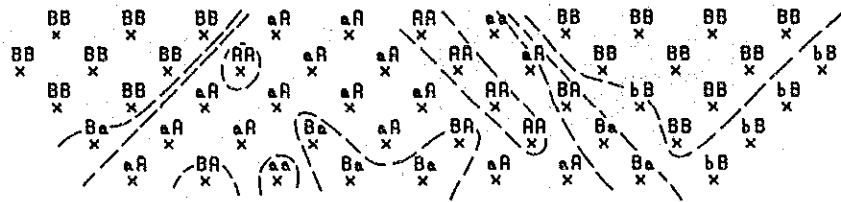


A. 2-3 DIAGRAMA DE FASE DESACOPLADA

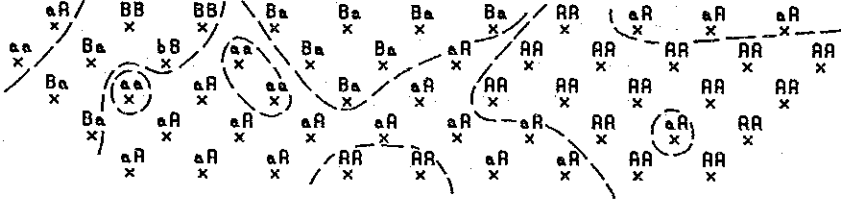
NW Line-D SE
 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15



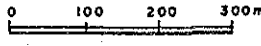
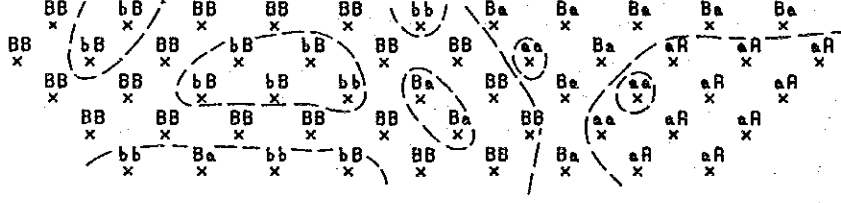
NW Line-C SE
 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15



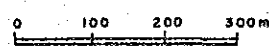
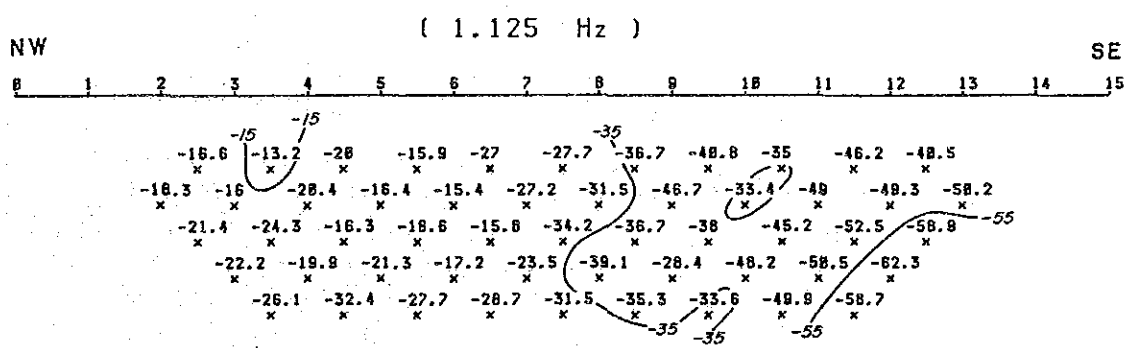
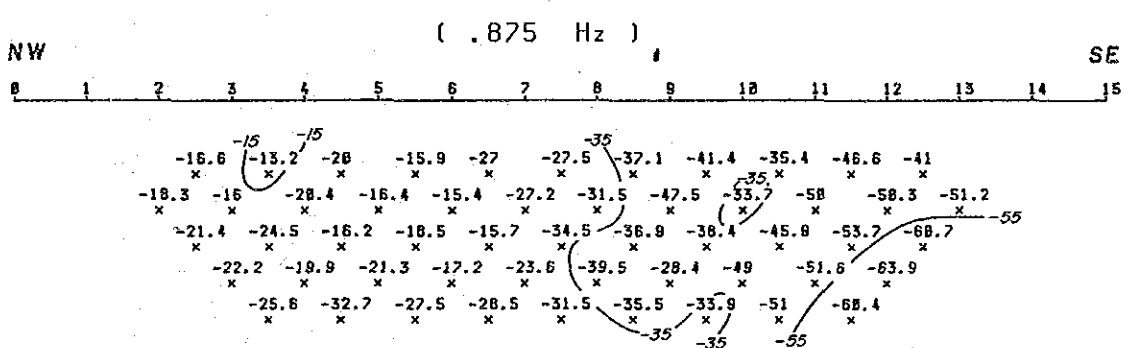
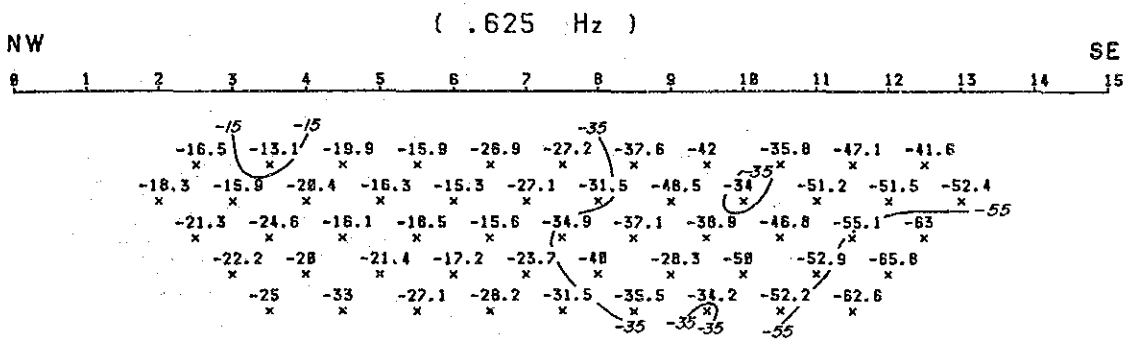
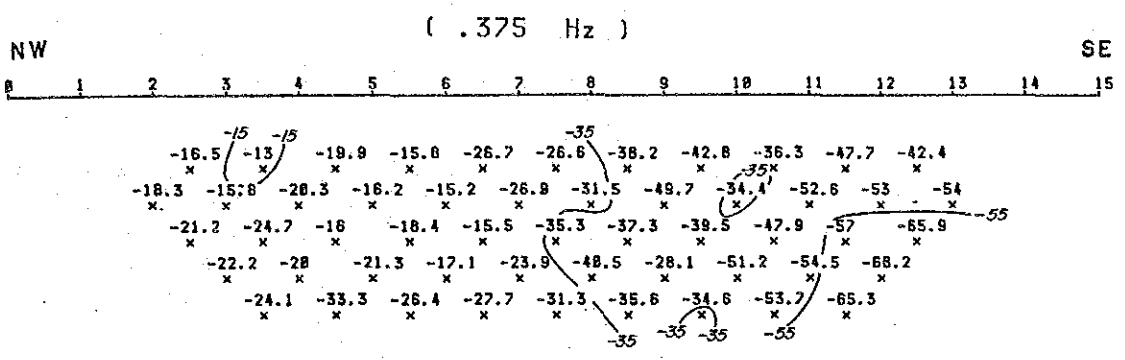
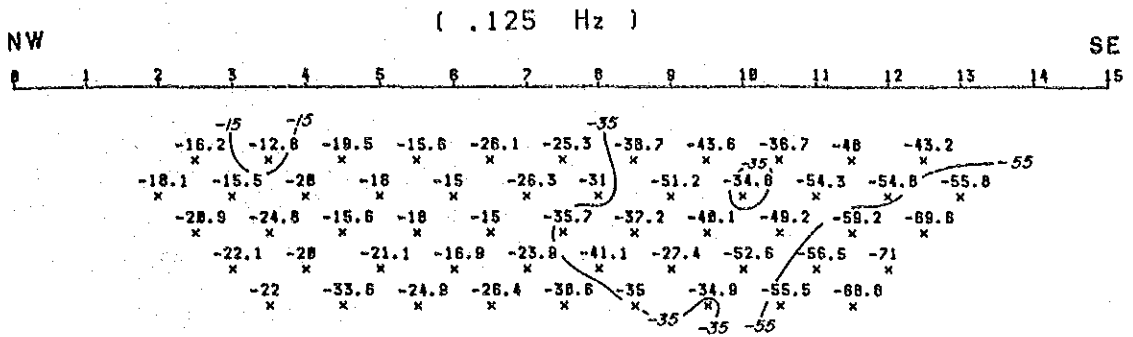
NW Line-B SE
 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15



