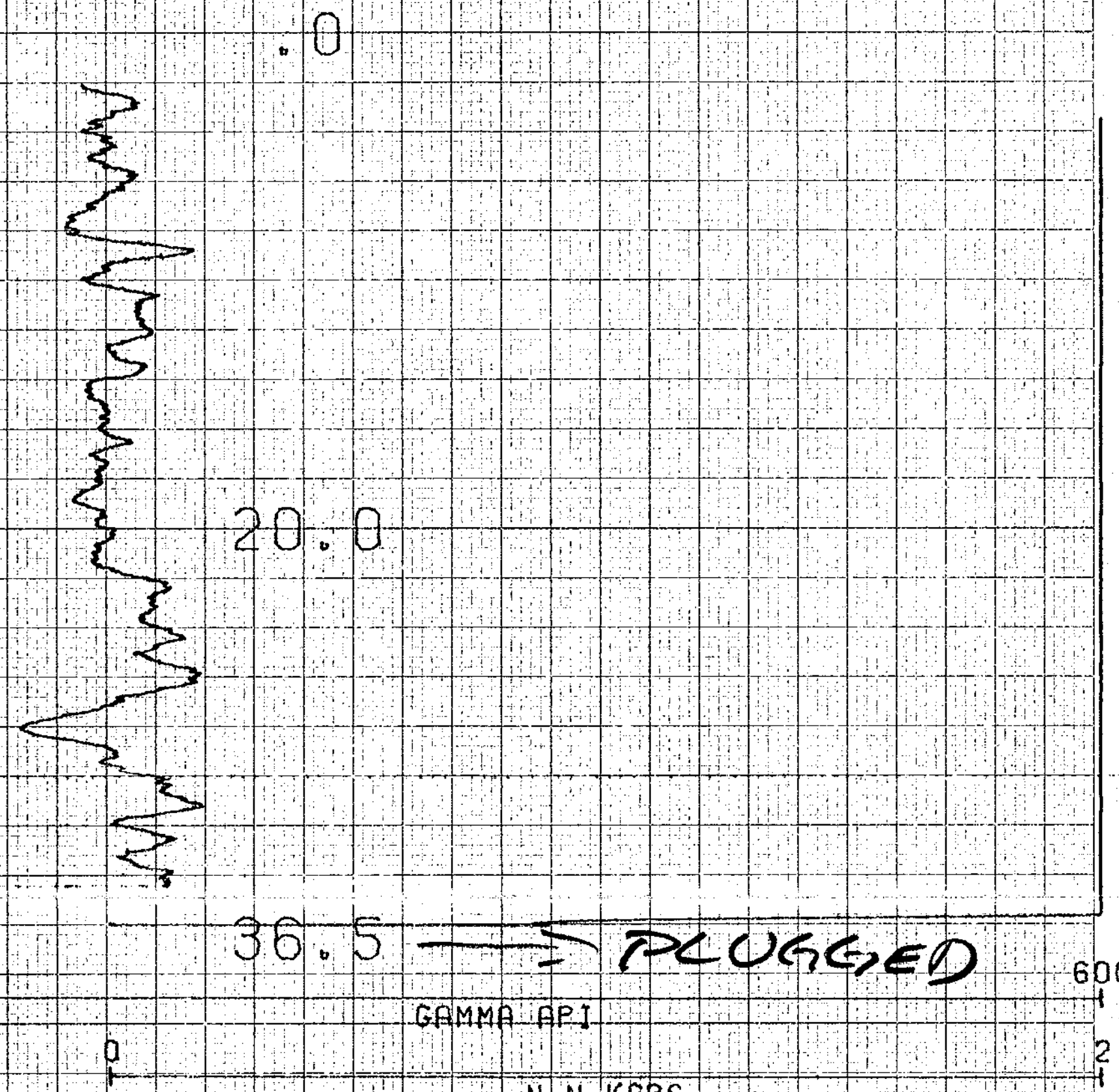
PROBE : 9055A 0079

TD = TOTAL DEPTH

T = TOP OF ZONE

R = BOTTOM OF ZONE

| DEPTH | TRUE DEPTH | NORTH DEV | EAST DEV | DISTANCE | AZIMUTH | SA | SAR |
|----------|------------|-----------|----------|----------|---------|-----|-------|
| .00 | .00 | .00 | .00 | .00 | .0 | .0 | .0 |
| 2.00 | 1.99 | -.07 | .01 | .07 | 170.5 | 2.0 | 170.5 |
| 4.00 | 3.99 | -.14 | .02 | .14 | 170.5 | 2.0 | 170.5 |
| 6.00 | 5.99 | -.21 | .04 | .21 | 169.0 | 2.0 | 165.9 |
| 8.00 | 7.99 | -.28 | .08 | .29 | 164.2 | 2.2 | 150.8 |
| 10.00 | 9.99 | -.34 | .14 | .37 | 158.1 | 2.5 | 138.0 |
| 12.00 | 11.98 | -.40 | .21 | .45 | 151.9 | 2.6 | 125.4 |
| 14.00 | 13.98 | -.44 | .30 | .53 | 145.7 | 2.6 | 113.3 |
| 16.00 | 15.98 | -.47 | .37 | .60 | 141.6 | 2.3 | 114.4 |
| 18.00 | 17.98 | -.52 | .43 | .68 | 140.4 | 2.2 | 130.3 |
| 20.00 | 19.98 | -.59 | .48 | .77 | 140.9 | 2.6 | 145.2 |
| 22.00 | 21.97 | -.69 | .52 | .87 | 142.7 | 2.9 | 156.2 |
| 24.00 | 23.97 | -.80 | .54 | .97 | 145.8 | 3.3 | 169.8 |
| 26.00 | 25.97 | -.93 | .55 | 1.08 | 149.2 | 3.6 | 176.7 |
| 28.00 | 27.96 | -1.06 | .56 | 1.20 | 152.0 | 3.6 | 176.4 |
| 30.00 | 29.96 | -1.19 | .57 | 1.32 | 154.1 | 3.7 | 173.3 |
| 32.00 | 31.95 | -1.31 | .59 | 1.44 | 155.6 | 3.6 | 171.0 |
| 34.00 | 33.95 | -1.44 | .61 | 1.57 | 156.8 | 3.6 | 171.2 |
| 36.00 | 35.94 | -1.59 | .63 | 1.71 | 158.4 | 4.2 | 175.5 |
| TD 36.40 | 36.34 | -1.62 | .63 | 1.74 | 158.6 | 4.7 | 167.8 |



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211

COMPU-LOG V8L2 PLOT 10-07-80

QHR87053

GAMMA NEUTRON DEV.

TRANSFER

HOLE DIAMETER : 13.1

PROBE # 9055A - 079

SENSOR #4 CAL STD CPS = 152

SENSOR #4 CAL RUN CPS = 186

SENSOR #4 CAL BIAS = 0

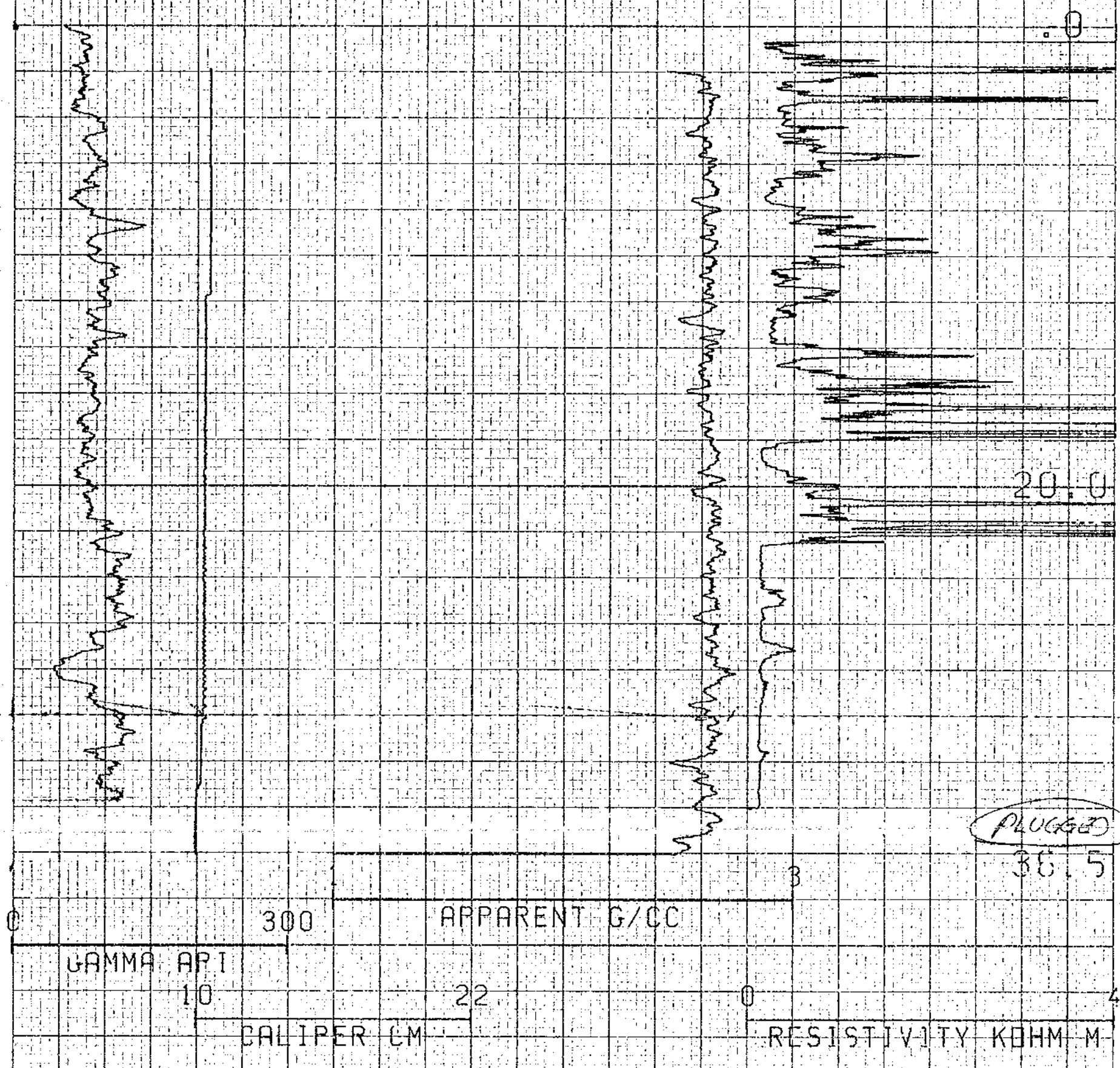
DATA V8L2WA TRUCK # 604

M. HEALY APPL. #7 L1

739

223

221



COMPU LOG V8L2 PLOT 10-07-80

739

QHR87053
GAMMA DENSITY CALIPR
TRANSFER

HOLE DIAMETER : 13.1
 PROBE # 9030A1-403
 SENSOR #4 CAL STD CPS = 6588
 SENSOR #4 CAL RUN CPS = 5000
 SENSOR #4 CAL BIAS = 98
 DATA V8L2*P TRUCK # 600
 M. HEALY APPL. #30 L1