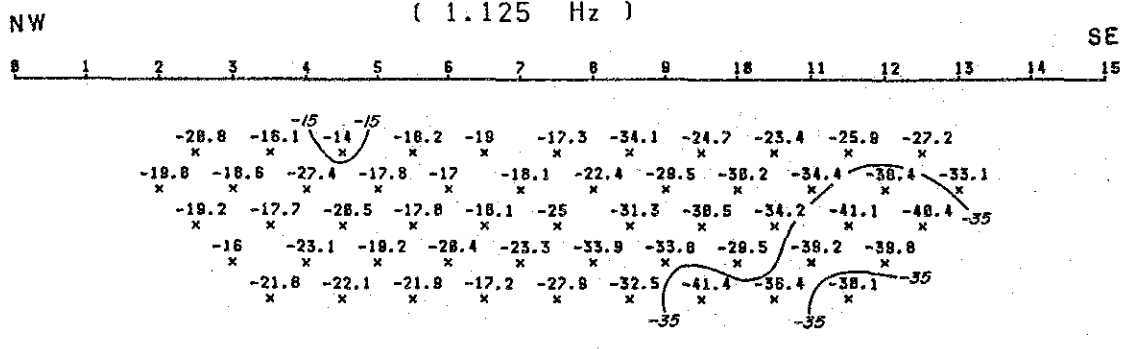
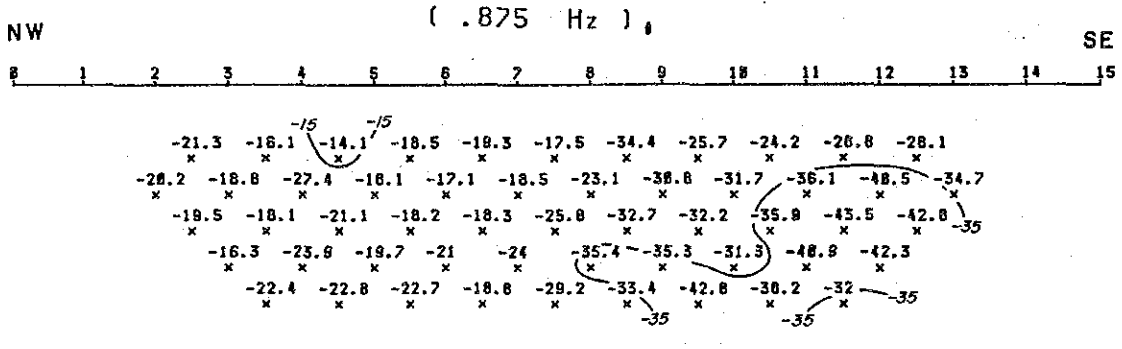
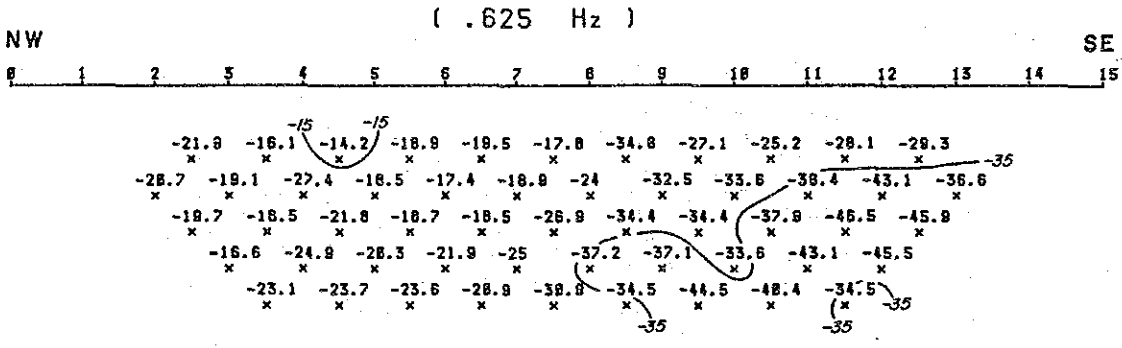
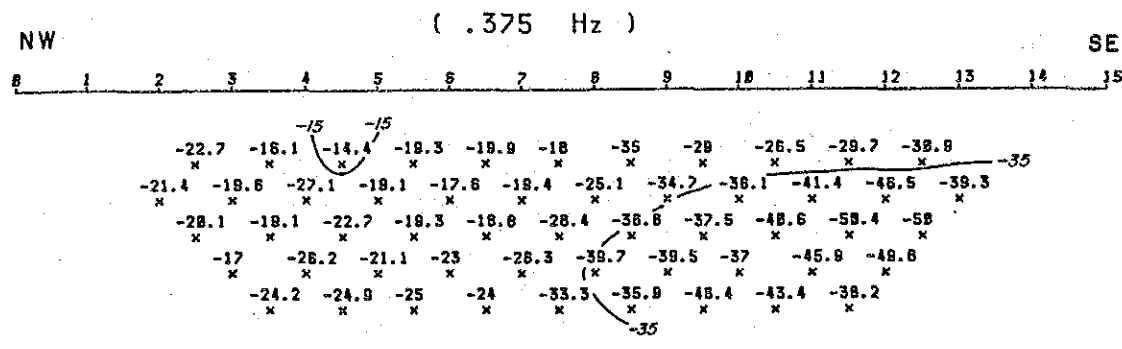
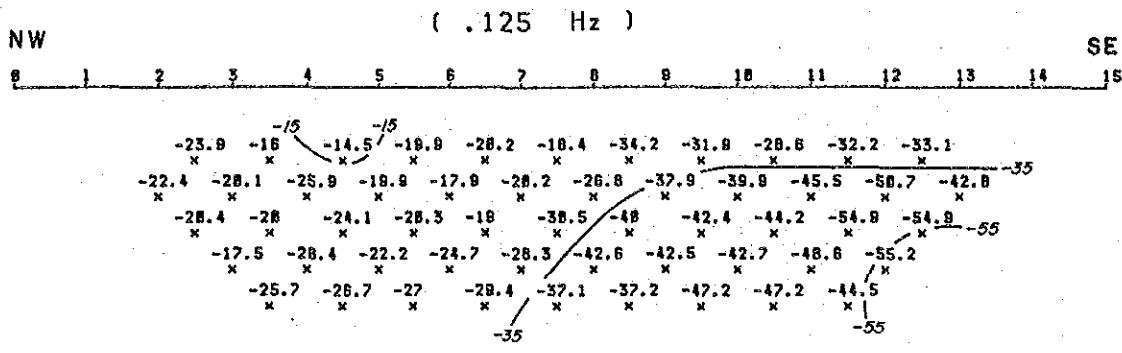
NW Line-A SE
 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15



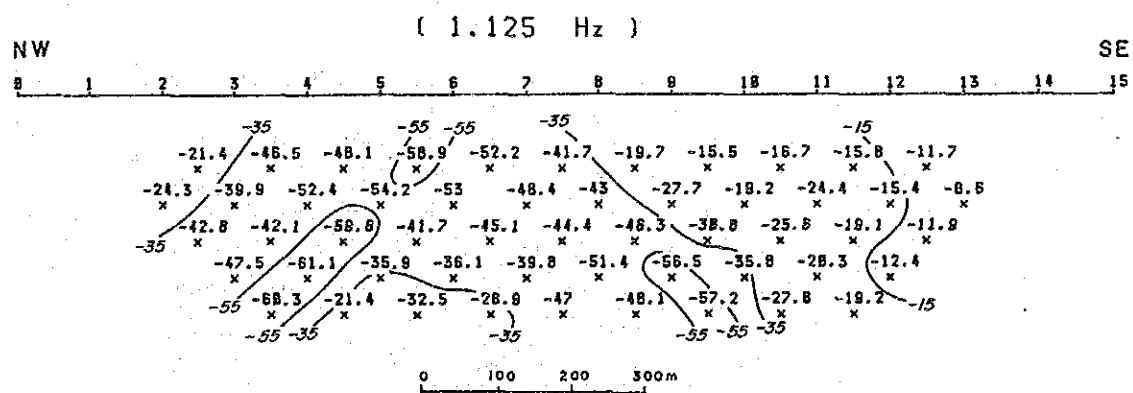
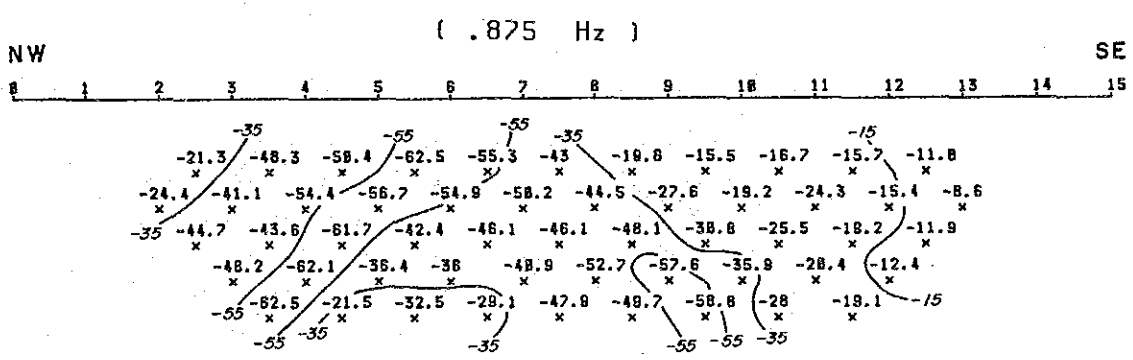
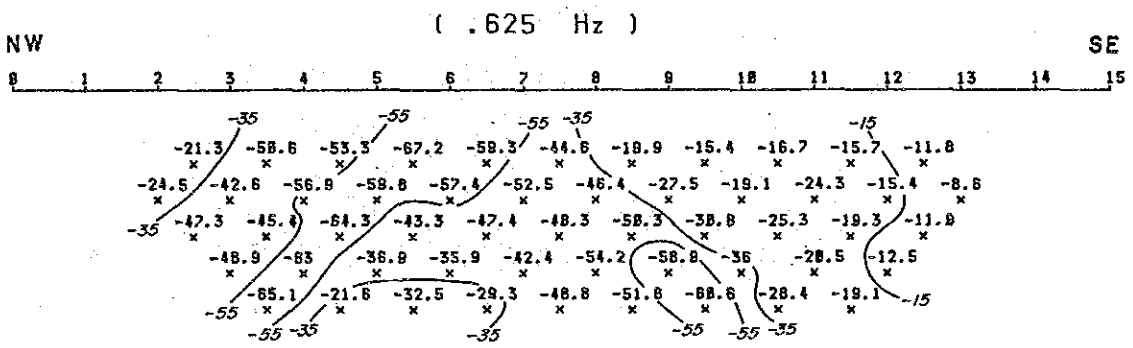
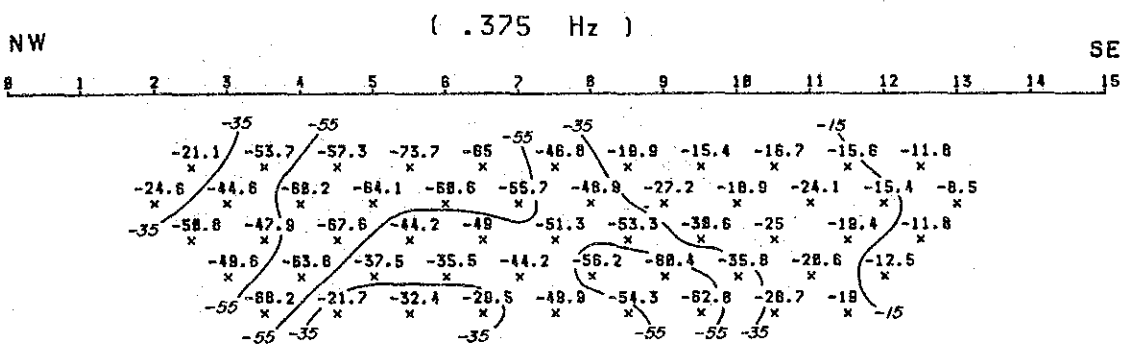
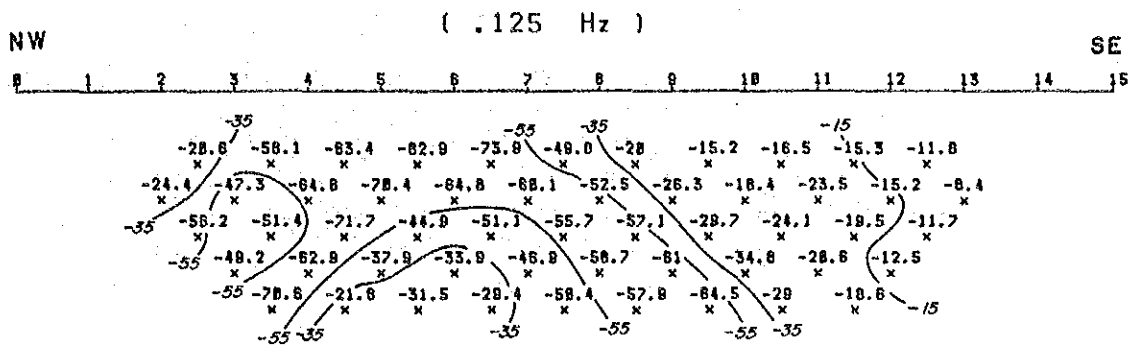
A. 2-4 DIAGRAMA DE CLASIFICACION ESPECTRAL DESACOPLADA



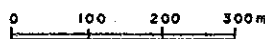
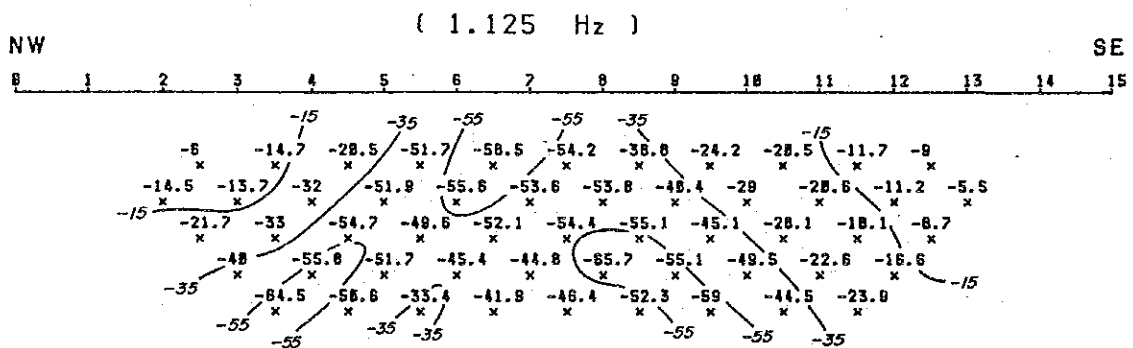
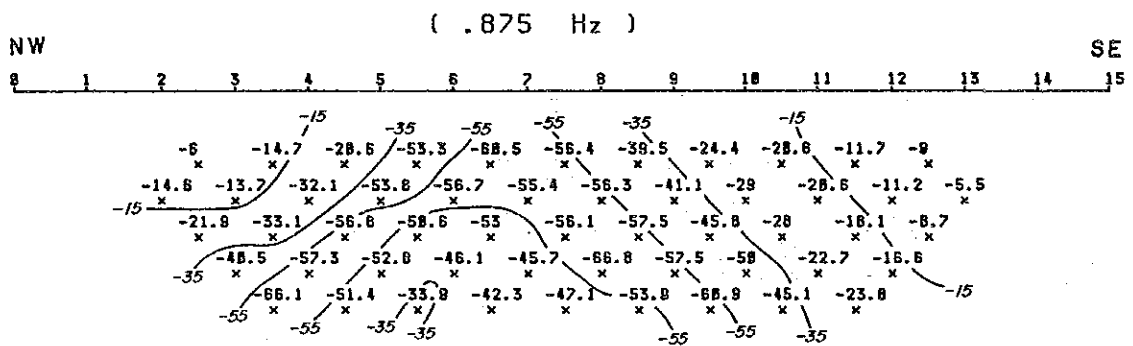
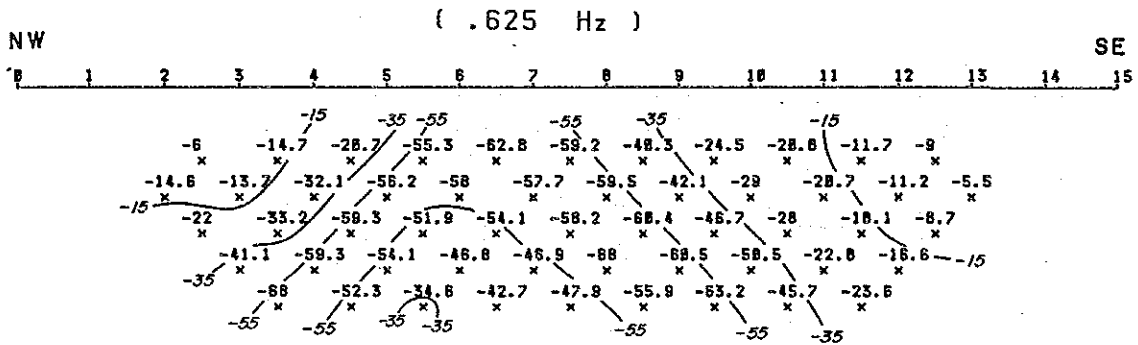
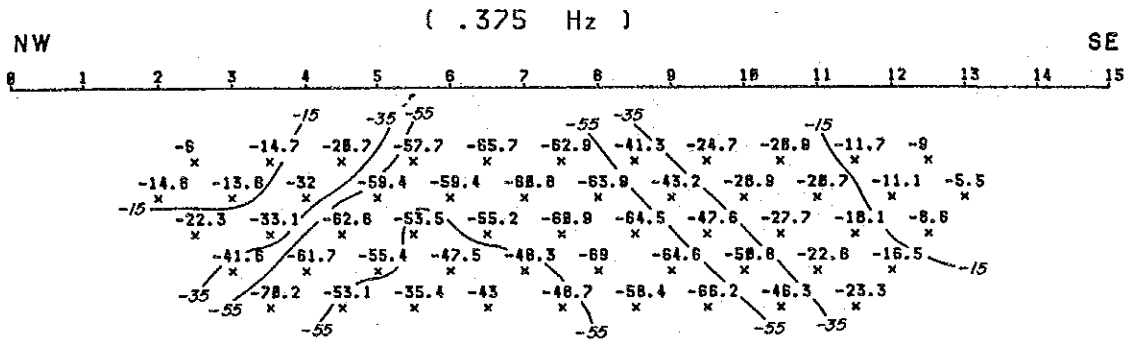
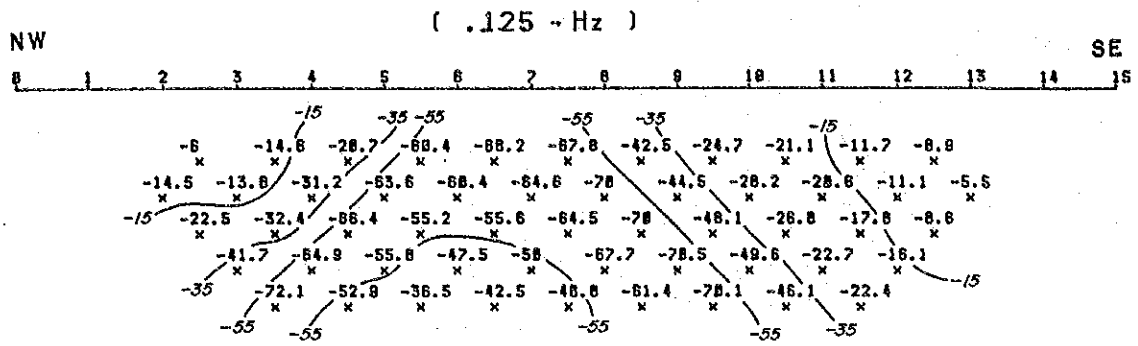
A. 2-5 SEUDOSECCIONES DE LA FASE DESACOPCADA LINEA A
A - 5