CENTURY GEOPHYSICAL CORPORATION
 * * * * * VERTICAL DEVIATION * * * * *
 COMPU-LOG VBL1 DEVIATION

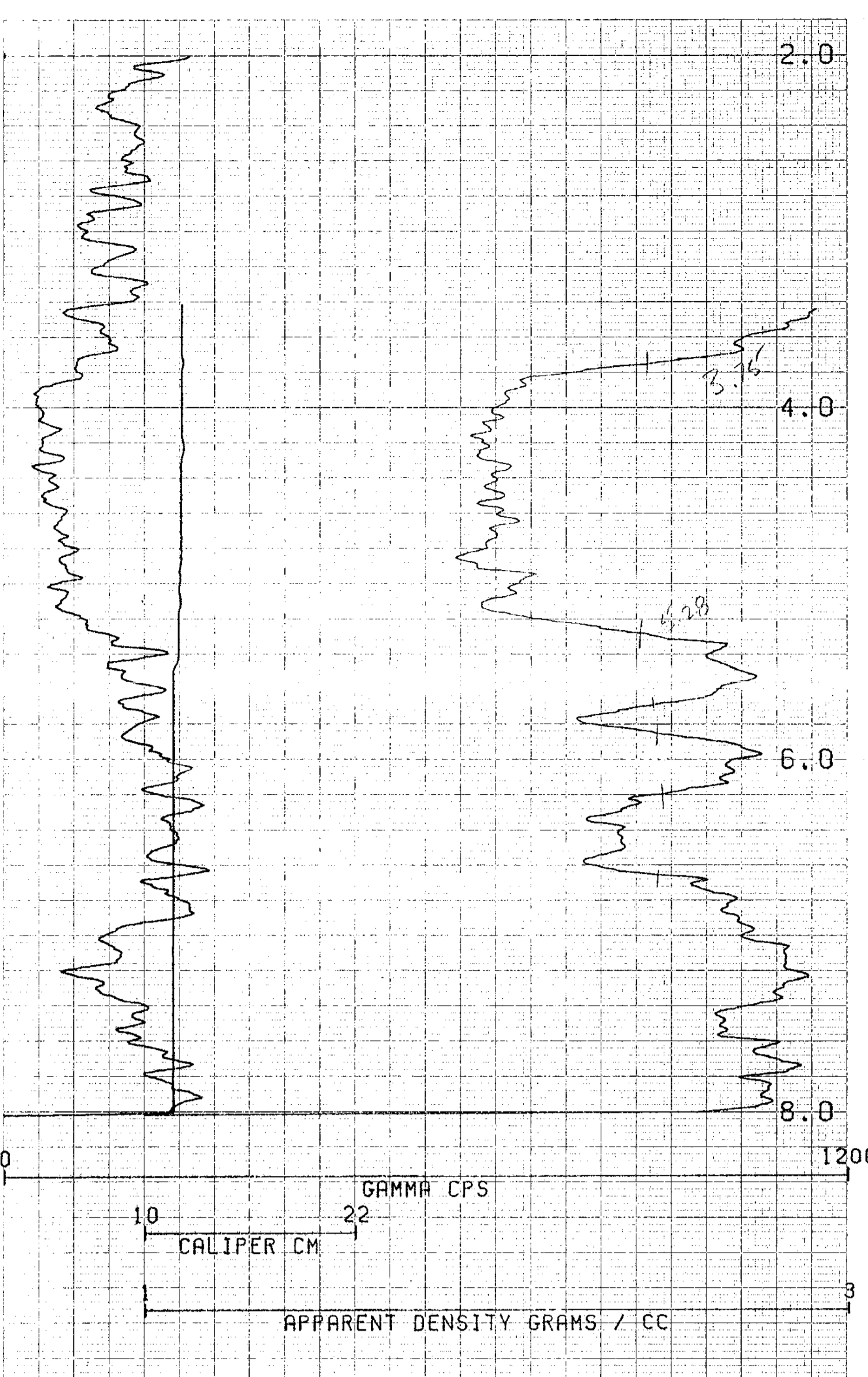
CLIENT : GAMMA NEUTRON DEV.
 LOCATION : TRANSFER
 DATA FROM : VBL2*A

HOLE ID : QHR87054
 DATE OF LOG : 10-07-80
 PROBE : 9055A 0079

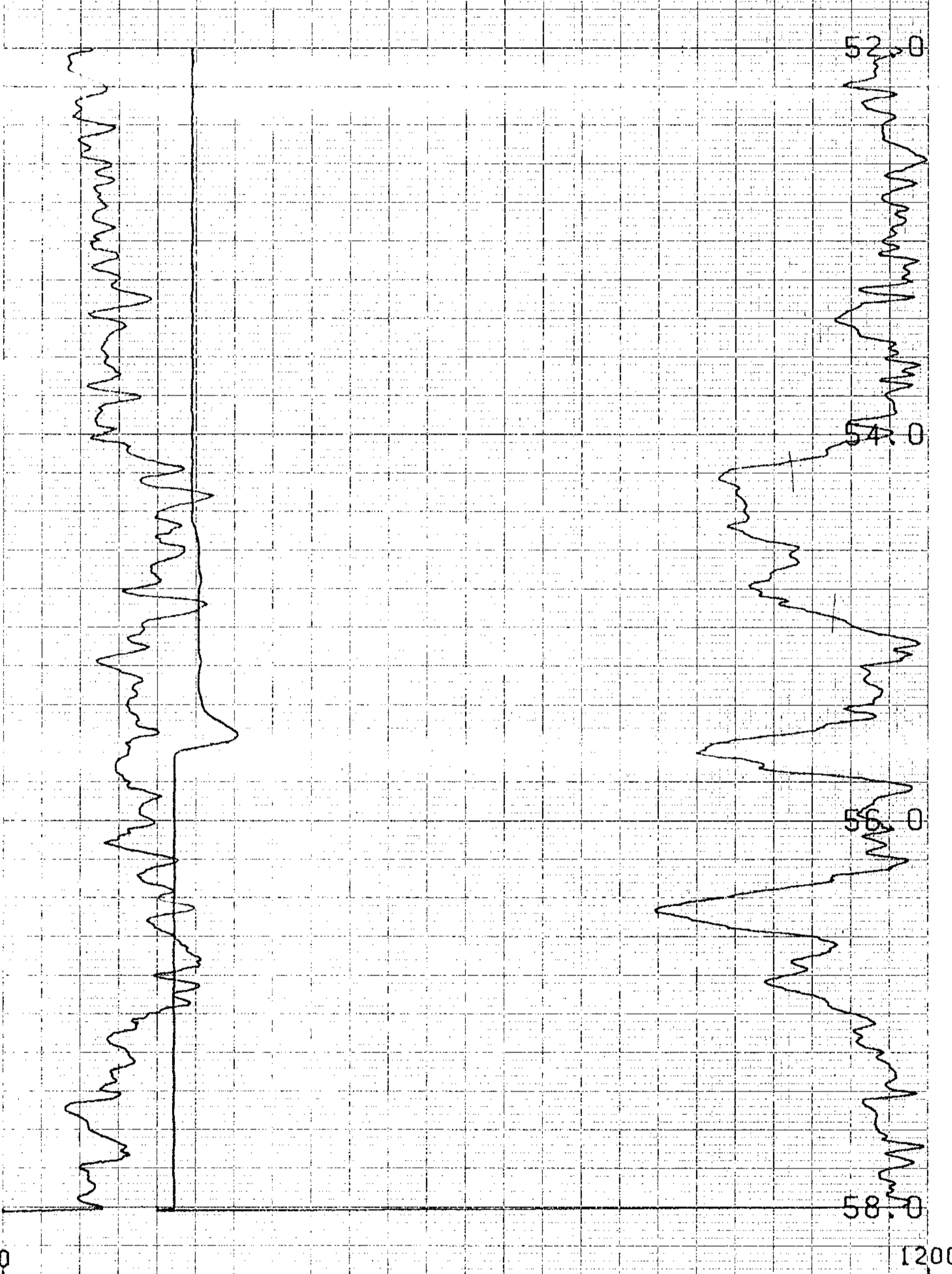
739

TD = TOTAL DEPTH
 T = TOP OF ZONE
 B = BOTTOM OF ZONE

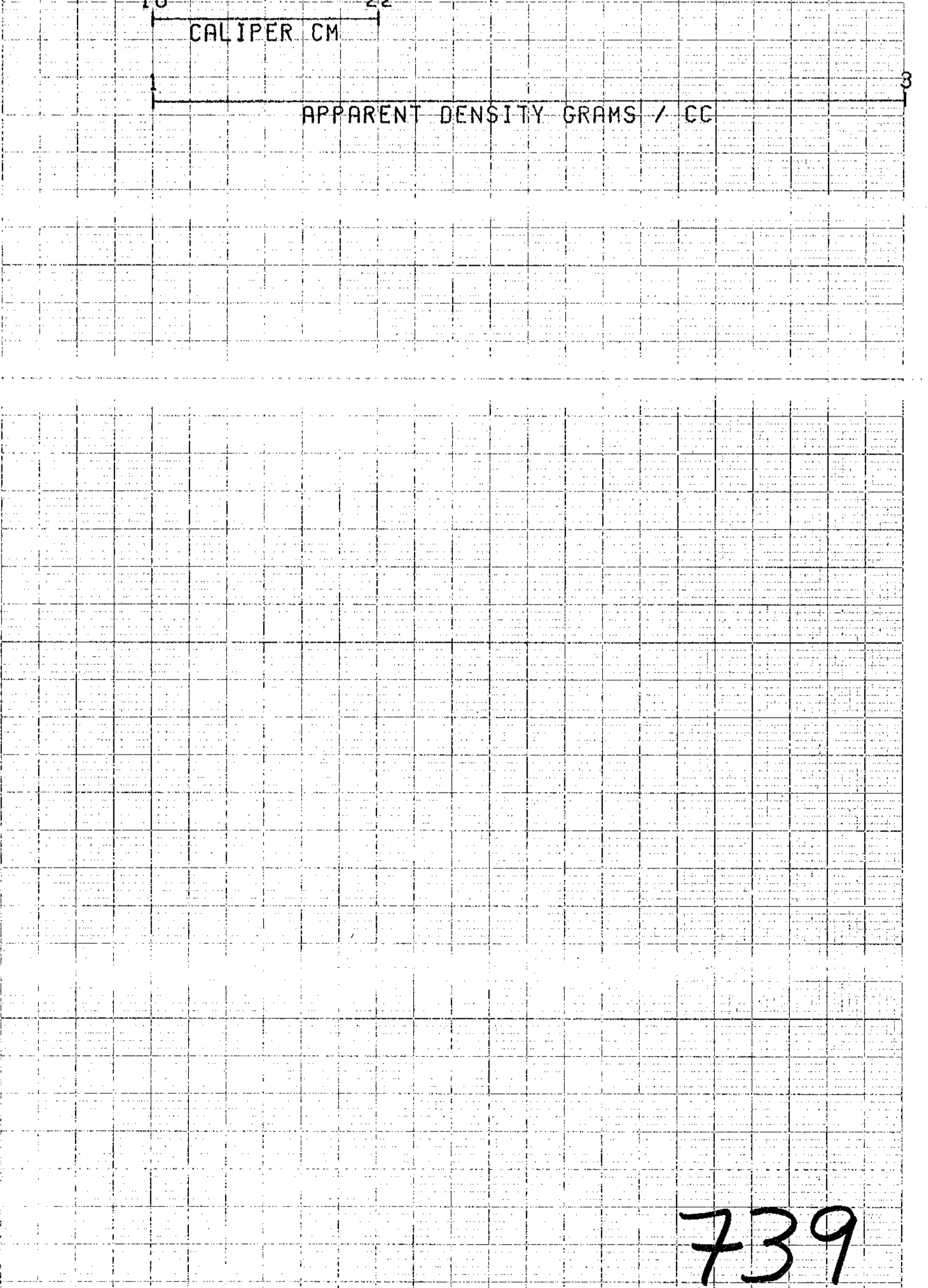
| DEPTH | TRUE DEPTH | NORTH DEV | EAST DEV | DISTANCE | AZIMUTH | SA | SAB |
|----------|------------|-----------|----------|----------|---------|-----|-------|
| .00 | .00 | .00 | .00 | .00 | .0 | .0 | .0 |
| 2.00 | 1.99 | .01 | -.03 | .03 | 286.7 | 1.0 | 286.6 |
| 4.00 | 3.99 | .02 | -.06 | .06 | 288.3 | .8 | 290.4 |
| 6.00 | 5.99 | .02 | -.07 | .08 | 289.9 | .4 | 296.9 |
| 8.00 | 7.99 | .02 | -.11 | .11 | 282.0 | 1.1 | 265.0 |
| 10.00 | 9.99 | .01 | -.14 | .15 | 276.4 | .9 | 256.7 |
| 12.00 | 11.99 | .00 | -.18 | .18 | 271.6 | .9 | 250.6 |
| 14.00 | 13.99 | -.00 | -.22 | .22 | 267.8 | 1.2 | 251.7 |
| 16.00 | 15.99 | -.02 | -.24 | .25 | 263.8 | .8 | 234.1 |
| 18.00 | 17.99 | -.05 | -.27 | .28 | 258.3 | 1.1 | 221.1 |
| 20.00 | 19.99 | -.08 | -.31 | .32 | 254.5 | 1.4 | 233.1 |
| 22.00 | 21.99 | -.12 | -.35 | .37 | 250.9 | 1.4 | 227.3 |
| 24.00 | 23.99 | -.16 | -.39 | .42 | 247.5 | 1.6 | 224.3 |
| 26.00 | 25.99 | -.20 | -.43 | .47 | 244.9 | 1.6 | 224.9 |
| 28.00 | 27.99 | -.23 | -.47 | .53 | 243.3 | 1.6 | 228.9 |
| 30.00 | 29.99 | -.27 | -.51 | .58 | 241.4 | 1.5 | 222.9 |
| 32.00 | 31.99 | -.31 | -.56 | .64 | 240.4 | 1.8 | 231.1 |
| 34.00 | 33.98 | -.35 | -.62 | .72 | 240.4 | 2.1 | 240.5 |
| 36.00 | 35.98 | -.41 | -.69 | .80 | 239.1 | 2.4 | 228.3 |
| 38.00 | 37.98 | -.48 | -.76 | .90 | 237.8 | 2.8 | 227.1 |
| 40.00 | 39.98 | -.54 | -.84 | .99 | 237.3 | 2.7 | 231.8 |
| 42.00 | 41.97 | -.58 | -.93 | 1.10 | 237.8 | 2.9 | 243.2 |
| 44.00 | 43.97 | -.66 | -1.00 | 1.20 | 236.6 | 2.9 | 223.5 |
| 46.00 | 45.97 | -.74 | -1.08 | 1.31 | 235.5 | 3.2 | 223.8 |
| 48.00 | 47.96 | -.84 | -1.16 | 1.43 | 234.0 | 3.6 | 218.3 |
| 50.00 | 49.96 | -.93 | -1.24 | 1.55 | 233.2 | 3.5 | 223.8 |
| 52.00 | 51.96 | -1.03 | -1.32 | 1.67 | 232.1 | 3.6 | 218.4 |
| 54.00 | 53.95 | -1.13 | -1.41 | 1.81 | 231.4 | 3.8 | 222.4 |
| TD 55.50 | 55.45 | -1.21 | -1.46 | 1.90 | 230.4 | 3.7 | 211.1 |



155



183



181

739

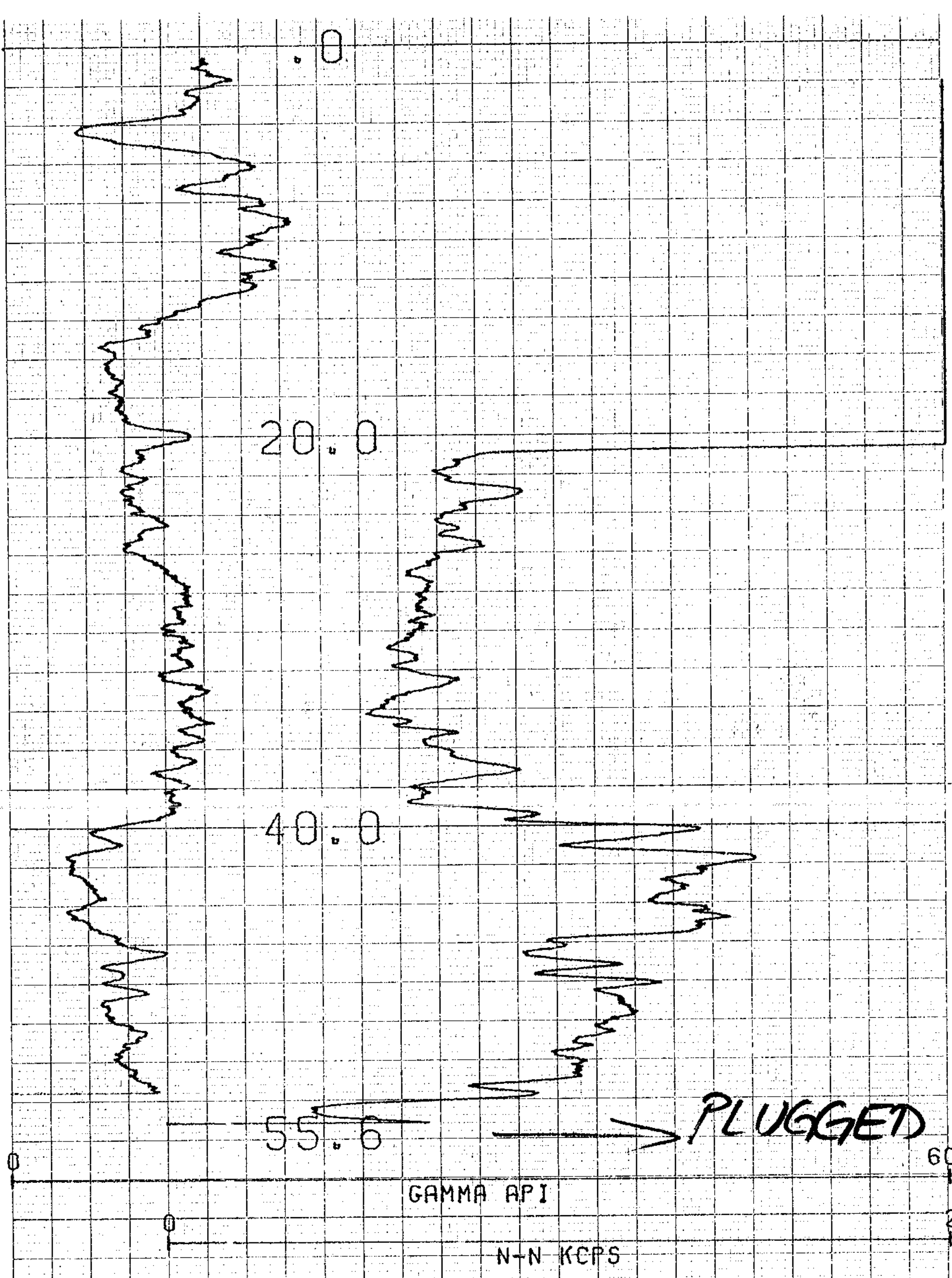
COMPU-LOG V8L2 PLOT 10-07-80

QHR87054
GAMMA DENSITY CALIPR
TRANSFER

HOLE DIAMETER : 13.1
 PROBE # 9030A1- 403
 SENSOR #4 CAL STD CPS = 6588
 SENSOR #4 CAL RUN CPS = 7500
 SENSOR #4 CAL BIAS = 98
 DATA V8L2WA TRUCK # 604
 M. HEALY APPL. #1708L1

209

207



COMPU-LOG V8L2 PLDT 10-07-80

QHR87054
GAMMA NEUTRON DEV.
TRANSFER

HOLE DIAMETER = 13.1
 PROBE # 9055A - 079
 SENSOR #4 CAL STD CPS = 152
 SENSOR #4 CAL RUN CPS = 186
 SENSOR #4 CAL BIAS = 0
 DATA V8L2WA TRUCK # 604
 M. HEALY APPL. #7 L1

739

VERTICAL DEVIATION

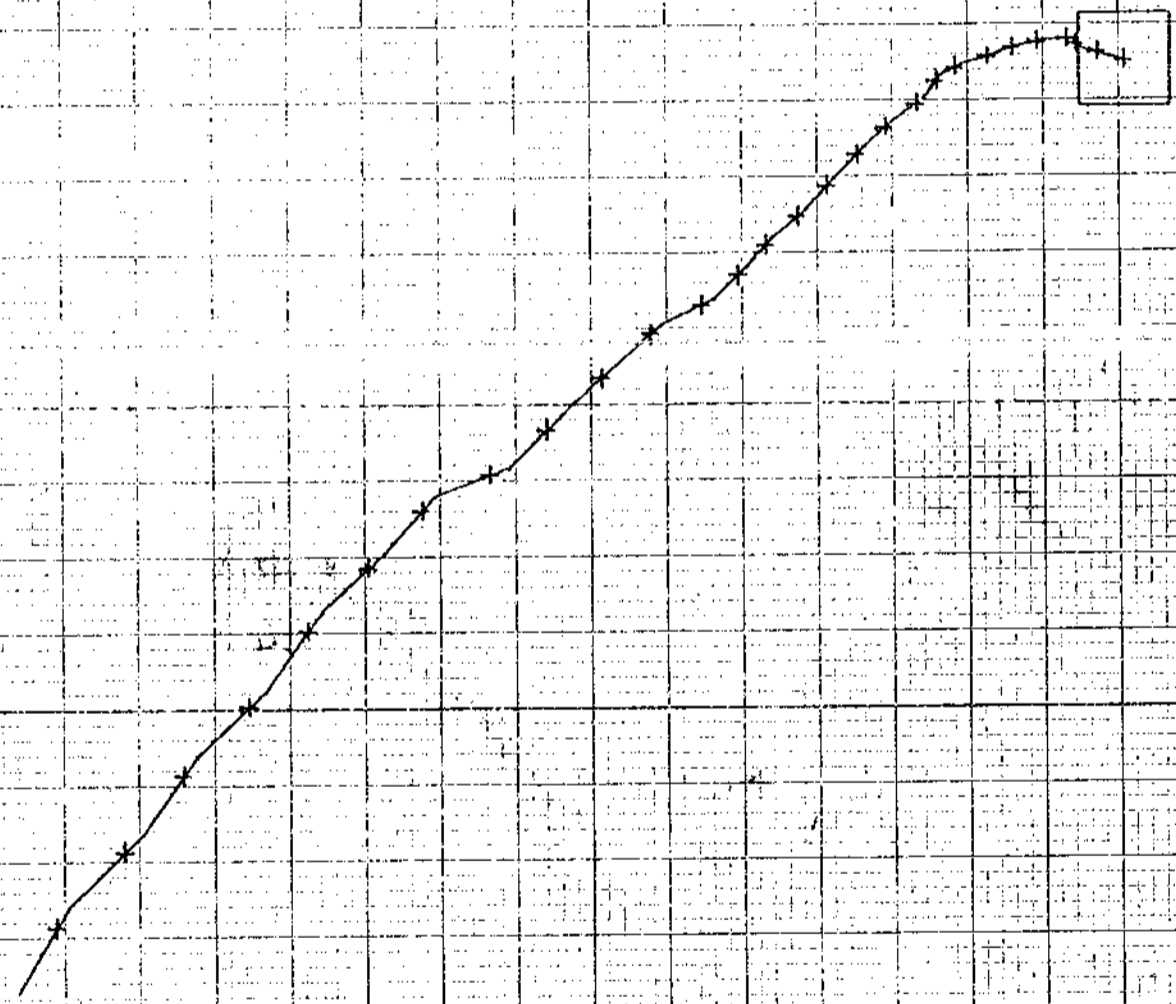
739

COMPU-LOG V8L1 DEVIATION
DATA FROM : V8L2*A

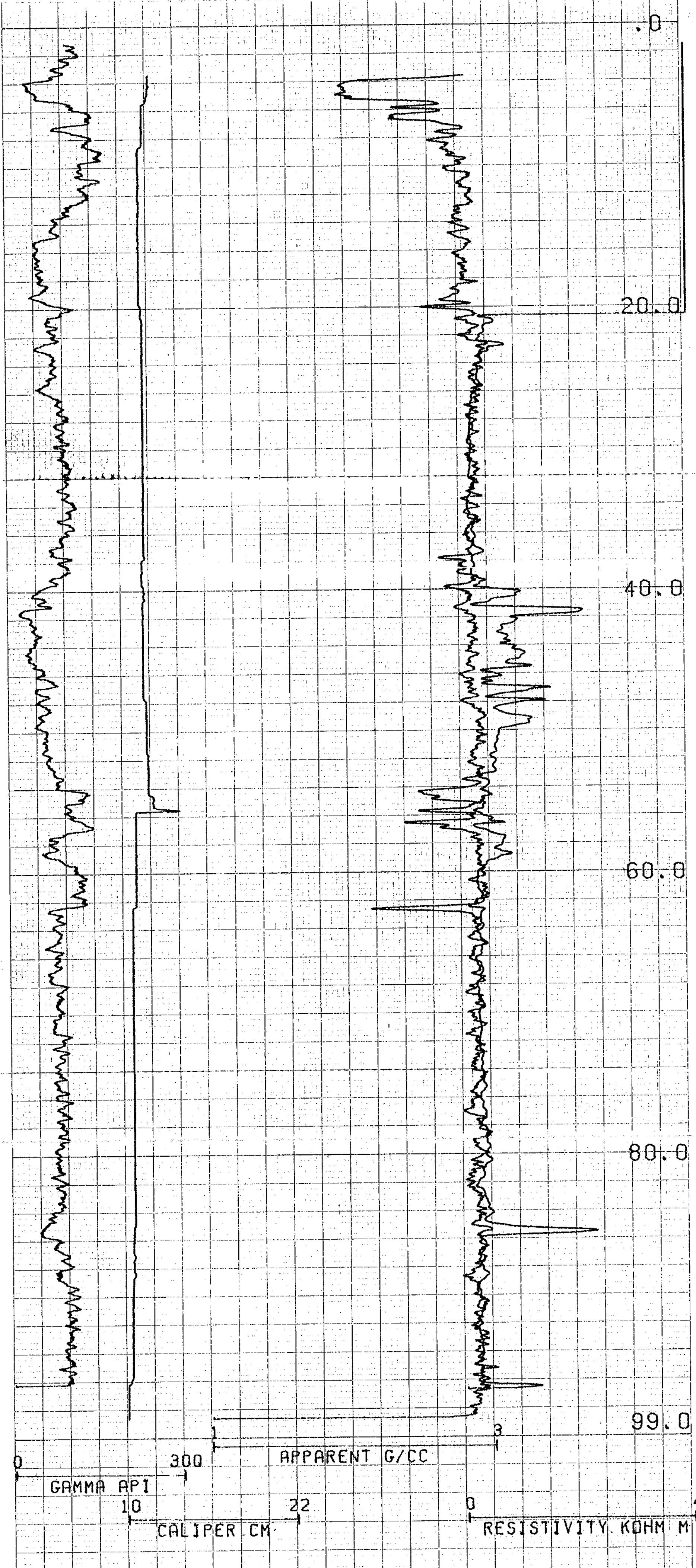
CLIENT : GAMMA NEUTRON DEV.
LOCATION : TRANSFER
HOLE ID : QHR87054
DATE OF LOG : 10-07-80
PROBE : 9055A 0079