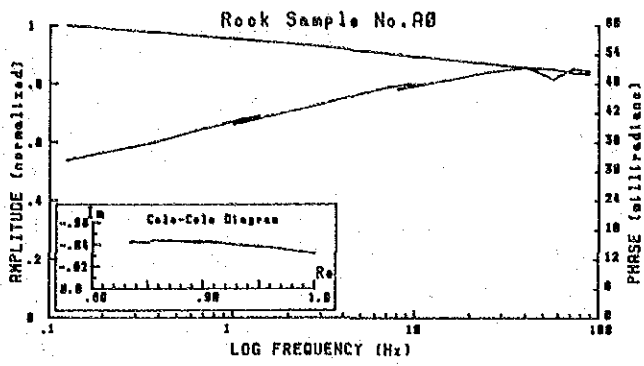
A. 2-6 SEUDOSECCIONES DE LA FASE DESACOPCADA LINEB B
A - 6



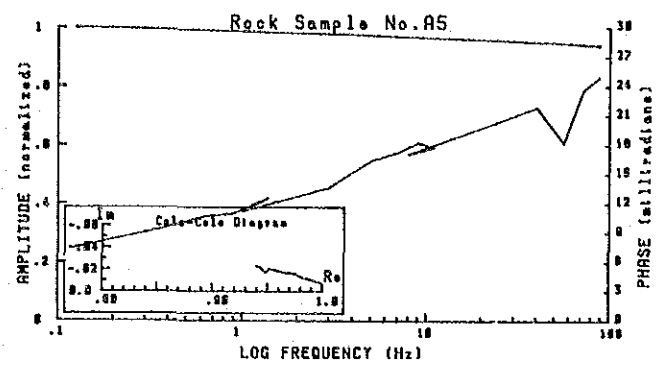
A. 2-7 SEUDOSECCIONES DE LA FASE DESACOPCADA LINEC C
A - 7



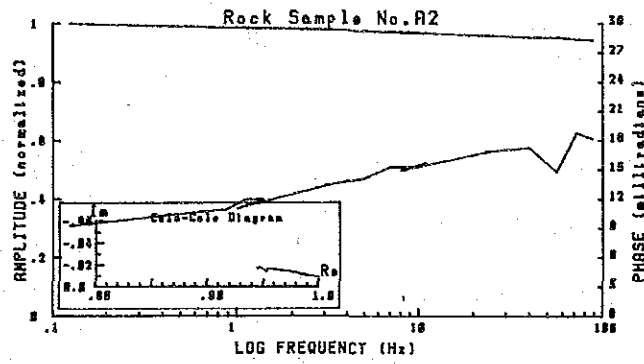
A. 2-8 SEUDOSECCIONES DE LA FASE DESACOPCADA LINED D



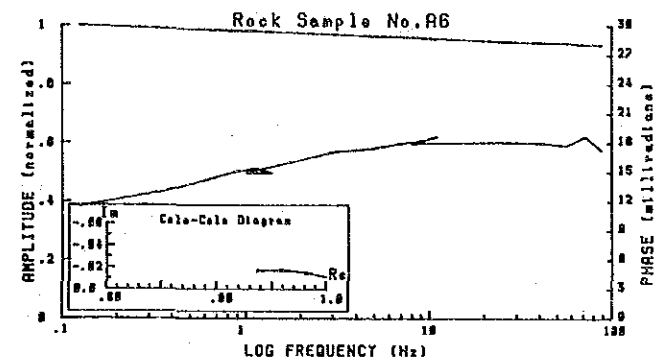
RHO: 783 ohm.m PFE: 4.8 % PHASE:-32 mrad SPECT. TYPE: ob



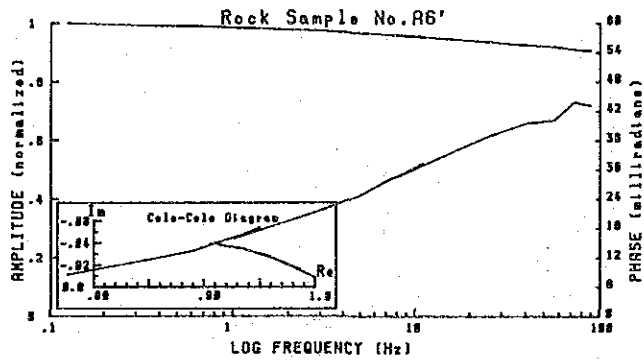
RHO: 1850 ohm.m PFE: 1.2 % PHASE:-7.5 mrad SPECT. TYPE: CC



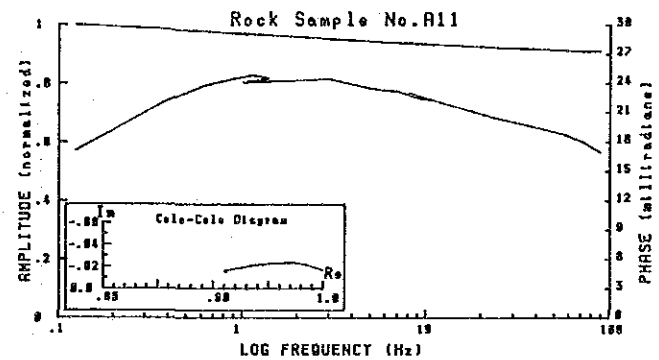
RHO: 131 ohm.m PFE: 1.3 % PHASE:-9.3 mrad SPECT. TYPE: cC



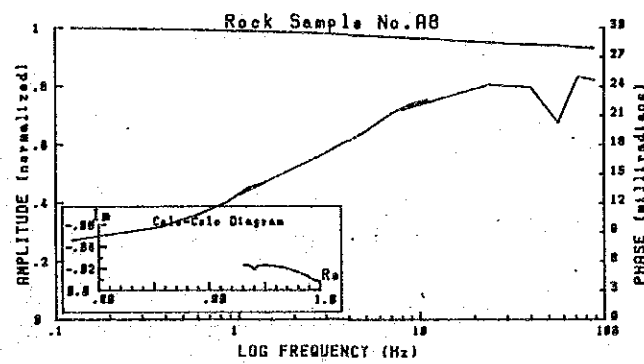
RHO: 216 ohm.m PFE: 1.8 % PHASE:-12 mrad SPECT. TYPE: cc



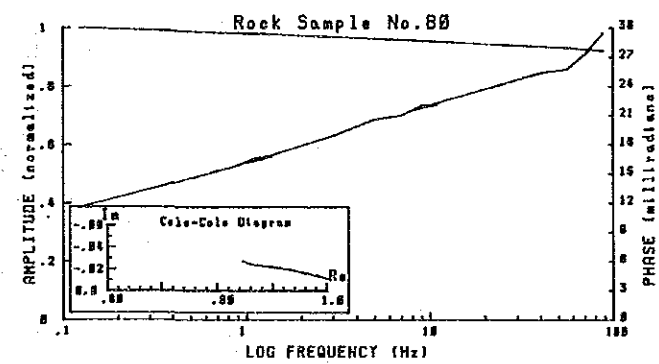
RHO: 77 ohm.m PFE: 1.4 % PHASE:-8.6 mrad SPECT. TYPE: CC