SCALE: .10 M/DIV
MAG DECL: 2.5
TRUE DEPTH: 55.5 M
AZIMUTH: 230.4
DISTANCE: 1.90 M

+ = 2.0 M INCR
Δ = TOP OF ZONE
◇ = BOTTOM OF ZONE
TRUE NORTH ↑



269



201

199

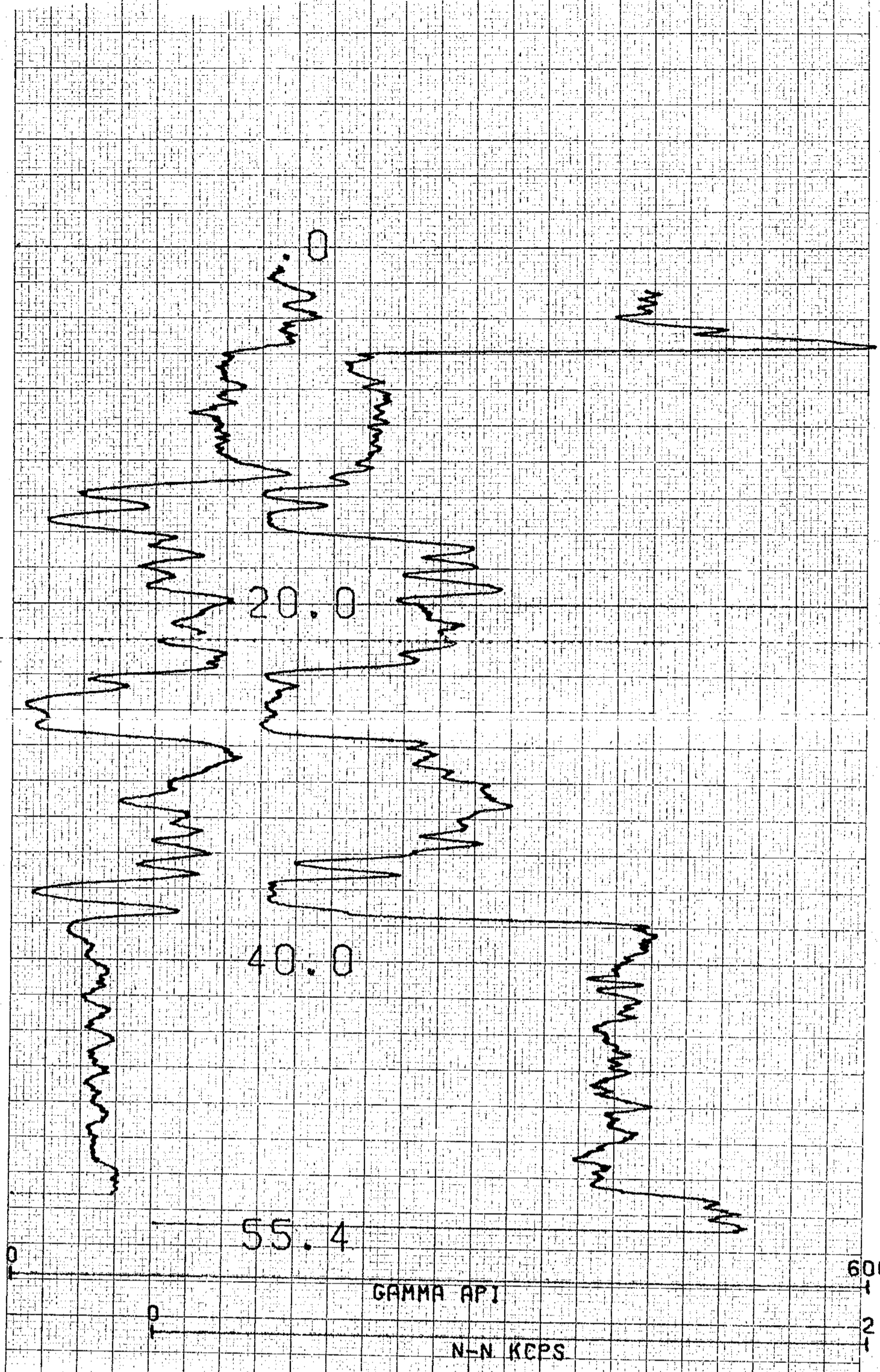
739

COMPU-LOG V8L2 PLOT 10-07-80

QHR87054
GAMMA DENSITY CALIPR
TRANSFER

HOLE DIAMETER = 13.1
PROBE # 9030A1- 403
SENSDR #4 CAL STD CPS = 6588
SENSDR #4 CAL RUN CPS = 7500
SENSDR #4 CAL BIAS = 98

DATA V8L2*RA TRUCK # 604
M. HEALY APPL. #30 L1



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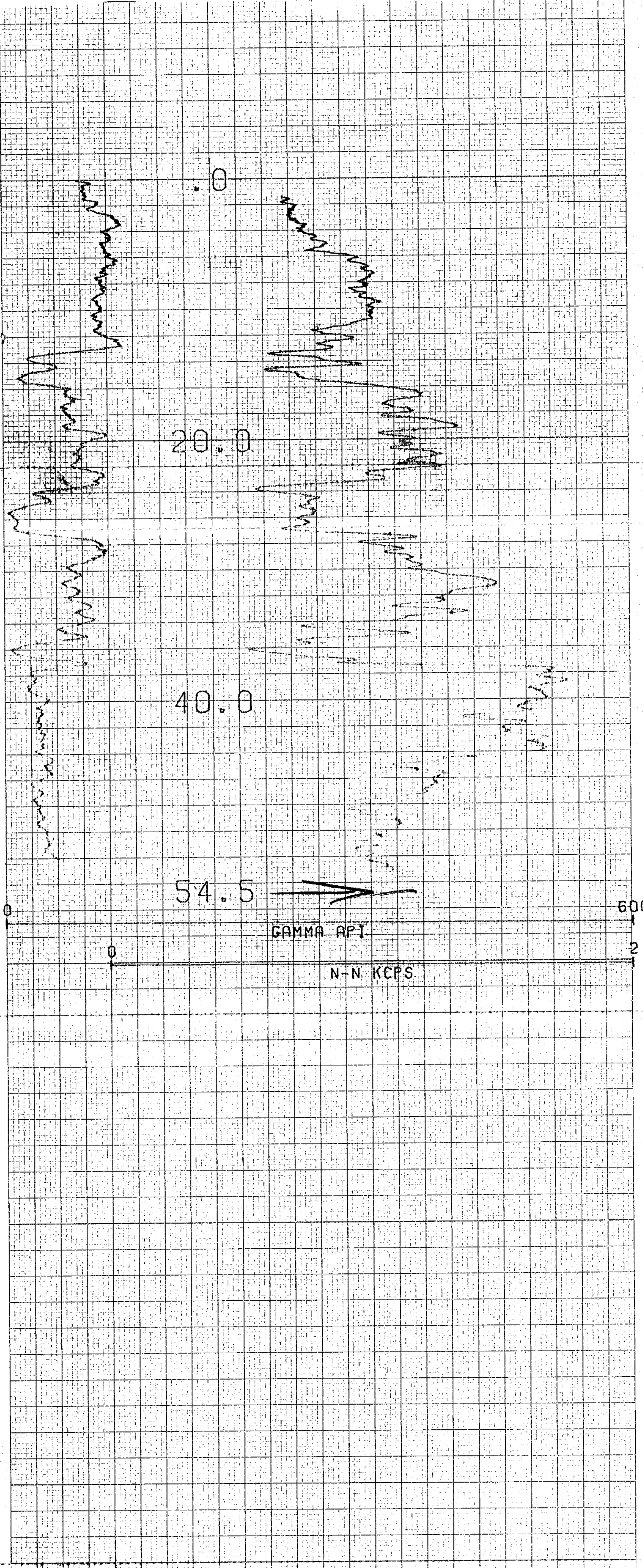
165

COMPU-LOG VOL2 PLOT 10-10-80

739

QHR87055
GAMMA NEUTRON DEV.
TRANSFER

HOLE DIAMETER : 13.1
 PROBE # 9055A - 079
 SENSOR #1 CAL STD CPS = 152
 SENSOR #1 CAL RUN CPS = 186
 SENSOR #1 CAL BIAS = 0
 DATA VOL2WA TRUCK # 604
 M. HEALY APPL # 7



217

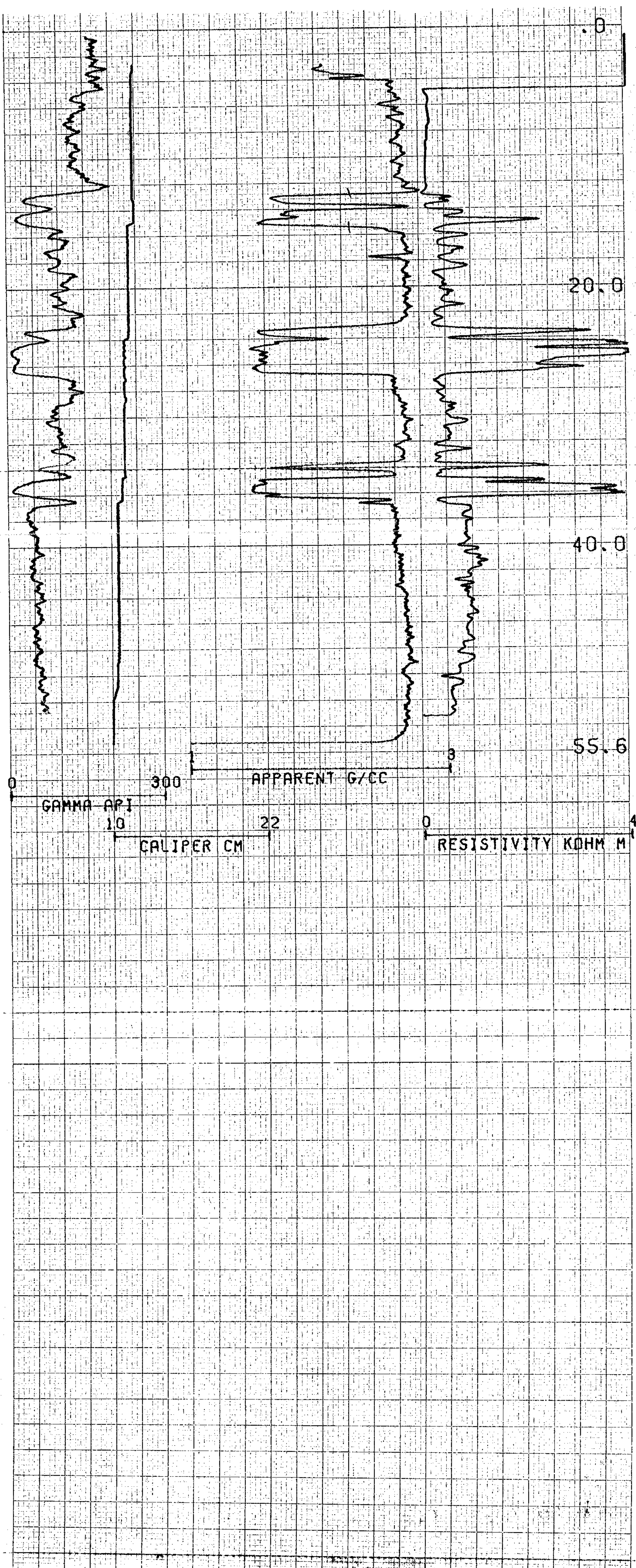
215

COMPU-LOG VBL2 PLOT 10-07-80

739

QHR87055
 GAMMA NEUTRON RODS
 TRANSFER

HOLE DIAMETER : 13.1
 PROBE # 8055A - 079
 SENSOR #4 CAL STD CPS = 152
 SENSOR #4 CAL RUN CPS = 166
 SENSOR #4 CAL BIAS = 0
 DATA VBL2WA TRUCK # 604
 H. HEALY APPL. #7 L1



171

169

COMPU-LOG V8L2 PLOT 10-10-80

739

QHR87055

GAMMA DENSITY CALIPR

TRANSFER

HOLE DIAMETER : 13.1

PROBE # 9030A1- 403

SENSOR #4 CAL STD CPS = 6588

SENSOR #4 CAL RUN CPS = 7500

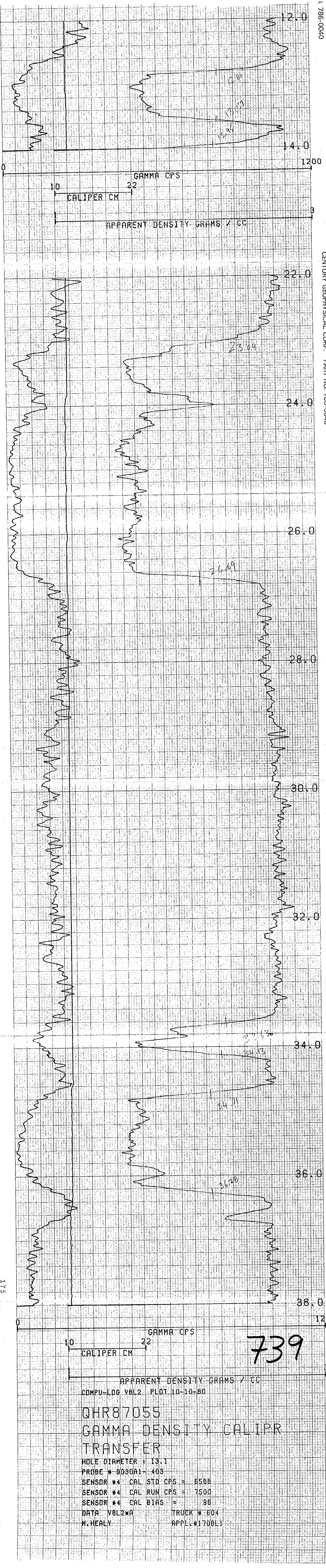
SENSOR #4 CAL BIAS = 98

DATA V8L2WA

TRUCK # 604

M. HEALY

APPL. #30 L1



179

177

175

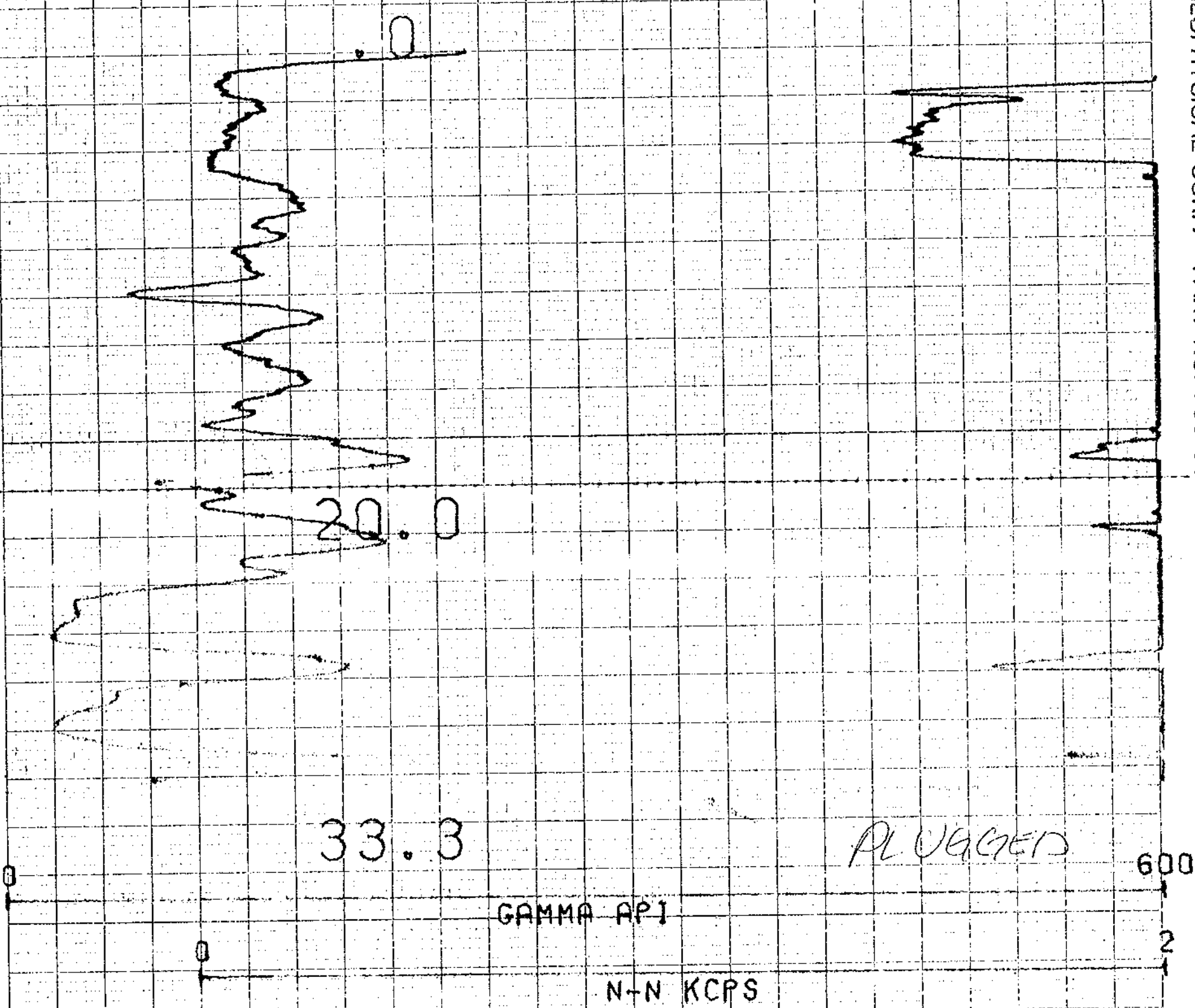
COMPU-LDG VBL2 PLOT 10-10-80

QHR87055
GAMMA DENSITY CALIPR
TRANSFER

HOLE DIAMETER = 13.1
 PROBE # 9030A1-403
 SENSOR #4 CAL STD CPS = 6588
 SENSOR #4 CAL RUN CPS = 7500
 SENSOR #4 CAL BIAS = 98
 DATA VBL2MA TRUCK # 604
 W. HEALY APPL # 1700L1