RHO: 518 ohm.m PFE: 3.1 % PHASE:-17 mrad SPECT. TYPE: CB

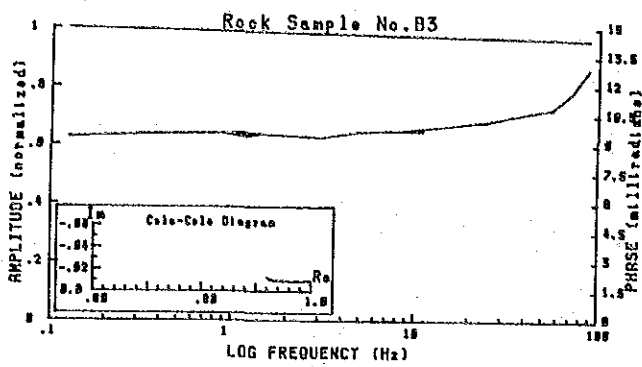


RHO: 118 ohm.m PFE: 1.1 % PHASE:-8.2 mrad SPECT. TYPE: CC

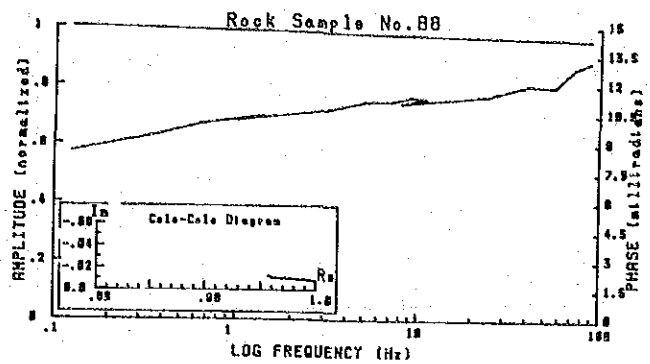


RHO: 1757 ohm.m PFE: 1.8 % PHASE:-12 mrad SPECT. TYPE: Co

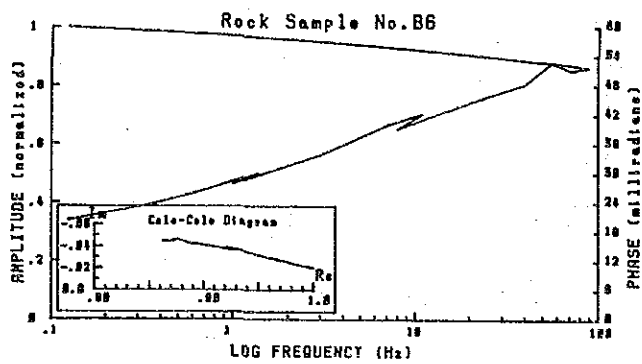
A. 2-9(1) DIAGRAMA COLE-COLE SOBRE LAS MUESTRAS



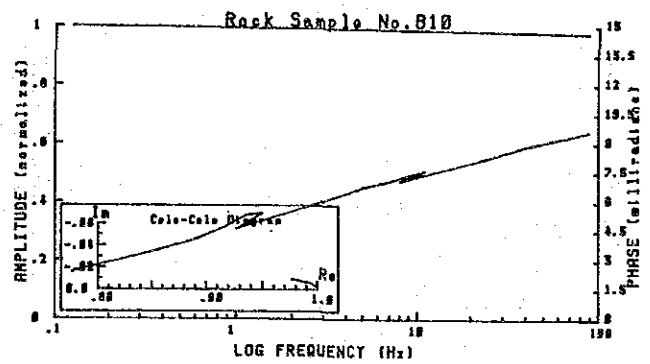
RHO: 1276 ohm.m PFE: 1.3 % PHASE:-9.4 mrad SPECT. TYPE: bb



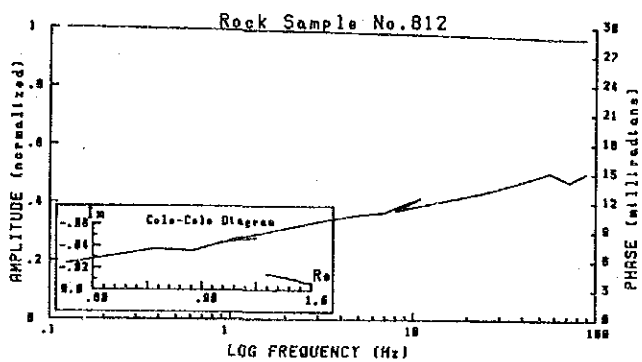
RHO: 1436 ohm.m PFE: 1.3 % PHASE:-6.6 mrad SPECT. TYPE: cb



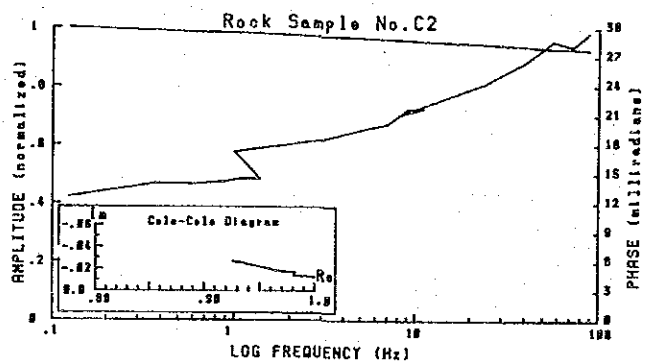
RHO: 1792 ohm.m PFE: 3 % PHASE:-20 mrad SPECT. TYPE: CC



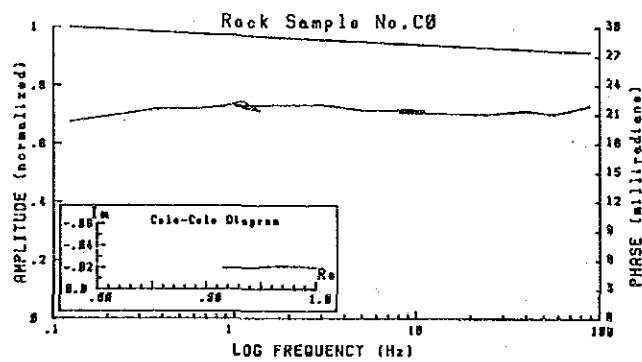
RHO: 685 ohm.m PFE: .4 % PHASE:-2.4 mrad SPECT. TYPE: CC



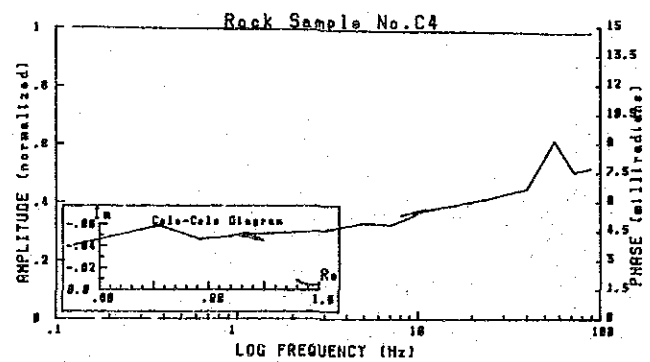
RHO: 747 ohm.m PFE: .9 % PHASE:-5.7 mrad SPECT. TYPE: CC



RHO: 1268 ohm.m PFE: 4.9 % PHASE:-34 mrad SPECT. TYPE: bb

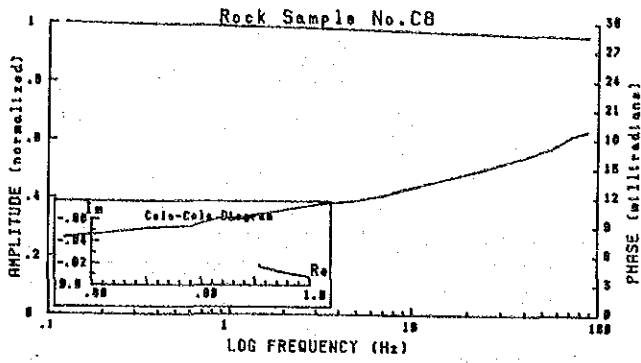


RHO: 643 ohm.m PFE: 2.9 % PHASE:-28.3 mrad SPECT. TYPE: bb

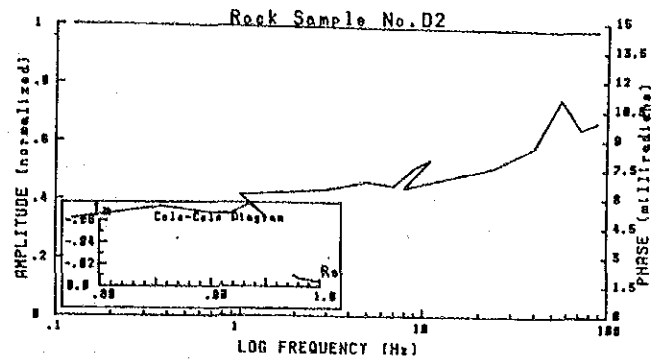


RHO: 667 ohm.m PFE: .6 % PHASE:-3.6 mrad SPECT. TYPE: bb

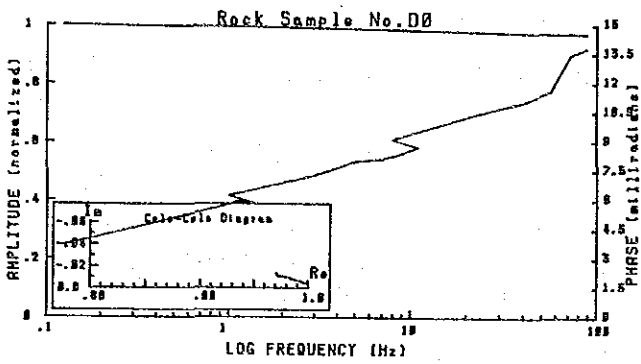
A. 2-9(2) DIAGRAMA COLE-COLE SOBRE LAS MUESTRAS