739

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COMPU-LOG V8L2 PLOT 10-10-80

739

QHR87056
 GAMMA NEUTRON DEV.
 TRANSFER

HOLE DIAMETER : 13.1
 PROBE # 9055A - 079
 SENSOR #4 CAL STD CPS = 152
 SENSOR #4 CAL RUN CPS = 186
 SENSOR #4 CAL BIAS = 0
 DATA V8L2*A TRUCK # 604
 M. HEALY APPL. #7 L1

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VERTICAL DEVIATION

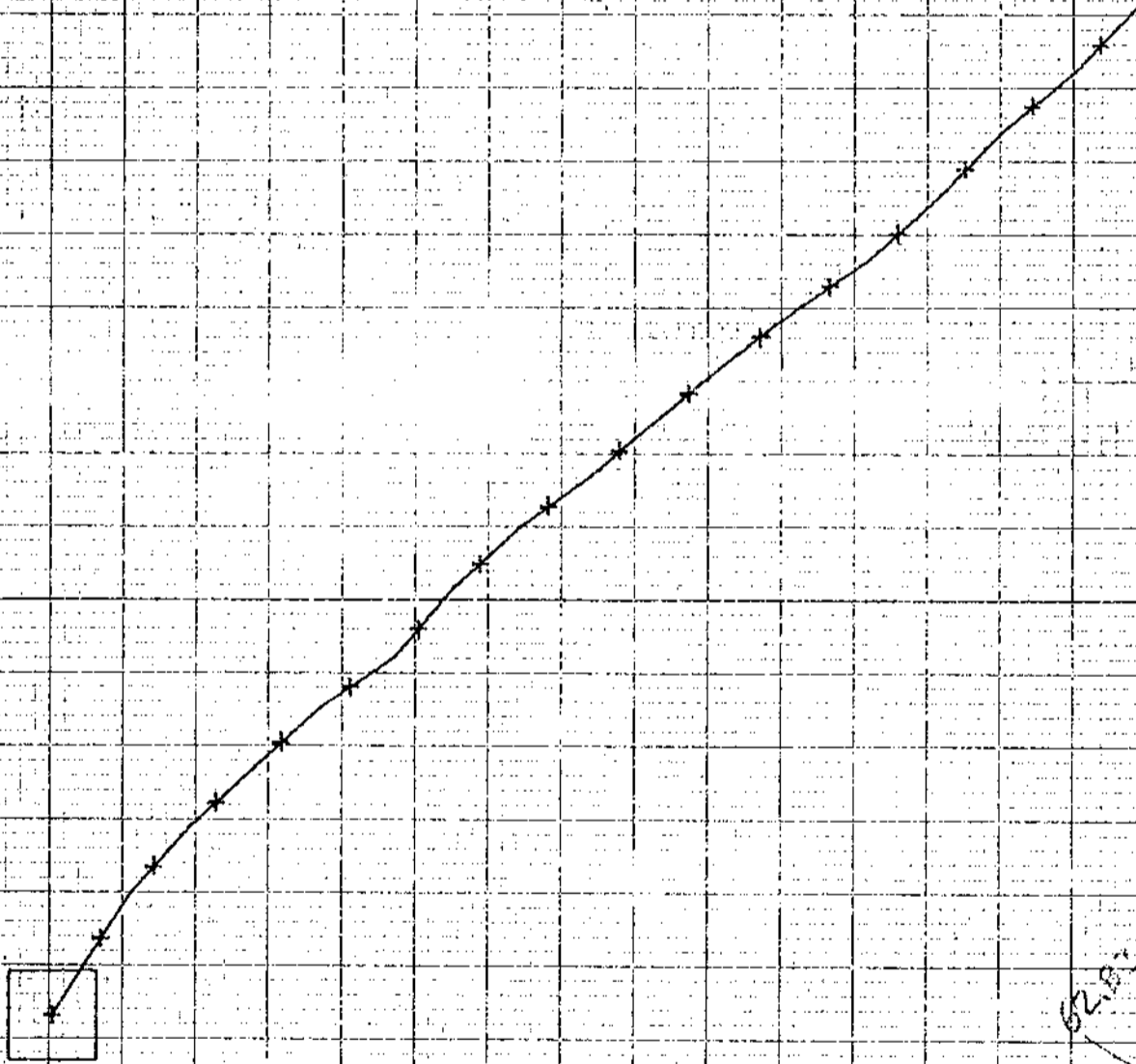
COMPU-LOG V8L1 DEVIATION
DATA FROM : V8L2*A

739

CLIENT : GAMMA NEUTRON DEV.
LOCATION : TRANSFER
HOLE ID : QHR87056
DATE OF LOG : 10-10-80
PROBE : 9055A 0079

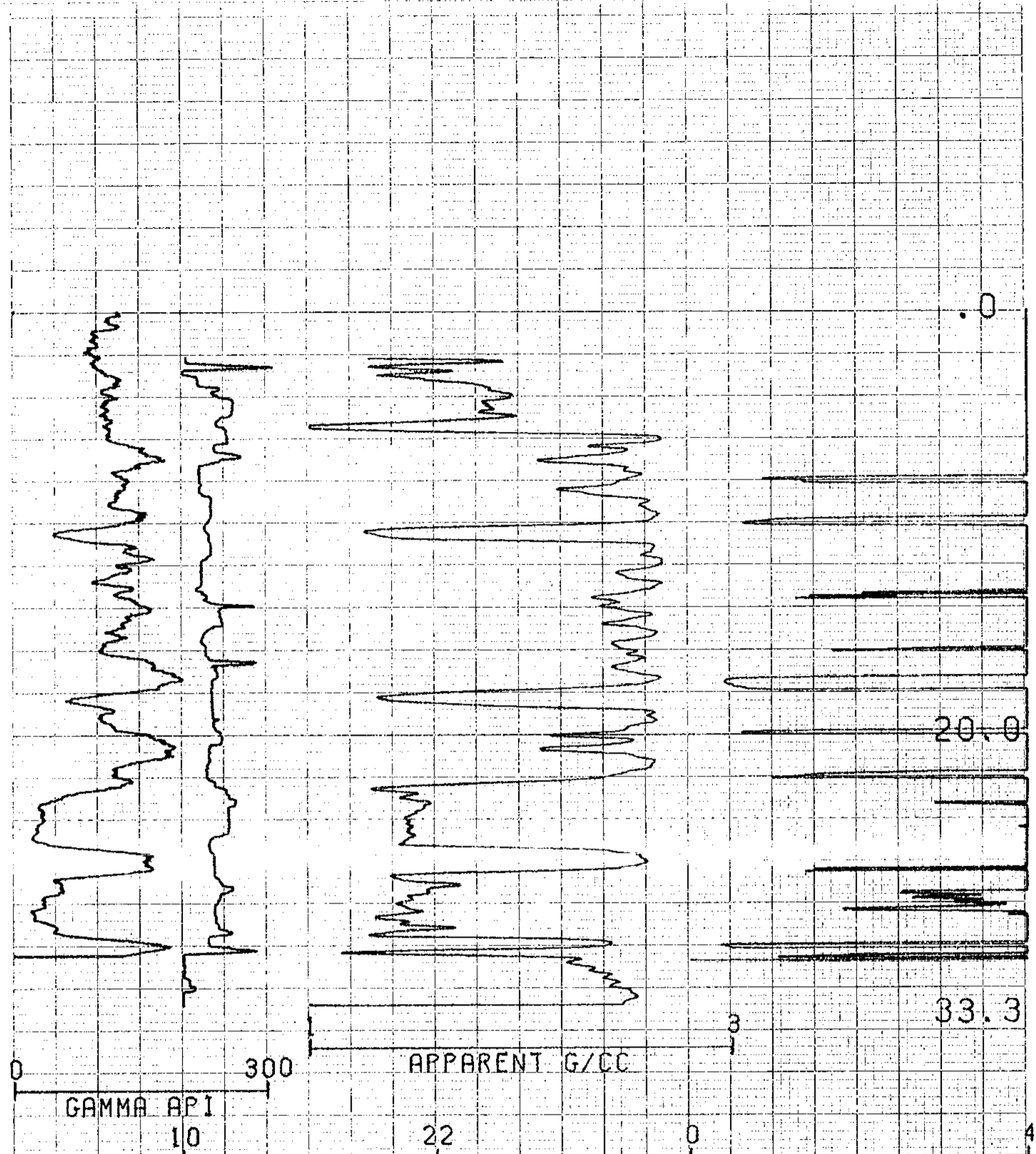
SCALE: .75 M/DIV
MAG DECL: 24.5
TRUE DEPTH: 29.5 M
AZIMUTH: 47.2
DISTANCE: 15.14 M

+ = 2.0 M INCR
Δ = TOP OF ZONE
◇ = BOTTOM OF ZONE
TRUE NORTH ↑



267

163



GAMMA API
10

APPARENT G/CC

RESISTIVITY KDHM M

CALIPER CM

CDMPU-LOG VBL2 PLOT 10-10-80

QHR87056

GAMMA DENSITY CALIPR

TRANSFER

HOLE DIAMETER : 13.1

PROBE # 9030A1- 403

SENSOR #4 CAL STD CPS = 6588

SENSOR #4 CAL RUN CPS = 7500

SENSOR #4 CAL BIAS = 98

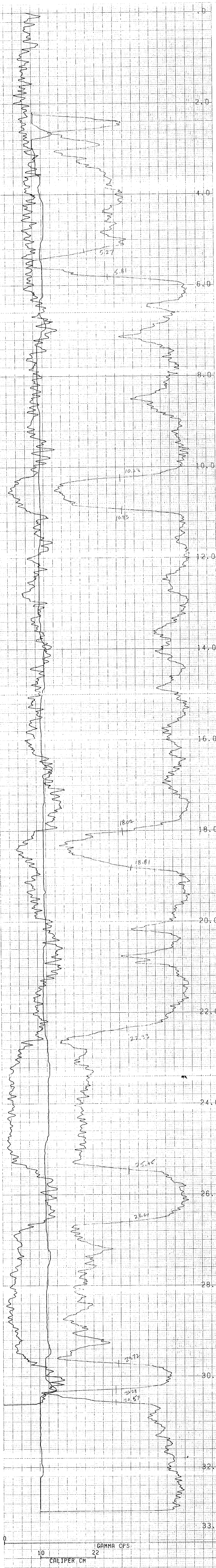
DATA VBL2*RA

TRUCK # 604

M. HEALY

APPL. #30 L1

739



173

171

169

167

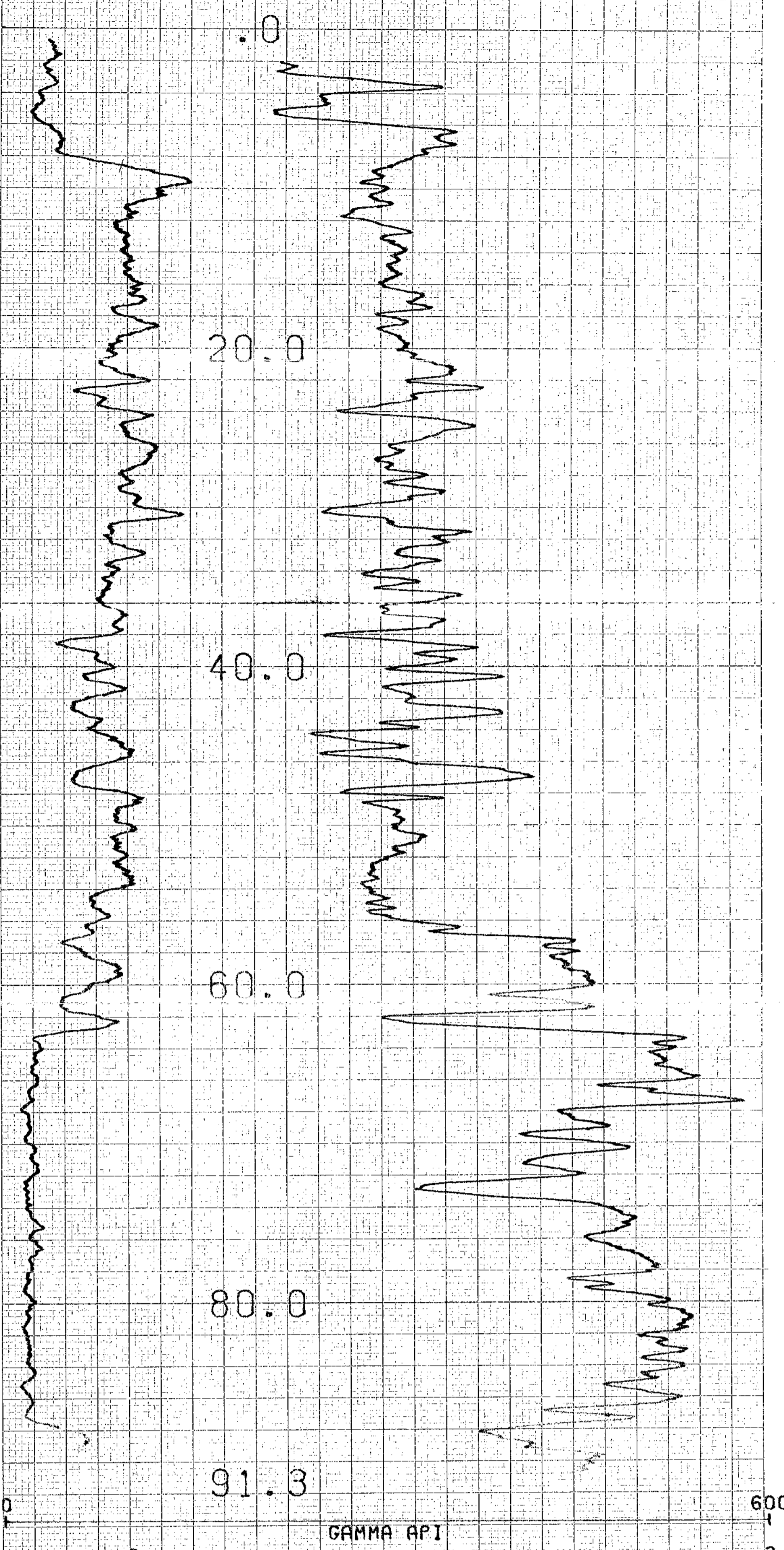
165

COMPU-LDG V8L2 PLOT 10-10-80

739

QHR87056
GAMMA DENSITY CALIPR
TRANSFER

HOLE DIAMETER = 13.1
 PROBE # 9030A1-403
 SENSOR #4 CAL STD CPS = 6588
 SENSOR #4 CAL RUN CPS = 7500
 SENSOR #4 CAL BIAS = 98
 DATA V8L2WA TRUCK # 604
 M.HERLY APPL.#1708L1