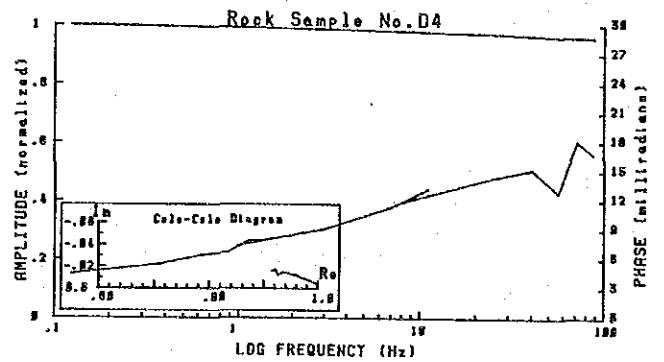
RHO: 450 ohm.m PFE: 1.2 % PHASE: -7.9 mrad SPECT. TYPE: cc



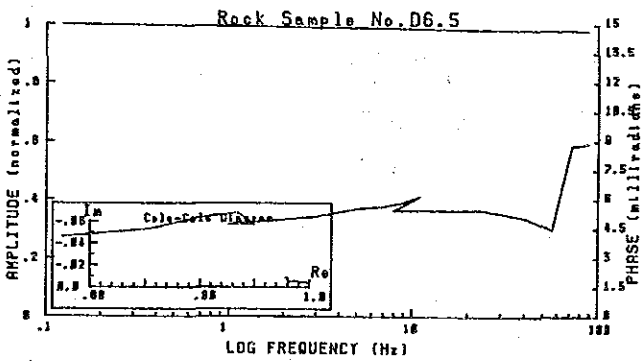
RHO: 4710 ohm.m PFE: 3.1 % PHASE: -22 mrad SPECT. TYPE: bb



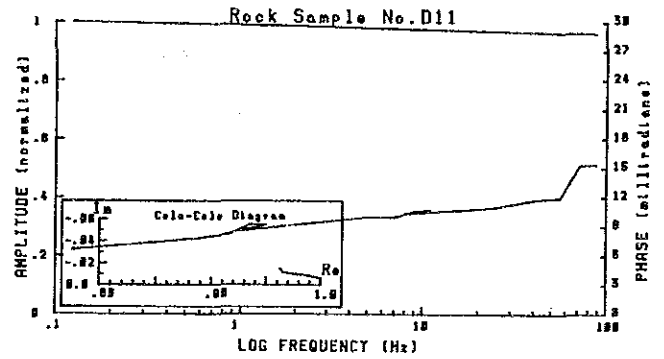
RHO: 4310 ohm.m PFE: 1.5 % PHASE: -9.6 mrad SPECT. TYPE: CC



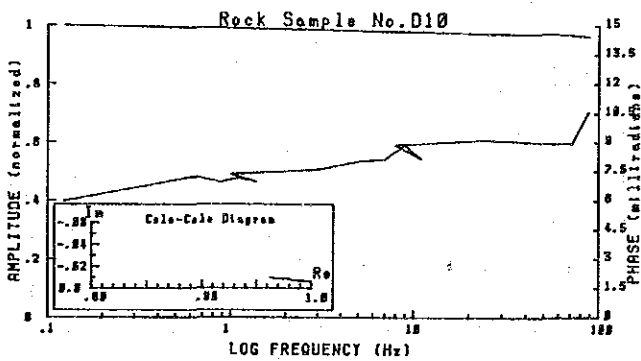
RHO: 371 ohm.m PFE: .7 % PHASE: -4.5 mrad SPECT. TYPE: CC



RHO: 885 ohm.m PFE: .6 % PHASE: -4.1 mrad SPECT. TYPE: eb



RHO: 284 ohm.m PFE: .9 % PHASE: -6.6 mrad SPECT. TYPE: Cc



RHO: 688 ohm.m PFE: .9 % PHASE: -6 mrad SPECT. TYPE: cc

A. 2-9(3) DIAGRAMA COLE-COLE SOBRE LAS MUESTRAS

A. 3-1 LISTA DE EQUIPO USADO EN PERFORACION

(1)

| Detalle | Modelo | Cantidad | Capacidad, tipo y especificaciones |
|------------------------------------|----------|----------|---|
| Máquina de perforación | TOM-3 | 1 | Capacidad NQ 600m, BQ 790m Diámetro interno del mandril 92 mm Peso (sin motor) 1,350 kg |
| Bomba | BBP-40 | 1 | piston 64mm Capacidad 31, 62, 109, 182 ℓ/minuto Presión 14 - 56 kg/cm ² |
| Bomba | L-33 | 1 | Piston 47mm Capacidad 93, 124, 166, 208 ℓ/minuto Presión 10 - 40 kg/cm ² |
| Motor de la máquina de perforación | F3L-912 | 1 | Motor diesel 2,300 rpm/44HP |
| Motor de la bomba | SR3 | 1 | Motor diesel 1,500 rpm/15HP |
| Motor de la bomba | NS-130CG | 1 | Motor diesel 1,800 rpm/9.5PS |
| Motor de la Mezclador lodo | NSA-50C | 1 | Motor diesel 1,800 rpm/5.5PS |
| Mezclador lodo | MCE-100A | 1 | Tamaño 100ℓ |
| Generador | YSG-3SN | 1 | 3KVA 1,800 rpm/5.5PS |
| Generador | YSG-5SN | 1 | 5KVA 1,800 rpm/9PS |
| Sostenedor tubería | LH | 1 | Tipo de mano |
| Tubos de perforación | HQ-WL | 40 | 3.00m c/u |
| Tubos de perforación | HQ-WL | 2 | 1.50m c/u |
| Tubos de perforación | NQ-WL | 95 | 3.00m c/u |
| Tubos de perforación | NQ-WL | 2 | 1.50m c/u |
| Tubos de perforación | BQ-WL | 135 | 3.00m c/u |
| Tubos de perforación | BQ-WL | 2 | 1.50m c/u |

(2)

| Detalle | Modelo | Cantidad | Capacidad, tipo y especificaciones |
|----------------|--------|----------|------------------------------------|
| Tubería casing | 127mm | 2 | 3.00m c/u |
| Tubería casing | 127mm | 5 | 1.50m c/u |
| Tubería casing | 127mm | 10 | 0.50m c/u |
| Tubería casing | HW | 5 | 3.00m c/u |
| Tubería casing | HW | 6 | 1.50m c/u |
| Tubería casing | HW | 4 | 0.50m c/u |
| Tubería casing | NW | 40 | 3.00m c/u |
| Tubería casing | NW | 20 | 1.50m c/u |
| Tubería casing | NW | 4 | 0.50m c/u |
| Tubería casing | BW | 85 | 3.00m c/u |
| Tubería casing | BW | 20 | 1.50m c/u |
| Tubería casing | BW | 4 | 0.50m c/u |

A. 3-2 ARTICULOS DE CONSUMO Y REPUESTOS DE PERFORACION

(1)

| Detalle | Especificaciones | Unidad | Cantidad | | | | |
|---------------------------|------------------|--------|----------|-------|-------|-------|-------|
| | | | CJM-1 | CJM-2 | CJM-3 | CJM-4 | CJM-5 |
| Aceite Liviano | | ℓ | 2,850 | 3,734 | 3,844 | 3,546 | 3,574 |
| Gasolina | | ℓ | 220 | 55 | 62 | 135 | 469 |
| Aceite hidraulico # 10 | | ℓ | 20 | 65 | 25 | 20 | 35 |
| Aceite Mobil # 40 | | ℓ | 65 | 110 | 40 | 170 | 110 |
| Aceite Mobil # 90 | | ℓ | 15 | 35 | 19 | 20 | 25 |
| Grasa | | kg | 20 | 16 | 20 | 22 | 30 |
| Aceite de corte | | ℓ | 60 | 90 | 60 | 72 | 65 |
| Bentonita | Saco 50 kg | Saco | 33 | 46 | 60 | 50 | 58 |
| Libonita | | kg | 127 | 216 | 133 | 177.5 | 176 |
| CMC | | kg | 54 | 62 | 63 | 68.5 | 70 |
| Estopa de algodón | | kg | - | - | - | - | - |
| Velocimetro | | ℓ | - | - | - | - | - |
| Cemento | Saco 40 kg | Saco | 9 | 10 | 10 | 12 | 13 |
| Zapata | 127mm | pc | 1 | 1 | 1 | 1 | 1 |
| Zapata | HW | pc | 1 | 1 | 2 | 1 | 1 |
| Zapata | NW | pc | 1 | 1 | 1 | 1 | 1 |
| Zapata | BW | pc | 1 | 1 | 1 | 1 | 1 |
| Broca | 131mm | pc | 1 | 1 | 1 | 1 | 2 |
| Broca | HQ | pc | 4 | 4 | 4 | 5 | 5 |
| Broca | NQ | pc | 4 | 4 | 6 | 6 | 4 |
| Broca | BQ | pc | 5 | 3 | 8 | 7 | 7 |
| Escariadors | HQ | pc | 1 | 1 | 1 | 1 | 2 |
| Escariadors | NQ | pc | 1 | 1 | 1 | 1 | 1 |
| Escariadors | BQ | pc | 1 | 1 | 1 | 1 | 1 |
| Corazonador sencillo | 129mm x 0.5m | Juego | - | 1 | - | - | - |
| Corazonador sencillo | 129mm x 1.5m | Juego | - | 1 | - | - | - |
| Barrera de corazonamiento | HQ x 1.5m | Juego | - | - | 1 | - | 1 |
| Barrera de corazonamiento | NQ x 1.5m | Juego | - | - | 1 | - | 1 |
| Barrera de corazonamiento | BQ x 1.5m | Juego | - | - | 1 | - | 1 |