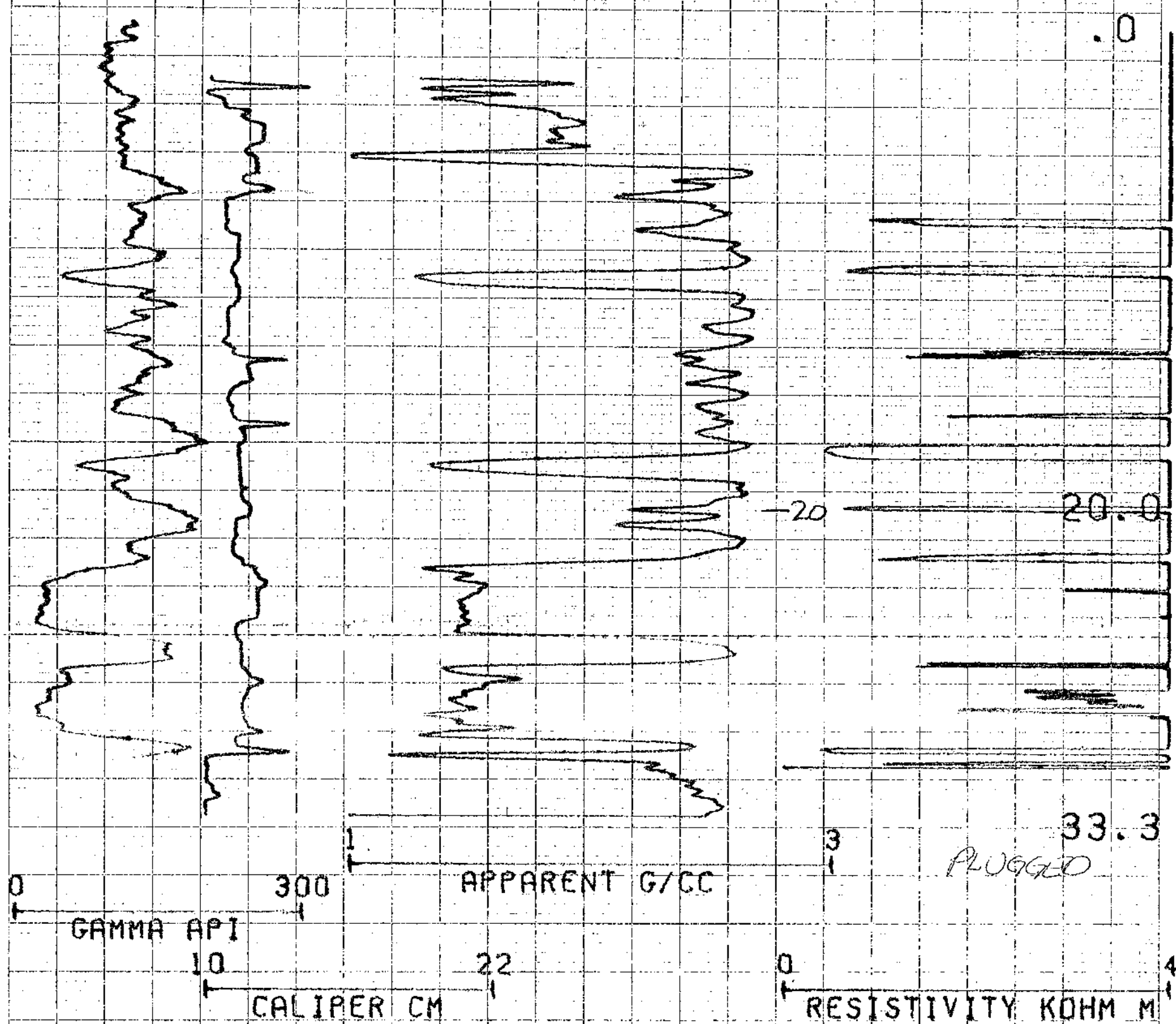


739

COMPU-LOG V8L2 PLOT 10-11-80

QHR87057
GAMMA NEUTRON RODS
TRANSFER

HOLE DIAMETER : 13.1
 PROBE # 9055A - 079
 SENSOR #4 CAL STD CPS = 15
 SENSOR #4 CAL RUN CPS = 16
 SENSOR #4 CAL BIAS =
 DATA V8L2WA TRUCK # 004
 M. HEALY APPL # 7

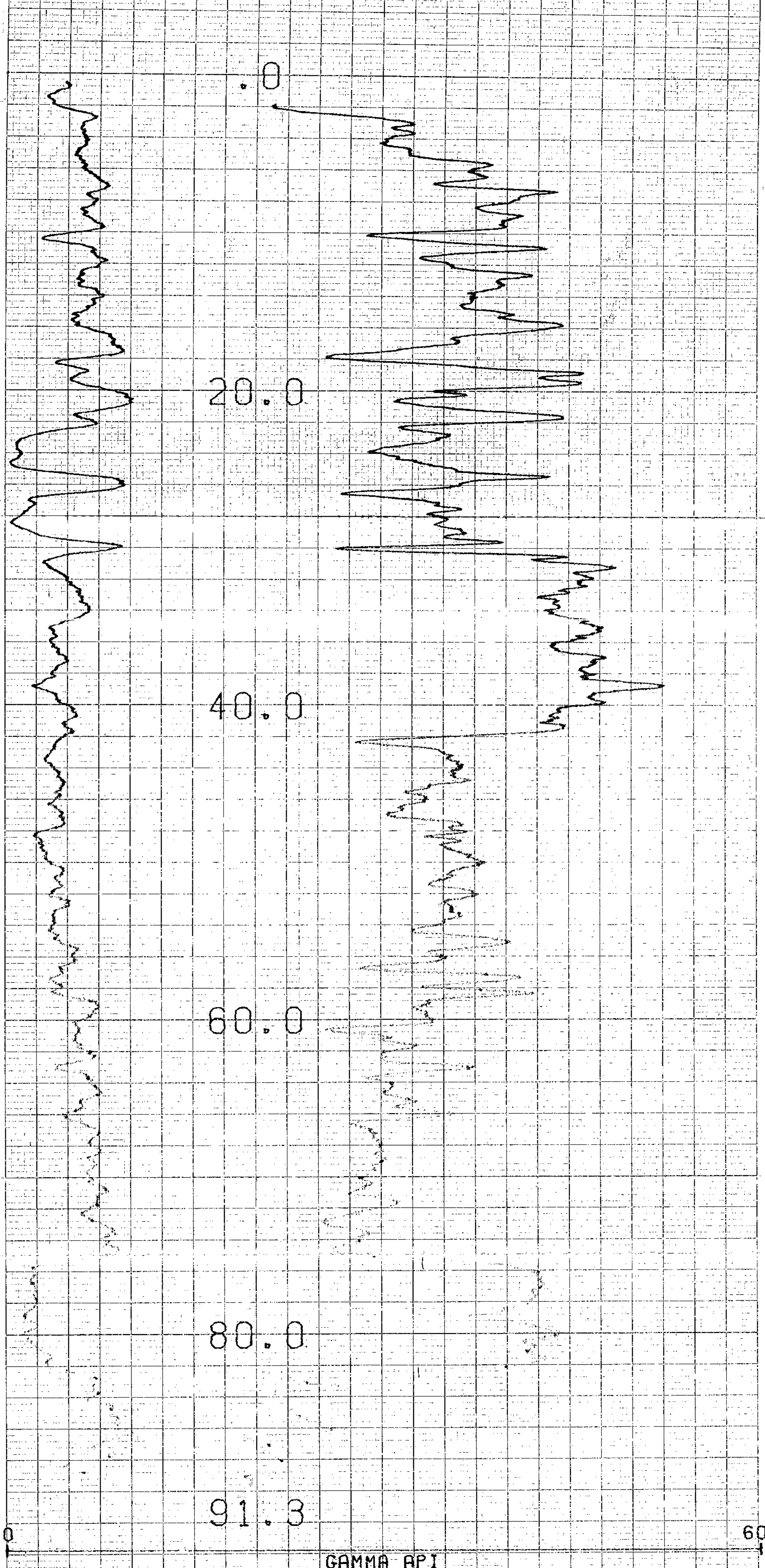


COMPU-LOG V8L2 PLOT 10-10-80

739

QHR87058
GAMMA DENSITY CALIPR
TRANSFER

HOLE DIAMETER : 13.1
 PROBE # 9030A1- 403
 SENSOR #4 CAL STD CPS = 6588
 SENSOR #4 CAL RUN CPS = 7500
 SENSOR #4 CAL BIAS = 98
 DATA V8L2WA TRUCK # 604
 M. HEALY APPL. #30 L1



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COMPU-LOG V8L2 PLOT 10-09-80

739

QHR87056
 GAMMA NEUTRON RODS
 TRANSFER

HOLE DIAMETER : 13.1
 PROBE # 8055A - 079
 SENSOR #4 CAL STD CPS = 152
 SENSOR #4 CAL RUN CPS = 186
 SENSOR #4 CAL BIAS = 0
 DATA V8L2WA TRUCK # 604
 H. HEALY APPL. #7 L1

739

LENTURY GEOPHYSICAL CORPORATION

***** VERTICAL DEVIATION *****

COMPU-LOG VBL1 DEVIATION

CLIENT : GAMMA NEUTRON DEV.

HOLE ID : QHR8702958

LOCATION : WOLV. VALLEY

DATE OF LOG : 10-15-80

DATA FROM : VBL2*A

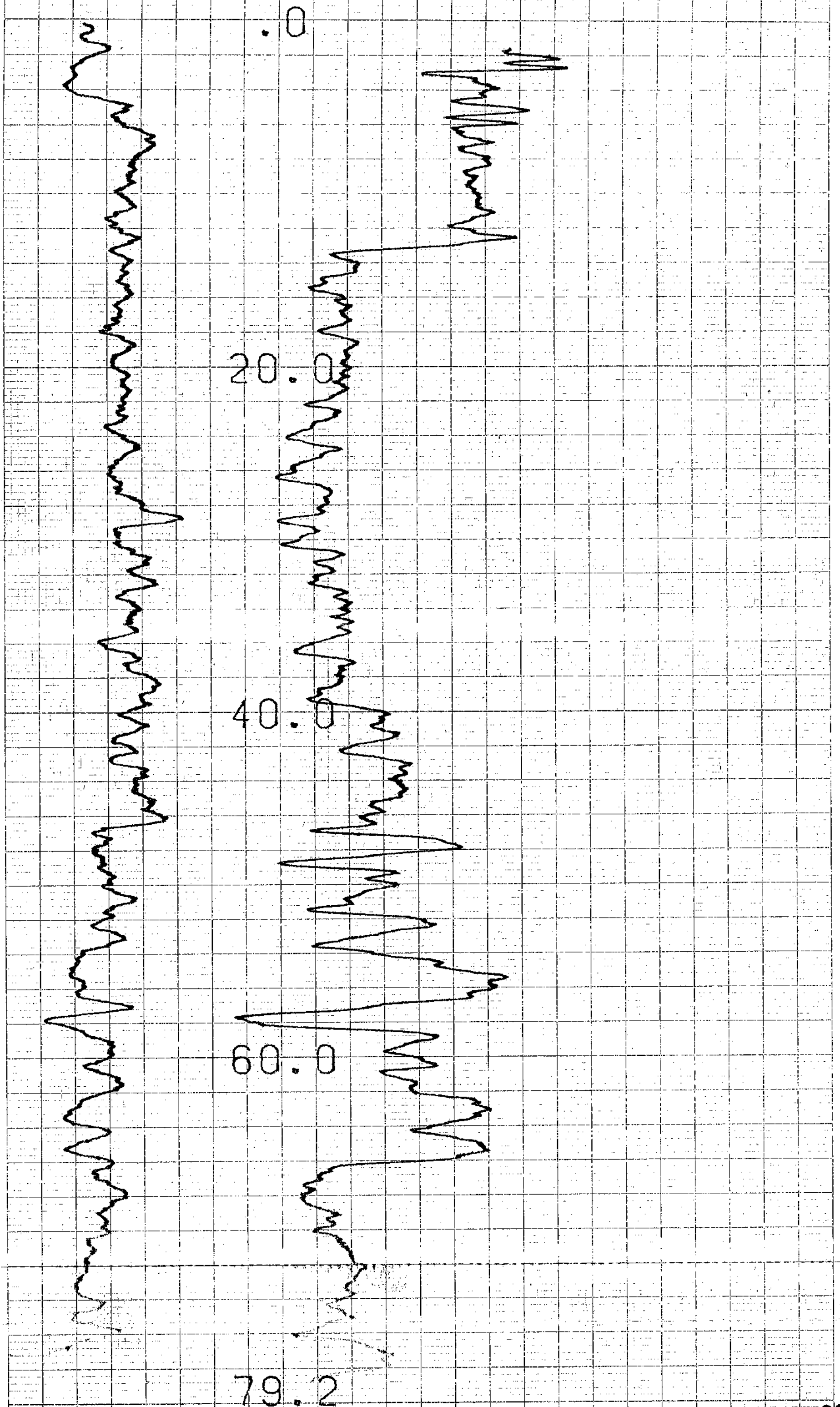
PROBE : 9055A 0079

TD = TOTAL DEPTH

T = TOP OF ZONE

B = BOTTOM OF ZONE

| DEPTH | TRUE DEPTH | NORTH DEV | EAST DEV | DISTANCE | AZIMUTH | SA | SAB |
|----------|------------|-----------|----------|----------|---------|-----|-------|
| .00 | .00 | .00 | .00 | .00 | .0 | .0 | .0 |
| 5.00 | 4.99 | -.02 | .04 | .05 | 123.0 | .6 | 123.0 |
| 10.00 | 9.99 | -.12 | .03 | .12 | 164.5 | 1.0 | 186.5 |
| 15.00 | 14.99 | -.18 | .01 | .18 | 175.9 | .7 | 197.6 |
| 20.00 | 19.99 | -.27 | .00 | .27 | 179.4 | 1.0 | 186.4 |
| 25.00 | 24.99 | -.42 | -.05 | .42 | 187.8 | 1.6 | 202.6 |
| 30.00 | 29.99 | -.58 | -.11 | .59 | 191.2 | 1.9 | 199.6 |
| 35.00 | 34.98 | -.77 | -.12 | .78 | 189.4 | 2.1 | 183.5 |
| 40.00 | 39.98 | -.99 | -.10 | 1.00 | 185.7 | 2.5 | 172.8 |
| 45.00 | 44.97 | -1.23 | -.07 | 1.23 | 183.4 | 2.6 | 173.1 |
| 50.00 | 49.97 | -1.46 | -.03 | 1.46 | 181.3 | 2.7 | 170.4 |
| 55.00 | 54.96 | -1.68 | .01 | 1.69 | 179.6 | 2.6 | 168.7 |
| 60.00 | 59.95 | -1.93 | .06 | 1.93 | 178.0 | 2.9 | 167.0 |
| 65.00 | 64.95 | -2.19 | .08 | 2.20 | 177.8 | 3.0 | 176.6 |
| 70.00 | 69.94 | -2.46 | .08 | 2.47 | 178.1 | 3.0 | 180.3 |
| TD 73.40 | 73.33 | -2.65 | .07 | 2.65 | 178.3 | 3.1 | 181.7 |



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COMPU-LOG V8L2 PLOT 10-11-80

QHR87057

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GAMMA NEUTRON RODS
TRANSFER

SOLE DIAMETER : 13.1

PROBE # 9055A - 079

SENSOR #1 CAL STD CPS = 152

SENSOR #1 CAL RUN CPS = 186

SENSOR #1 CAL BIAS = 0

DATA V8L2*H
M. HEALY

TRUCK # 604
APPL. #7 LI

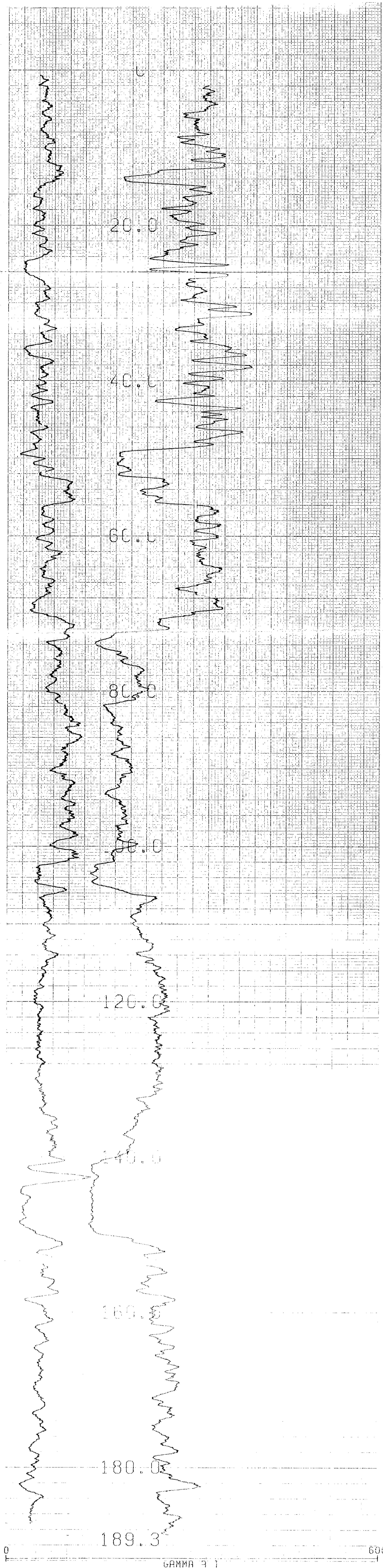
739

CENTURY GEOPHYSICAL CORPORATION
 * * * * * VERTICAL DEVIATION * * * * *
 COMPU-LOG VBL1 DEVIATION

CLIENT : GAMMA NEUTRON DEV. HOLE ID : QHR87059
 LOCATION : GRIZZLY DATE OF LOG : 12-09-80
 DATA FROM : VBL2*A PROF : 9055A 0079

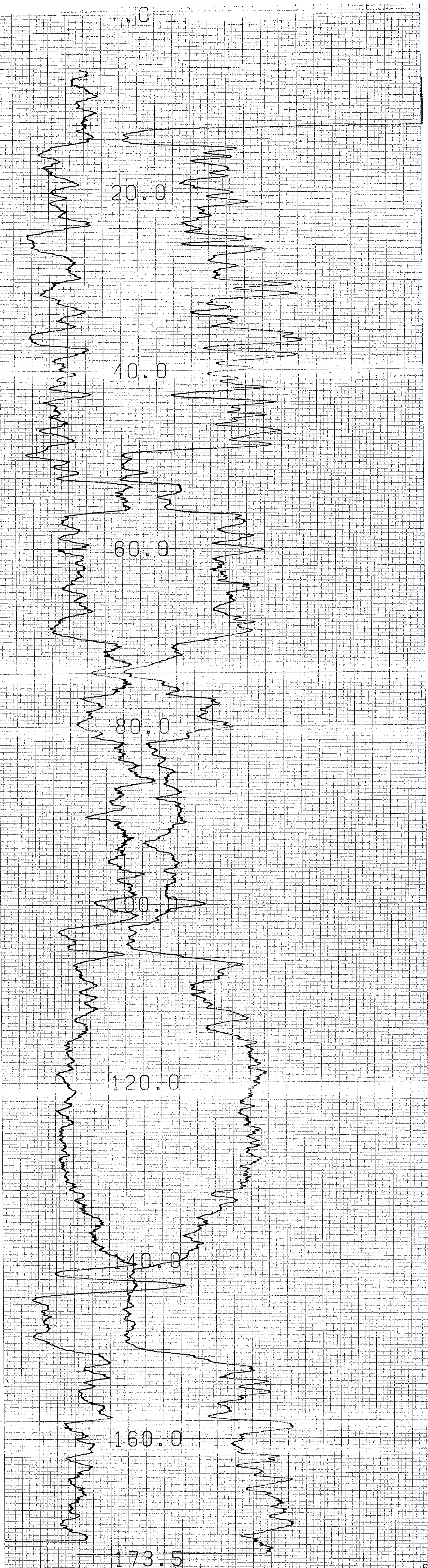
TD = TOTAL DEPTH
 T = TOP OF ZONE
 B = BOTTOM OF ZONE

| DEPTH | TRUE DEPTH | NORTH DEV | EAST DEV | DISTANCE | AZIMUTH | SA | SAB |
|-----------|------------|-----------|----------|----------|---------|-----|-------|
| .00 | .00 | .00 | .00 | .00 | .0 | .0 | .0 |
| 10.00 | 9.99 | -.13 | -.07 | .15 | 208.0 | .8 | 208.0 |
| 20.00 | 19.99 | -.26 | -.09 | .28 | 199.0 | .7 | 188.9 |
| 30.00 | 29.98 | -.39 | .13 | .41 | 161.1 | 1.4 | 119.0 |
| 40.00 | 39.97 | -.30 | .14 | .33 | 155.2 | .4 | 4.5 |
| 50.00 | 49.97 | -.53 | .08 | .53 | 171.1 | 1.3 | 194.5 |
| 60.00 | 59.96 | -.73 | .36 | .82 | 153.6 | 2.0 | 126.0 |
| 70.00 | 69.96 | -.62 | .48 | .78 | 142.3 | .9 | 44.5 |
| 80.00 | 79.96 | -.70 | .39 | .80 | 150.3 | .6 | 224.8 |
| 90.00 | 89.95 | -1.01 | .28 | 1.05 | 164.5 | 1.9 | 200.2 |
| 100.00 | 99.94 | -1.37 | .36 | 1.42 | 165.0 | 2.1 | 166.7 |
| 110.00 | 109.93 | -1.44 | .68 | 1.59 | 154.7 | 1.8 | 101.4 |
| 120.00 | 119.93 | -1.52 | .93 | 1.79 | 148.5 | 1.5 | 109.0 |
| 130.00 | 129.92 | -1.78 | .87 | 1.99 | 154.0 | 1.5 | 193.5 |
| 140.00 | 139.91 | -2.11 | .61 | 2.20 | 163.8 | 2.3 | 218.2 |
| 150.00 | 149.90 | -2.44 | .45 | 2.48 | 169.5 | 2.0 | 206.7 |
| 160.00 | 159.89 | -2.81 | .31 | 2.83 | 173.5 | 2.2 | 199.4 |
| 170.00 | 169.88 | -3.17 | .11 | 3.17 | 178.0 | 2.3 | 210.4 |
| TD 173.40 | 173.27 | -3.31 | .05 | 3.31 | 179.1 | 2.6 | 201.7 |



COMPU-LOG V8L2 PLOT 12-9-80
 QHR87059
 GAMMA NEUTRON RODS
 GRIZZLY
 HOLE DIAMETER : 13.1
 PROBE # 90559 079
 SENSOR #1 CAL STD CPS = 152
 SENSOR #2 CAL RUN CPS = .86
 SENSOR #4 CAL BIAS = 0
 DATA V8L2*RA T-JLK # 600
 M. HEAL APPL #7 1

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COMPU-LOG V8L2 PLOT 12-09-80

QHR87059

GAMMA NEUTRON DEV.

GRIZZLY

HOLE DIAMETER : 13.1

PROBE # 9055A - 079

SENSOR #4 CAL STD CPS = 152

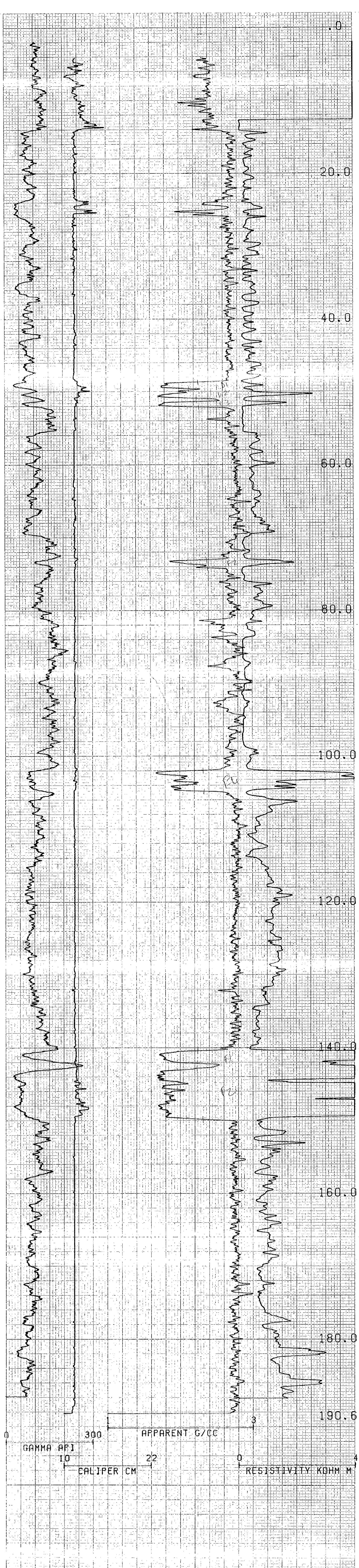
SENSOR #4 CAL RUN CPS = 186

SENSOR #4 CAL BIAS = 0

DATA V8L2*RA TRUCK # 600

M. HEALY APPL.#7 L1

739



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COMPU-LOG V8L2 PLOT 12-09-80
 QHR87059
 GAMMA DENSITY CALIPR
 GRIZZLY
 HOLE DIAMETER : 13.1
 PROBE # 9030A1-445
 SENSOR #4 CAL STD CPS = 6588
 SENSOR #4 CAL RUN CPS = 5000
 SENSOR #4 CAL BIAS = 2
 DATA V8L2WA TRUCK # 600
 M. HEALY APPL. #30 LL

739

739

CENTURY GEOPHYSICAL CORPORATION

***** VERTICAL DEVIATION *****

COMPU-LOG VBL1 DEVIATION

CLIENT : GAMMA NEUTRON DEV.

HOLE ID : QHR8060

LOCATION : GRIZZIY

DATE OF LOG : 12-09-80

DATA FROM : VBL2*A

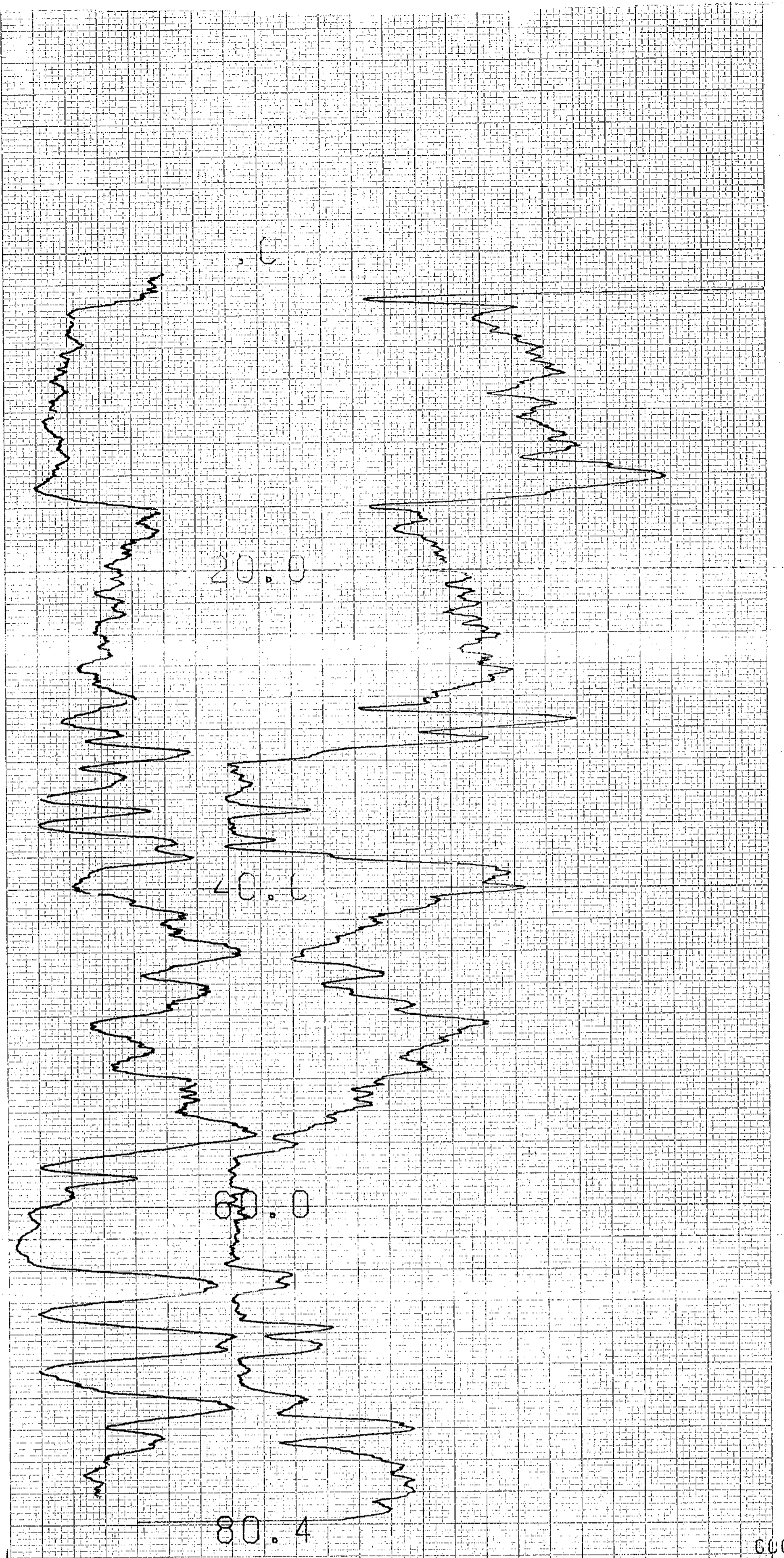
PROBE : 7055A 0079

TD = TOTAL DEPTH

T = TOP OF ZONE

B = BOTTOM OF ZONE

| DEPTH | TRUE DEPTH | NORTH DEV | EAST DEV | DISTANCE | AZIMUTH | SA | SAR |
|----------|------------|-----------|----------|----------|---------|-----|-------|
| .00 | .00 | .00 | .00 | .00 | .0 | .0 | .0 |
| 5.00 | 4.99 | .00 | .03 | .03 | 78.6 | .3 | 78.5 |
| 10.00 | 9.99 | -.02 | -.00 | .02 | 193.8 | .5 | 228.6 |
| 15.00 | 14.99 | .12 | .07 | .14 | 28.9 | 1.9 | 26.5 |
| 20.00 | 19.98 | .39 | .08 | .40 | 12.4 | 3.0 | 3.3 |
| 25.00 | 24.98 | .46 | -.06 | .47 | 351.6 | 1.9 | 296.6 |
| 30.00 | 29.98 | .36 | -.11 | .38 | 342.6 | 1.3 | 202.5 |
| 35.00 | 34.98 | .30 | -.08 | .31 | 344.3 | .7 | 154.9 |
| 40.00 | 39.97 | .31 | -.03 | .31 | 354.4 | .6 | 74.5 |
| 45.00 | 44.97 | .37 | -.04 | .38 | 353.5 | .7 | 349.0 |
| 50.00 | 49.97 | .43 | -.13 | .45 | 342.3 | 1.2 | 298.9 |
| 55.00 | 54.97 | .45 | -.33 | .56 | 323.2 | 2.3 | 276.0 |
| 60.00 | 59.96 | .43 | -.64 | .77 | 303.8 | 3.5 | 266.4 |
| 65.00 | 64.94 | .35 | -1.03 | 1.09 | 288.9 | 4.5 | 258.5 |
| 70.00 | 69.92 | .29 | -1.45 | 1.48 | 281.5 | 4.8 | 262.3 |
| 75.00 | 74.90 | .19 | -1.90 | 1.91 | 275.9 | 5.2 | 257.3 |
| 80.00 | 79.87 | -.00 | -2.37 | 2.37 | 269.9 | 5.9 | 246.7 |
| TD 80.30 | 80.17 | -.01 | -2.41 | 2.41 | 269.7 | 6.1 | 257.1 |

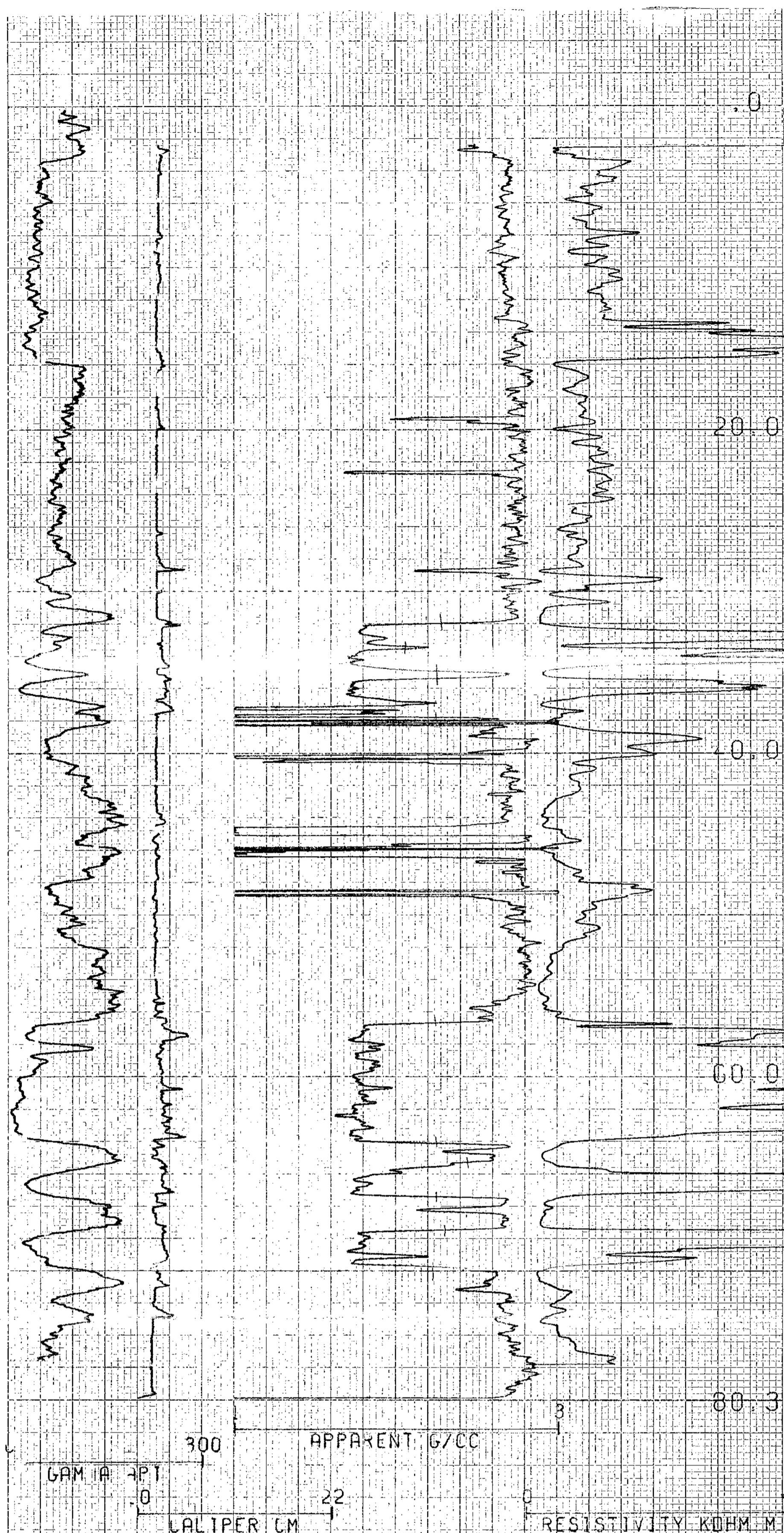


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COMPU-LOG V8L2 PLOT 12-09-80
 QHR8060
 GAMMA NEUTRON DEV.
 GRIZZLY
 HOLE DIAMETER : 13.1
 PROBE # 9055A 079
 SENSOR #2 CAL STD CPS = 152
 SENSOR #4 CAL R1 CPS = 186
 SENSOR #4 CAL BIAS = 0
 DATA V8L2*H TRACK # 600
 M. HEALY APPL #7 LI

739



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COMPU-DG V8L2 PLOT 12-09-80

739

QHR87060
GAMMA DENSITY CALIPR
GRIZZLY

HOLE DIAMETER : 13.1
 PROBE # 9C30A1 445
 SENSOR # CAL STD CPS = 6588
 SENSOR # CAL R/N CPS = 5000
 SENSJR #4 CAL BIAS = 2
 DATA V8L2*RA TRACK # 600
 M. HEALY APP. #30

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CENTURY GEOPHYSICAL CORPORATION * * * * *
 * * * * * VERTICAL DEVIATION * * * * *
 COMPU-LOG V81.1 DEVIATION