(2)

| Detalle | Especificaciones | Unidad | Cantidad | | | | |
|----------------------------------|------------------|--------|----------|-------|-------|-------|-------|
| | | | CJM-1 | CJM-2 | CJM-3 | CJM-4 | CJM-5 |
| Tubo interno | HQ x 1.5m | Juego | - | - | 1 | - | 1 |
| Tubo interno | NQ x 1.5m | Juego | - | - | 1 | - | 1 |
| Tubo interno | BQ x 1.5m | Juego | - | - | 1 | - | 1 |
| Tubo externo | HQ x 1.5m | pc | - | - | 1 | - | 1 |
| Tubo externo | NQ x 1.5m | pc | - | - | 1 | - | 1 |
| Tubo externo | BQ x 1.5m | pc | - | - | 1 | - | 1 |
| Tubo interno | HQ x 1.5m | pc | - | - | - | - | 1 |
| Tubo interno | NQ x 1.5m | pc | - | - | - | - | 1 |
| Tubo interno | BQ x 1.5m | pc | - | - | - | - | 1 |
| Guía | HQ | pc | - | - | - | 1 | - |
| Guía | NQ | pc | - | - | - | 1 | - |
| Guía | BQ | pc | - | - | - | 1 | - |
| Guía de acople | HQ | pc | - | - | - | - | 1 |
| Guía de acople | NQ | pc | - | - | - | - | 1 |
| Guía de acople | BQ | pc | - | - | - | - | 1 |
| Caja de pescador | HQ | pc | 1 | 1 | 1 | 2 | 1 |
| Caja de pescador | NQ | pc | 2 | 2 | 2 | 2 | 2 |
| Caja de pescador | BQ | pc | 2 | 2 | 3 | 4 | 2 |
| Pescador | HQ | pc | 2 | 2 | 2 | 4 | 2 |
| Pescador | NQ | pc | 4 | 4 | 4 | 4 | 4 |
| Pescador | BQ | pc | 4 | 4 | 6 | 8 | 4 |
| Empaques del cabeza de inyección | | pc | 9 | - | - | 9 | - |
| Eje del cabeza de inyección | | pc | 1 | - | - | 1 | - |
| Manguera de succión | 50mm x 3.0m | pc | - | - | 1 | - | 1 |
| Camisa del piston | | pc | - | - | 2 | - | 2 |
| Esfera para valvula | | pc | - | - | 8 | - | 8 |
| Empaquetadura | | pc | 16 | - | 16 | - | 16 |
| Correa | TOM-3 | Juego | - | - | 1 | - | - |
| Correa | BBP-4079 | Juego | - | - | - | 1 | - |
| Correa | L-33 x NS-130CG | Juego | - | - | - | - | 1 |
| Correa | MCE-100A | Juego | - | - | 1 | - | - |
| Correa | YSG-5SNxNS-90CG | Juego | - | - | 1 | - | 1 |
| Correa | YSG-3SNxNSA-50CG | Juego | - | - | 1 | - | 1 |

(3)

| Detalle | Especificaciones | Unidad | Cantidad | | | | |
|------------------|------------------|--------|----------|-------|-------|-------|-------|
| | | | CJM-1 | CJM-2 | CJM-3 | CJM-4 | CJM-5 |
| Caja de Núcleos | 131mm | pc | 2 | 2 | 1 | 2 | 3 |
| Caja de Núcleos | HQ | pc | 27 | 33 | 29 | 27 | 25 |
| Caja de Núcleos | NQ | pc | 22 | 28 | 23 | 25 | 26 |
| Caja de Núcleos | BQ | pc | 18 | 18 | 19 | 25 | 25 |
| Alambre | #10 | kg | 15 | 20 | 15 | 13 | 35 |
| Alambre | #12 | kg | 15 | 10 | 13 | 18 | 23 |
| Uña | | kg | 4 | 7 | 5 | 6 | 10 |
| Cable | 5mm x 500m | Rollo | - | - | 1 | - | - |
| Cable | 12mm x 60m | Rollo | - | - | 1 | - | - |
| Manila | 18mm x 60m | Rollo | - | - | 1 | - | - |
| Manila de vinilo | 8mm x 500m | Rollo | 1 | - | 1 | - | 1 |
| Trapo | | kg | 5 | - | 10 | 5 | 20 |

A. 3-3 PREPARACION REGISTROS DE TRANSPORTE

| Detalle | Pozo No. | CJM-1 | | CJM-2 | | CJM-3 | | CJM-4 | | CJM-5 | | |
|--------------------------|----------------------|----------------|--------|----------------|--------|----------------|--------|---------------|--------|------------------|--------|-----|
| | | Días | Turnos | Días | Turnos | Días | turnos | Días | Turnos | Días | Turnos | |
| Preparación y transporte | Entrada | 18th Ago. '85 | 88 | 20th Jul. '85 | 5 | 08th Sept. '85 | 110 | 13th Oct. '85 | 360 | 05th Nov. '85 | 152 | |
| | Salida | 08th Sept. '85 | 150 | 05th Ago. '85 | 90 | 04th Oct. '85 | 90 | 02th Nov. '85 | 200 | 04th Diciem. '85 | 163 | |
| Preparación | | 25th Sept. '85 | 49 | 29th Ago. '85 | 56 | 23th Oct. '85 | 63 | 28th Nov. '85 | 50 | 24th Diciem. '85 | 140 | |
| | | 26th Sept. '85 | 22 | 01st Sept. '85 | 7 | 24th Oct. '85 | 11 | 29th Nov. '85 | 10 | 01st Ene. '86 | 49 | |
| | | | 2 | | 53 | | 98 | | 10 | | 65 | |
| | | | 19 | 331 | 17 | 211 | 24 | 372 | 21 | 630 | 14 | 569 |
| | Total | | 1 | 19 | 1 | 19 | 1 | 21 | 1 | 21 | 1 | 21 |
| Transporte | Desmontar | | - | | - | | - | | - | | - | |
| | Transporte tubería | | - | | - | | - | | - | | - | |
| | Acarreo | | - | | - | | - | | - | | - | |
| | Adecuar la carretera | | - | | - | | - | | - | | - | |
| | Otros | | 1 | 19 | 57 | 1 | 21 | 1 | 21 | 1 | 102 | |
| Total | | 2 | 38 | 4 | 76 | 2 | 42 | 2 | 42 | 7 | 412 | |
| Grand Total | | 21 | 369 | 21 | 287 | 26 | 414 | 23 | 672 | 21 | 981 | |