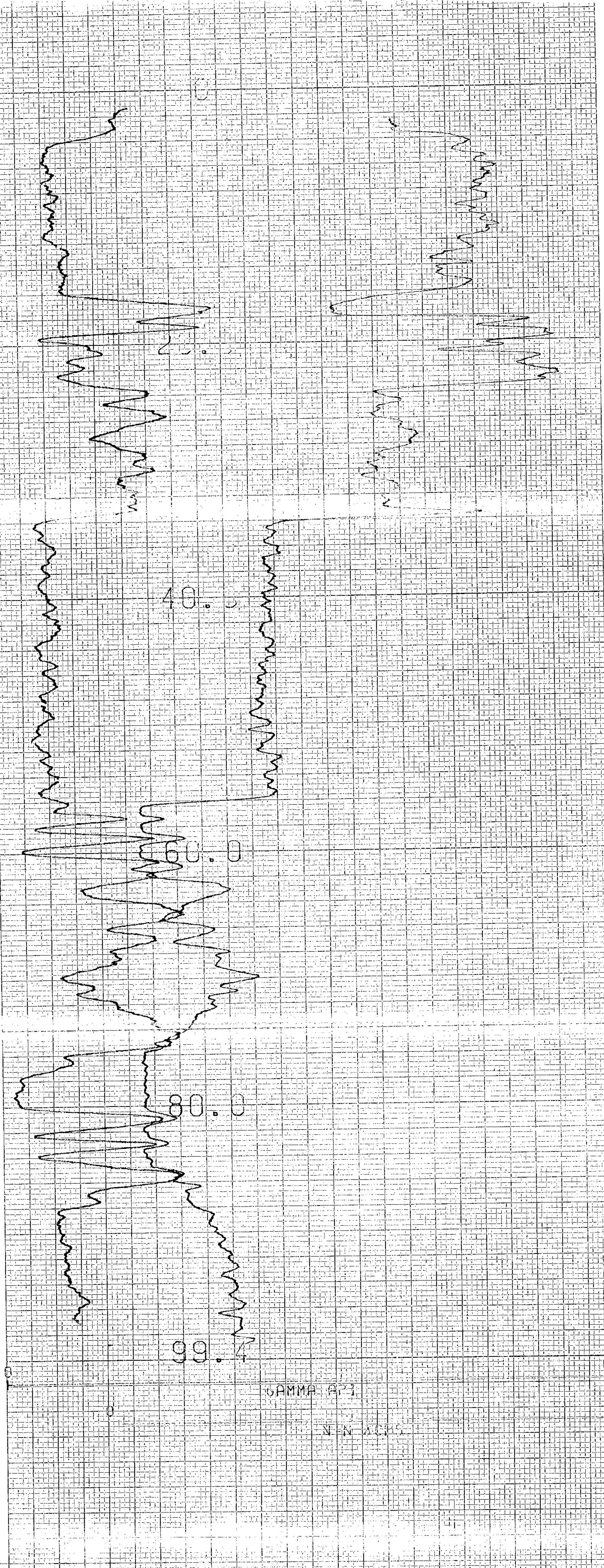
CLIENT : GAMMA NEUTRON DEV'N HOLE ID : QHR87061
 LOCATION : TRANSFER EXPLORATION DATE OF LOG : 12-13-81
 DATA FROM : V812*A PROSE : 7055A 0079

TD = TOTAL DEPTH
 T = TOP OF ZONE
 B = BOTTOM OF ZONE

| DEPTH | TRUE DEPTH | NORTH DEV | EAST DEV | DISTANCE | AZIMUTH | SA | SAB |
|-------|------------|-----------|----------|----------|---------|-----|-------|
| .00 | .00 | .00 | .00 | .00 | .0 | .0 | .0 |
| 5.00 | 4.99 | .02 | .16 | .16 | 81.9 | 1.6 | 81.9 |
| 10.00 | 9.99 | .11 | .22 | .25 | 63.4 | 1.2 | 35.5 |
| 15.00 | 14.99 | .14 | .35 | .37 | 67.4 | 1.4 | 75.1 |
| 20.00 | 19.98 | .25 | .44 | .50 | 60.3 | 1.5 | 40.7 |
| 25.00 | 24.98 | .24 | .43 | .49 | 60.9 | .1 | 210.4 |
| 30.00 | 29.98 | .19 | .50 | .54 | 69.0 | .9 | 125.0 |
| 35.00 | 34.98 | .10 | .54 | .55 | 78.8 | 1.0 | 153.8 |
| 40.00 | 39.98 | .00 | .62 | .62 | 87.1 | 1.4 | 143.0 |
| 45.00 | 44.98 | -.09 | .70 | .71 | 97.5 | 1.5 | 139.9 |
| 50.00 | 49.98 | -.20 | .79 | .81 | 104.5 | 1.6 | 143.2 |
| 55.00 | 54.97 | -.32 | .87 | .93 | 110.6 | 1.7 | 146.3 |
| 60.00 | 59.97 | -.49 | .94 | 1.06 | 117.4 | 2.0 | 156.6 |
| 65.00 | 64.97 | -.70 | .98 | 1.20 | 125.5 | 2.4 | 169.4 |
| 70.00 | 69.96 | -.99 | .97 | 1.39 | 135.6 | 3.3 | 181.8 |
| 75.00 | 74.94 | -1.26 | .87 | 1.62 | 147.3 | 4.4 | 194.1 |
| 80.00 | 79.92 | -1.81 | .74 | 1.96 | 157.7 | 5.3 | 197.1 |
| 85.00 | 84.90 | -2.25 | .61 | 2.33 | 164.7 | 5.2 | 196.1 |
| 90.00 | 89.87 | -2.69 | .47 | 2.73 | 170.0 | 5.3 | 197.4 |
| 95.00 | 94.85 | -3.13 | .30 | 3.15 | 174.4 | 5.4 | 200.8 |
| 99.20 | 99.03 | -3.55 | .15 | 3.56 | 177.5 | 6.1 | 199.9 |

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739



COMP - 05 V8L2 PLOT 12-13-81

QHR8 7061

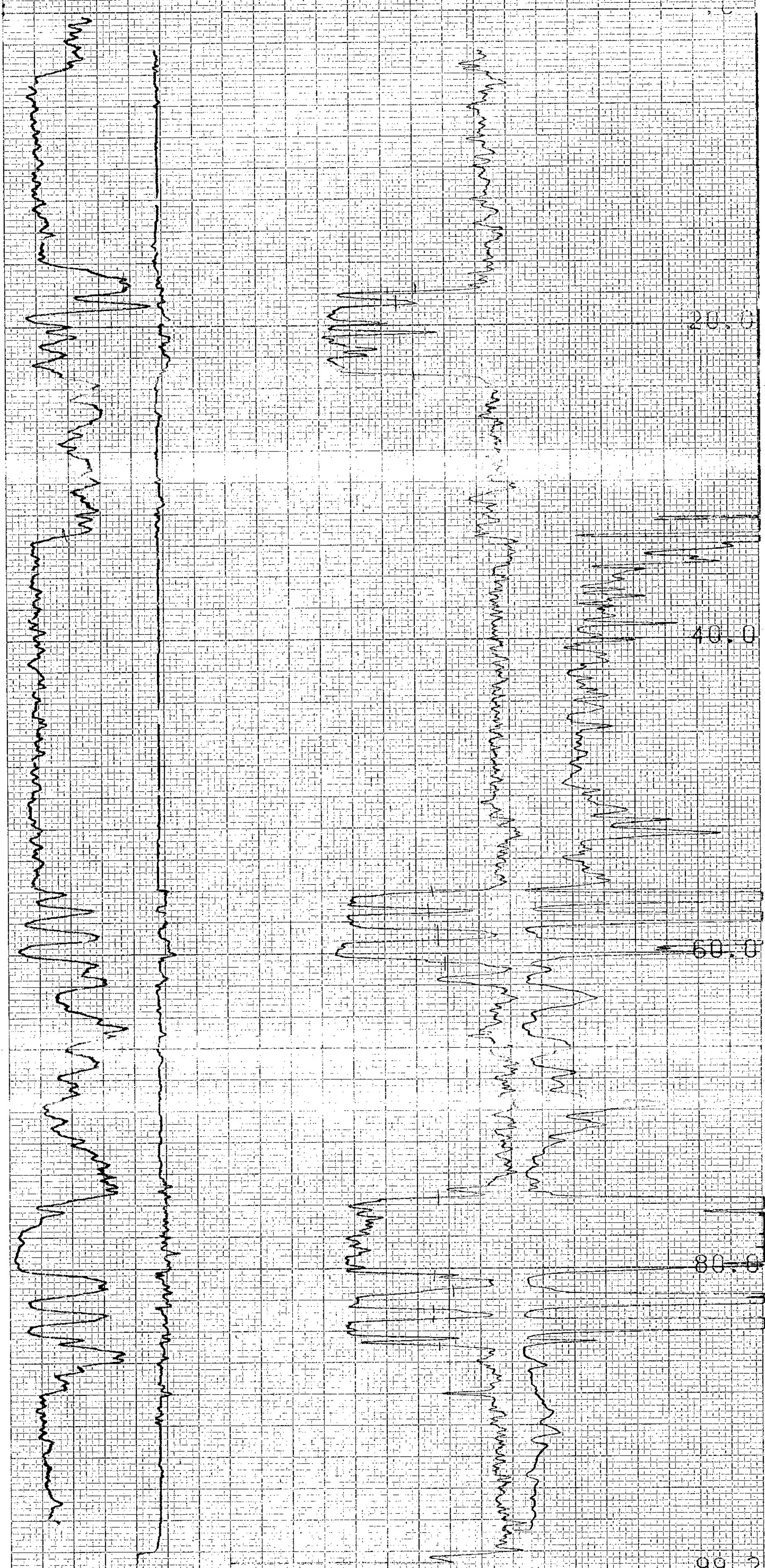
739

GAMMA NEUTRON DEVIATION
TRANSFER EXP. ERROR

HOLE DIAMETER = 53.0
 PROBE # 9055A = 079
 SENSOR #1 CAL STD CPS = 152
 SENSOR #1 CAL RUN CPS = 186
 SENSOR #1 CAL BIAS = 0
 DATA V8.2*P TRUCK # 500
 PENDLETON APPL # 7

93

97

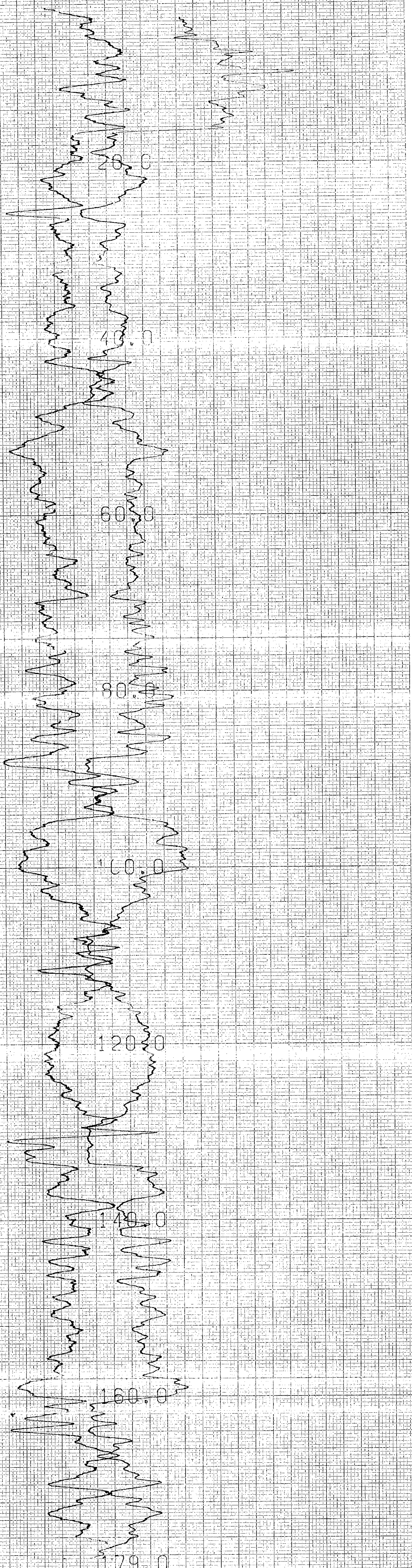


0 300 400 500 600 700 800
 GAMMA API 42 APPARENT G/CC RESISTIVITY KUFM

EMP-LOG VS 2 PLOT 12-13-81
 QHR87061
 GAMMA DENSITY CALIPR
 TRANSFER EXPLORATION

HOLE DIAMETER : 13.0
 PROBE # 9030A1- 445
 SENSOR #4 CAL STD CPS = 6588
 SENSOR #4 CAL RUN CPS = 5000
 SENSOR #4 CAL BIAS = 2
 DATA VBL2KA TRUCK # 600
 L RENDLETON APPL: #30 UT

739



89

87

85

COMP: 06 V8L2 PLOT 12-13-81

OMP87062

GAMMA NEUTRON BEAM

TRANSFER EXP. DATE

WELL DIAMETER = 13.0

PROBE # 9355A - 079

SENSOR #4 CAL STD CPS = 152

SENSOR #4 CAL RUN CPS = 186

SENSOR #4 CAL BIAS = 0

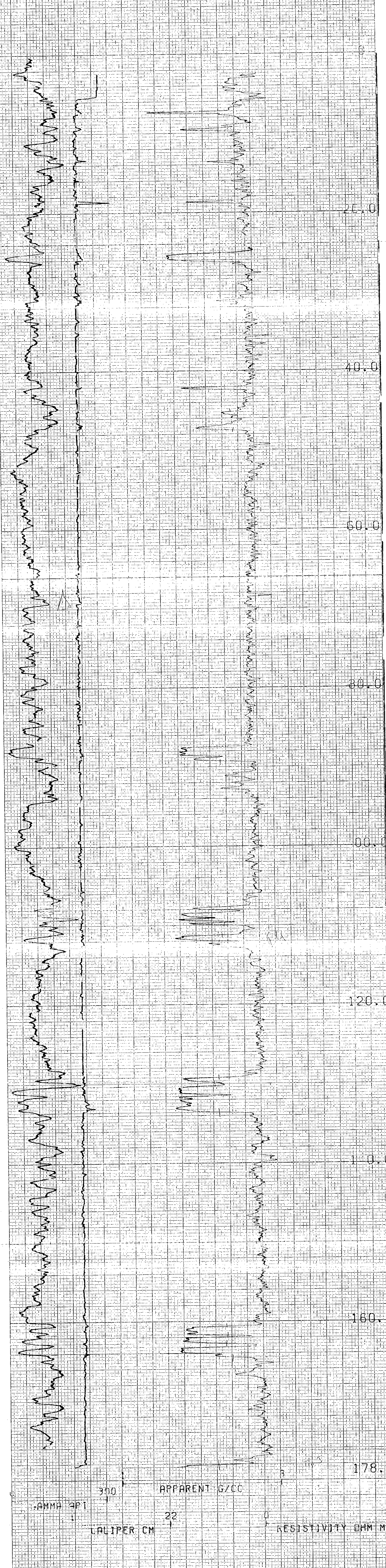
DATE 10-24-81

TRUCK # 600

L PENOLETON

APP. #7 1

739



83

81

73

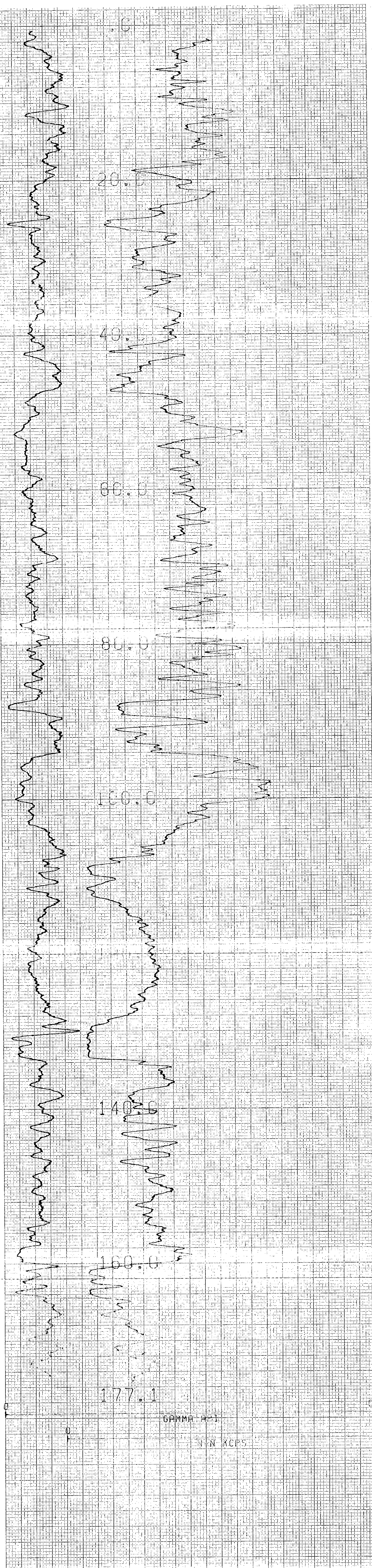
DMPU-LD6-VBL2 PLOT 12-13-8

CHR87062

GAMMA DENSITY CALIPER
TRANSFER EXPERIMENT

HOLE DIAMETER = 13.0
 PROBE # 8030A1 445
 SENSOR #4 CAL STD CPS = 6588
 SENSOR #4 CAL R N CPS = 5000
 SENSOR #4 CAL BIAS = 2
 DATA /BL2WA TRACK # 000
 PENDLET N APPL #30 1

739



107

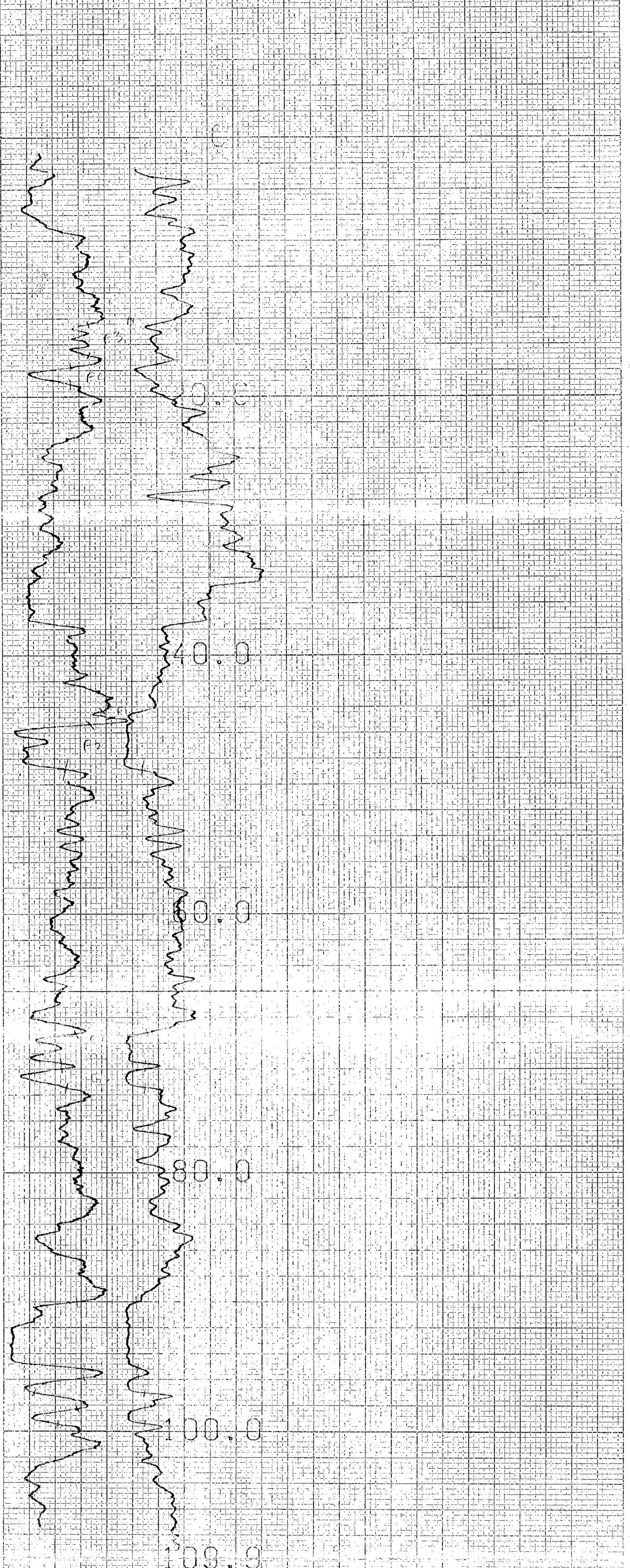
103

103

CMPU-LOG V8L2 PL07 12-13-81
 QHR87062
 GAMMA NEUTRON (RODS)
 TRANSFER EXPLORATION
 HOLE DIAMETER = 13.0
 PROBE # 9055A = 079
 SENSOR #4 CAL STD CPS = 152
 SENSOR #4 CAL RUN CPS = 186
 SENSOR #4 CAL BIAS = 0
 DATA V8L2MA TRUCK # 600
 L PENDLETON APPL.#7 LL

739

19.5
16.8
17.6
19.1
6.3
110.2
46.8
45.3
48.8
60.5
70.7
70.6
71.5
71.0
72.4
90.0
95.2
95.9
97.0
98.3
99.6
6.1



GAMMA API

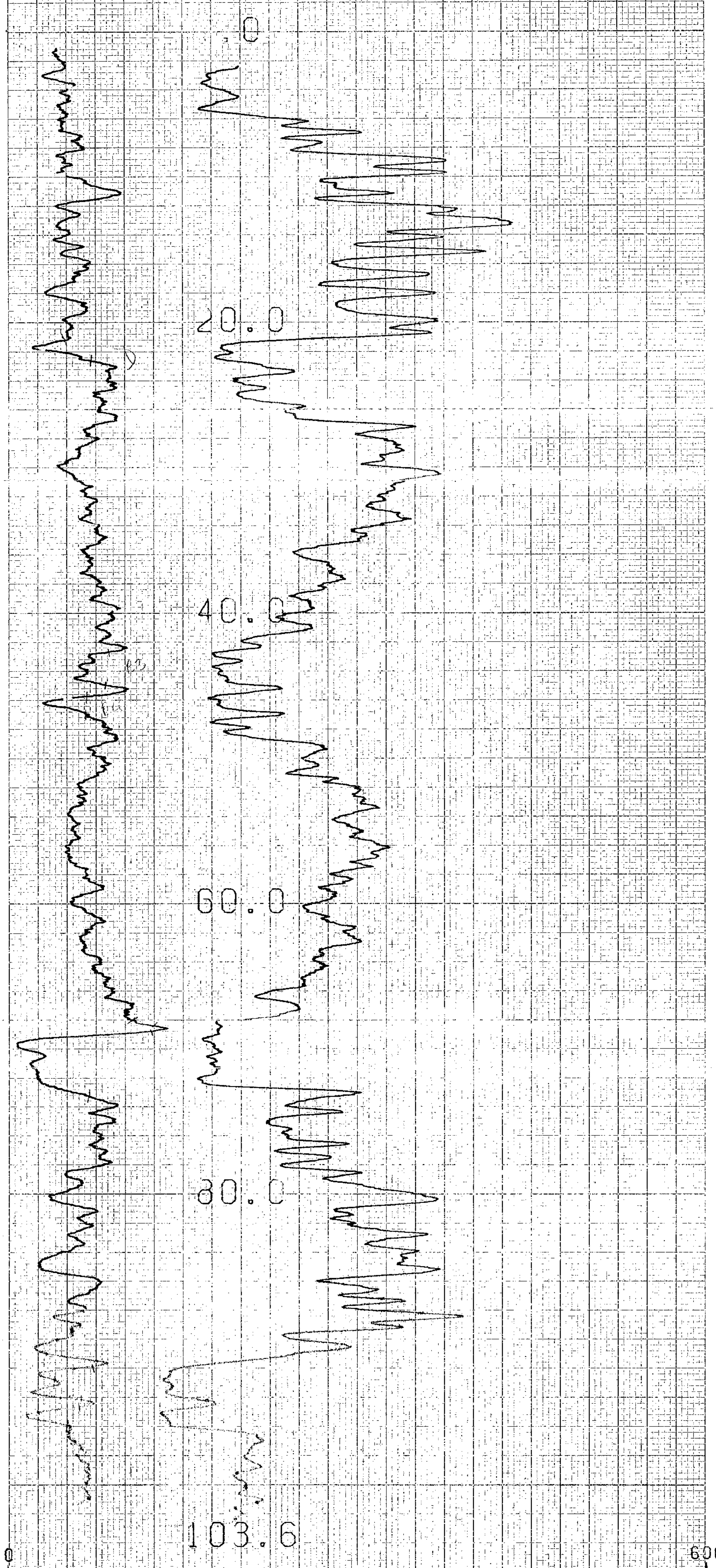
N-N KCPS

COMPU-LOG V8L2 PLDT 12-14-80

739

QHR87063
GAMMA NEUTRON (RODS)
GRIZZLEY AREA

HOLE DIAMETER : 13.0
PROBE # 9055A - 079
SENSOR #4 CAL STD CPS = 152
SENSOR #4 CAL RUN CPS = 180
SENSOR #4 CAL BIAS = 1
ATA V8L2WF TRUCK # 0000
G. HOLMUND APPL # 11

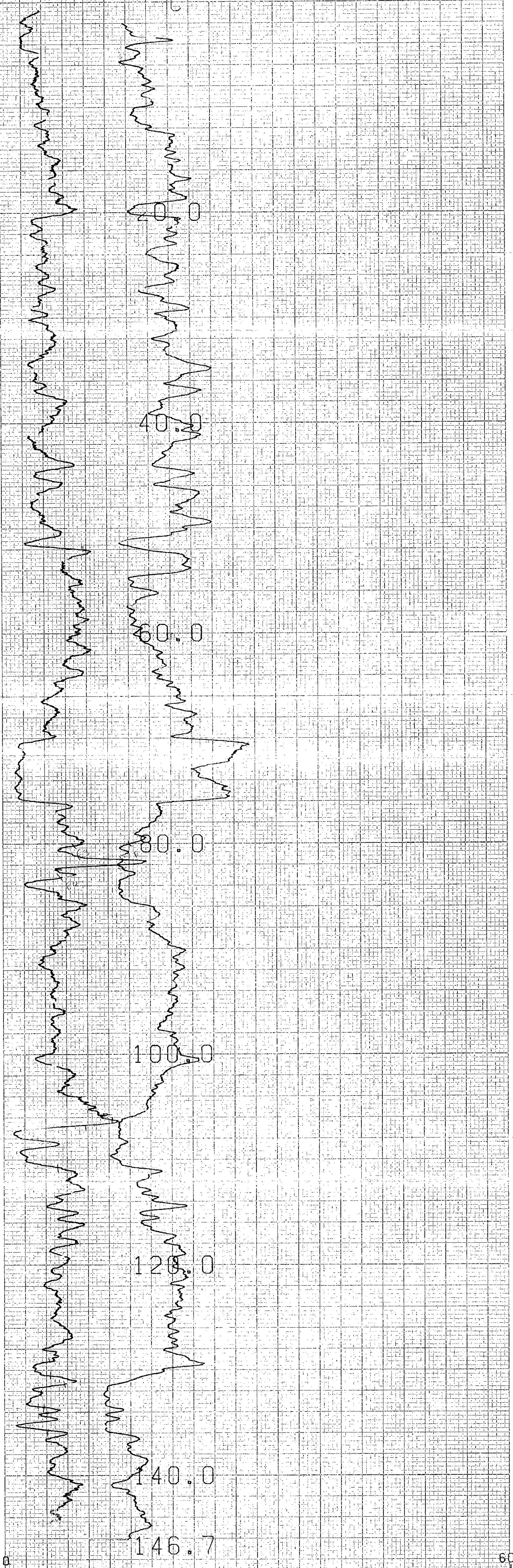


21.2
22.6
42.7
45.0
45.5
46.9
50.1
65.0
65.4
65.5
73.2
91.9
92.8
93.7
94.2
94.6
95.9

GAMMA API
N. N. KCPS

DMPU-LDG V8L2 PLOT 12-20-80
 4
 QHR8706 (RE-DO)
 GAMMA NEUTRON DEV.
 TRANS-ER
 HOLE DIAMETER : 13.1
 PROBE # 9055A 079
 SENSOR #4 CAL STD CPS = 152
 SENSOR #4 CAL RUN CPS = 186
 SENSOR #4 CAL BIAS = 0
 DATA V8E2*RA TRUCK # 600
 M. HEALY APPL. #7 LI

739



93

91

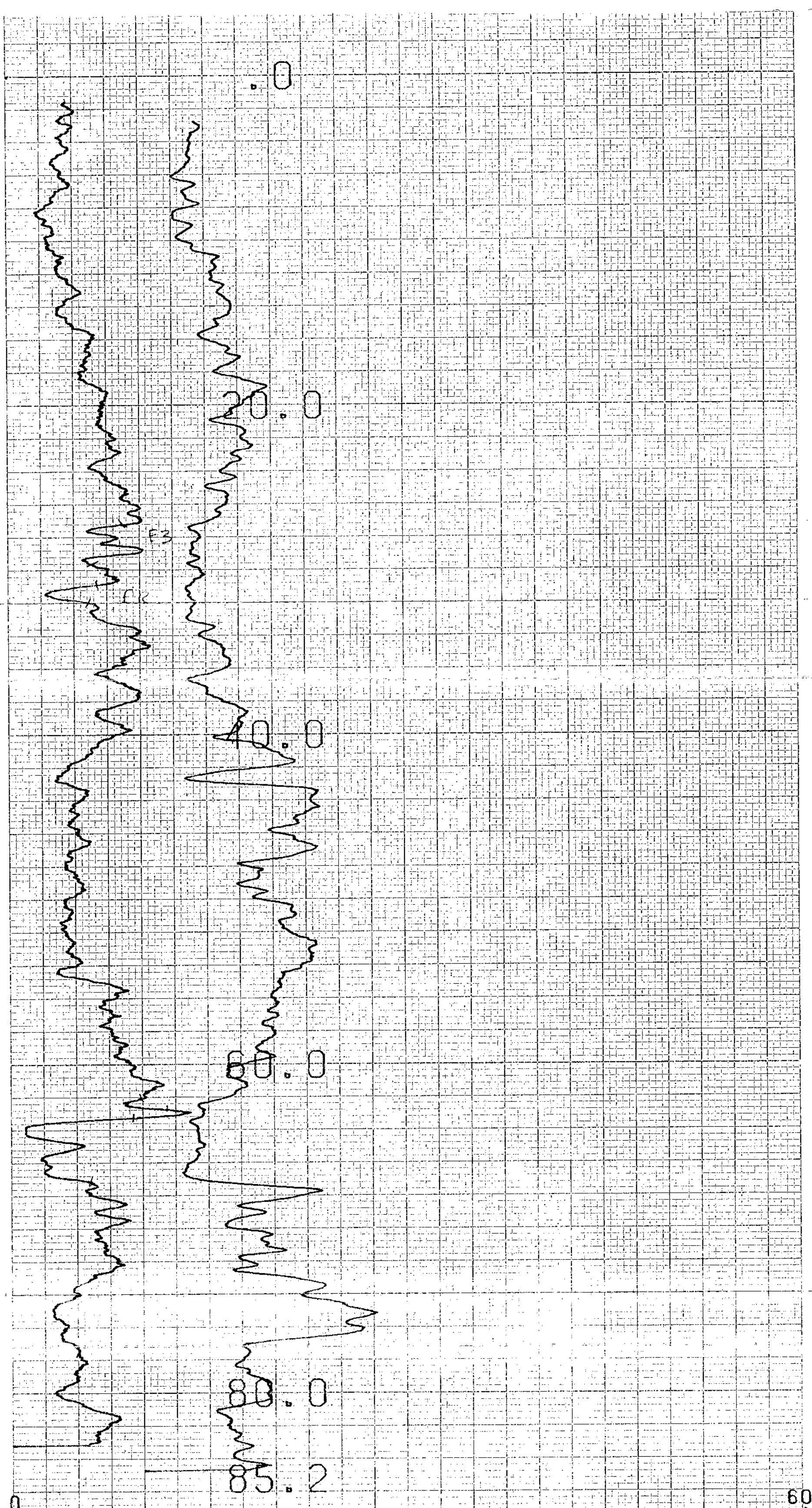
83

739

LDMPU LOG V8.2 PLDT 12-16-80

GHR87065
GAMMA NEUTRON (RODS)
TRANSFER EX.

HOLE DIAMETER = 13.0
 PROBE # 9055A - 079
 SENSOR #4 CAL STD CPS = 152
 SENSOR #4 CAL RUN CPS = 186
 SENSOR #4 CAL BIAS = 0
 DATA V8L2*A TRUCK # U600
 G. HOLMLUND APPL. #7 L1



COMPU-LOG V8L2 PLOT 12-17-80

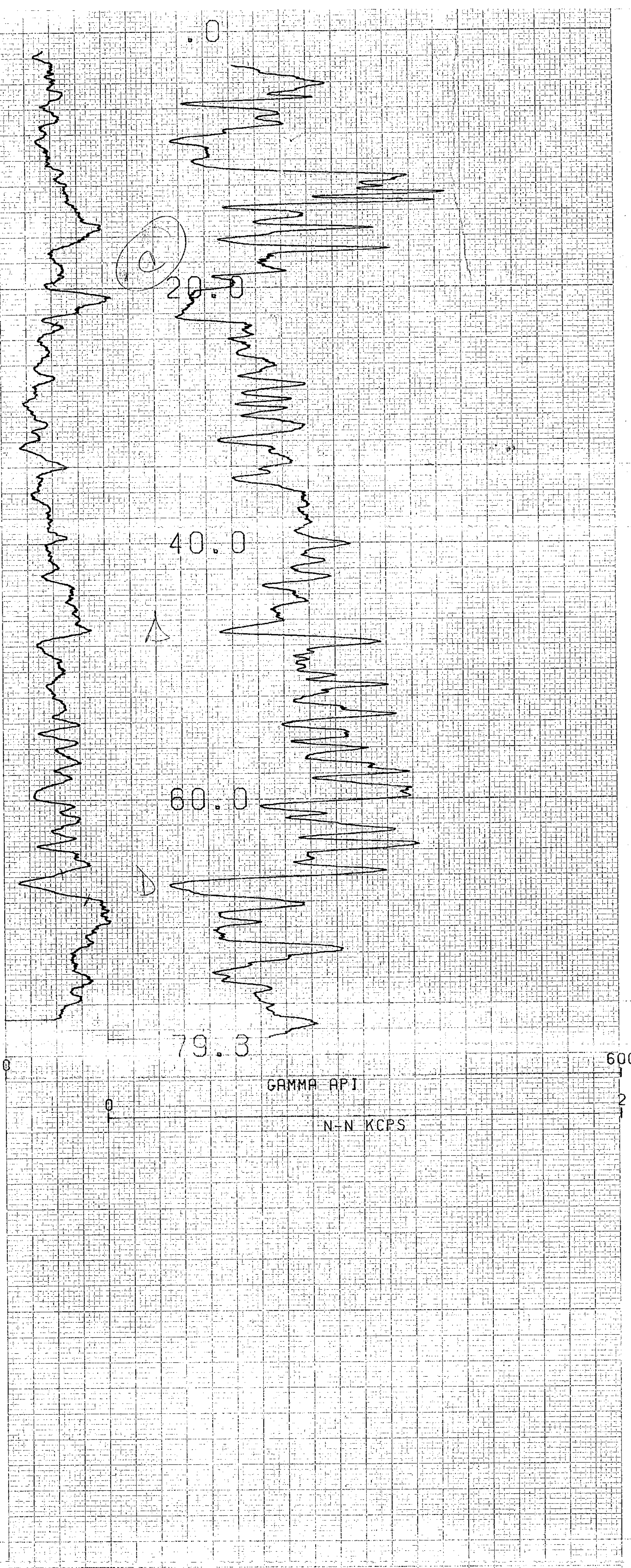
739

QHR87066
GAMMA NEUTRON RODS
TRANSFER

HOLE DIAMETER = 13.1
 PROBE # 9055A - 079
 SENSOR #4 CAL STD CPS = 152
 SENSOR #4 CAL RUN CPS = 186
 SENSOR #4 CAL BIAS = 0
 DATA V8L2*RA TRUCK # 600
 M. HEALY APPL. #7 L1

05

07



COMPU-LOG V8L2 PLOT 12-19-80

QHR87067⁶⁸

GAMMA NEUTRON RODS TRANSFER

HOLE DIAMETER : 13.1

PROBE # 9055A - 079

SENSOR #4 CAL STD CPS = 152

SENSOR #4 CAL RUN CPS = 186

SENSOR #4 CAL BIAS = 0

DATA V8L2WA TRUCK # 600

M. HEALY APPL. #7 L1

67 not logged
739