A. 3-4 RESULTADOS OPERACIONALES DE UN POZO DE PERFORACION CJM-I

| Periodo de trabajo | Periodo | | No. de días | Días actuales de trabajo | Día libre | Total de trabajadores | |
|-------------------------|--|--|--------------------------------|--|------------------------------------|-----------------------------------|-----------|
| | Preparación | 18th Ago. '85 - 08th Sept. '85 | 22 | 19 | 3 | 331 | |
| | Perforación | 09th Sept. '85 - 24th Sept. '85 | 17 | 17 | - | 304 | |
| | Traslado | 25th Sept. '85 - 26th Sept. '85 | 2 | 2 | - | 38 | |
| | Total | 18th Ago. '85 - 26th Sept. '85 | 41 | 38 | 3 | 673 | |
| Longitud de perforación | Longitud planeada | 300.00m | Material esteril - m | Recuperación de núcleos por cada sección de 100 m. | | | |
| | Incremento o decrecimiento en longitud | m | Longitud de núcleo | 300.50m | Profundidad del Pozo (m) | Sección (%) | Total (%) |
| | Longitud perforada | 301.80m | Recuperación núcleo | 99.6% | 0 - 102.50 | 100 | 100 |
| | | | | | 102.50 - 192.30 | 99.6 | 99.8 |
| | | | | | 192.30 - 301.80 | 99.2 | 99.6 |
| Tiempo de trabajo | Perforación | 134°00' | 28.4% | 22.9% | | | |
| | Levantado y bajando tubería | 63°00' | 13.3% | 10.8% | | | |
| | Levantando y bajando T.I. | 48°00' | 10.2% | 8.2% | | | |
| | Miscelánea | 163°00' | 34.5% | 27.9% | Eficiencia en perforación | | |
| | Reparación | - | - % | - % | 301.80m/Periodo de trabajo | 7.4m/día | |
| | Otros | 64°00' | 13.7% | 10.9% | 301.80m/Días trabajados | 7.9m/día | |
| | Total | 472°00' | 100 % | 80.7% | 301.80m/Periodo de perforación | 17.8m/día | |
| | Traslado | Preparación | 48°00' | - | 8.3% | 301.80m/Días netos de perforación | 17.8m/día |
| | Traslado | 64°00' | - | 11.0% | Total Trabajadores/301.80m | | |
| | G. Total | 584°00' | - | 100 % | 2.2 Hombre/m | | |
| Tubería Casing Colocada | Tamaño tubería y metraje | Longitud colocada % Longitud perforada | Recuperación tubería de Casing | Total Trabajadores de perforación/301.80m | | 1.0 Hombre/m | |
| | 127mm 6.20m | 2.1% | 100% | Levantando y bajando tubería 25 Times | Levantado y bajando T.I. 214 Times | | |
| | HW 7.00m | 2.3% | 100% | | | | |
| | NW 102.50m | 34.0% | 100% | Observaciones | | | |
| | BW 201.50m | 66.8% | 100% | G : Grande T.I.: Tubería interna | | | |

A. 3-5 RESULTADOS OPERACIONALES DE UN POZO DE PERFORACION CJM-2

| Período de trabajo | Período | | No. de días | Días actuales de trabajo | Día libre | Total de trabajadores | | |
|-------------------------|--|---|--------------------------------|---|--|-----------------------------------|-----------|--------------|
| | Preparación | 20th Jul. '85 - 05th Ago. '85 | 17 | 17 | - | 211 | | |
| | Perforación | 06th Ago. '85 - 28th Ago. '85 | 23 | 23 | - | 409 | | |
| | Traslado | 29th Ago. '85 - 01st Sept. '85 | 4 | 4 | - | 76 | | |
| | Total | 20th Jul. '85 - 01st Sept. '85 | 44 | 44 | - | 696 | | |
| Longitud de perforación | Longitud planeada | 350.00m | Material esteril | 0.20m | Recuperación de núcleos por cada sección de 100 m. | | | |
| | Incremento o decrecimiento en longitud | m | Longitud de núcleo | 348.20m | Profundidad del Pozo (m) | Sección (%) | Total (%) | |
| | Longitud perforada | 351.40m | Recuperación núcleo | 99.1% | 0 - 97.50 | 100 | 100 | |
| | | | | | 97.50 - 207.10 | 97.2 | 98.5 | |
| | | | | | 207.10 - 306.30 | 99.2 | 98.9 | |
| | | | | 306.30 - 351.40 | 100 | 99.1 | | |
| Tiempo de trabajo | Perforación | 198°00' | 31.9% | 28.4% | | | | |
| | Levantado y bajando tubería | 102°00' | 16.5% | 14.6% | | | | |
| | Levantando y bajando T.I. | 79°00' | 12.7% | 11.4% | | | | |
| | Miscelánea | 177°00' | 28.5% | 25.4% | Eficiencia en perforación | | | |
| | Reparación | - | - % | - % | 351.40m/Período de trabajo | 7.9m/día | | |
| | Otros | 64°00' | 10.4% | 9.2% | 351.40m/Días trabajados | 7.9m/día | | |
| | Total | 620°00' | 100 % | 89.0% | 351.40m/Período de perforación | 15.3m/día | | |
| | Traslado | Preparación | 30°00' | - | 4.4% | 351.40m/Días netos de perforación | 15.3m/día | |
| | | Traslado | 46°00' | - | 6.6% | | | |
| | G. Total | 696°00' | - | 100 % | Total Trabajadores/351.40m | | | 1.9 Hombre/m |
| Tubería Casing Colocada | Tamaño tubería y metraje | Longitud colocada % Longitud perforada | Recuperación tubería de Casing | Total Trabajadores de perforación/351.40m | | 1.2 Hombre/m | | |
| | 127mm 5.50m | 1.6% | 100% | Levantando y bajando tubería 29 Times | Levantado y bajando T.I. 263 Times | | | |
| | HW 25.00m | 7.3% | 100% | | | | | |
| | NW 117.60m | 33.5% | 100% | Observaciones | | | | |
| | BW 252.60m | 71.9% | 80.8% | G : Grande T.I.: Tubería interna | | | | |

A. 3-6 RESULTADOS OPERACIONALES DE UN POZO DE PERFORACION CJM-3

| Período de trabajo | Período | | No. de días | Días actuales de trabajo | Día libre | Total de trabajadores | |
|-------------------------|---|--|--------------------------------|--|---------------------------------------|-----------------------|-----------|
| | Preparación | 08th Sept. '85 - 04th Oct. '85 | 27 | 24 | 3 | 372 | |
| | Perforación | 05th Oct. '85 - 22th Oct. '85 | 18 | 18 | - | 378 | |
| | Traslado | 23th Oct. '85 - 24th Oct. '85 | 2 | 2 | - | 42 | |
| Total | 08th Sept. '85 - 24th Oct. '85 | 47 | 44 | 3 | 792 | | |
| Longitud de perforación | Longitud planeada | 300.00m | Material esteril | Recuperación de núcleos por cada sección de 100 m. | | | |
| | Incremento o decrecimiento en longitud | m | Longitud de núcleo | 296.85m | Profundidad del Pozo (m) | Sección (%) | Total (%) |
| | Longitud perforada | 300.60m | Recuperación núcleo | 98.8% | 0 - 107.00 | 100 | 100 |
| | | | | | 107.00 - 204.70 | 97.9 | 98.9 |
| | | | | 204.70 - 300.60 | 98.2 | 98.8 | |
| Tiempo de trabajo | Perforación | 174°00' | 32.5% | 26.4% | | | |
| | Levantado y bajando tubería | 121°00' | 22.6% | 18.3% | | | |
| | Levantando y bajando T.I. | 99°00' | 18.4% | 15.0% | | | |
| | Miscelánea | 62°00' | 11.6% | 9.4% | Eficiencia en perforación | | |
| | Reparación | - | - % | - % | 300.60m/Período de trabajo | 6.4m/día | |
| | Otros | 80°00' | 14.9% | 12.1% | 300.60m/Días trabajados | 6.8m/día | |
| | Total | 536°00' | 100 % | 81.2% | 300.60m/Período de perforación | 16.7m/día | |
| | Traslado | 72°00' | - | 10.9% | 300.60m/Días netos de perforación | 16.7m/día | |
| | 52°00' | - | 7.9% | Total Trabajadores/300.60m | | | |
| G. Total | 660°00' | - | 100 % | 2.6 Hombre/m | | | |
| Tubería Casing Colocada | Tamaño tubería y metraje | Longitud colocada % Longitud perforada | Recuperación tubería de Casing | Total Trabajadores de perforación/300.60m | | 1.3 Hombre/m | |
| | 127mm 1.80m | 0.6% | 100% | Levantando y bajando tubería 38 Times | Levantado y bajando T.I. 330 Times | | |
| | HW 15.50m | 5.2% | 100% | | | | |
| | NW 99.00m | 32.9% | 100% | Observaciones | | | |
| | BW 199.50m | 66.4% | 100% | G : Grande T.I.: Tubería interna | | | |

A. 3-7 RESULTADOS OPERACIONALES DE UN POZO DE PERFORACION CJM-4

| Período de trabajo | Período | | | No. de días | Días actuales de trabajo | Día libre | Total de trabajadores | |
|-------------------------|--|---|--------------------------------|---|--|--------------|-----------------------|--------------|
| | Preparación | 13th Oct. '85 - 02th Nov. '85 | | | 21 | 21 | - | 630 |
| | Perforación | 03th Nov. '85 - 27th Nov. '85 | | | 25 | 17 | 8 | 448 |
| | Traslado | 28th Nov. '85 - 29th Nov. '85 | | | 2 | 2 | - | 42 |
| | Total | 13th Oct. '85 - 29th Nov. '85 | | | 48 | 80 | 8 | 1,120 |
| Longitud de perforación | Longitud planeada | 350.00m | Material esteril | 4.50m | Recuperación de núcleos por cada sección de 100 m. | | | |
| | Incremento o decrecimiento en longitud | m | Longitud de núcleo | 345.90m | Profundidad del Pozo (m) | Sección (%) | Total (%) | |
| | Longitud perforada | 351.20m | Recuperación núcleo | 98.5% | 0 - 100.40 | 98.6 | 98.6 | |
| | | | | | 100.40 - 203.00 | 100 | 99.3 | |
| | | | | | 203.00 - 292.60 | 93.2 | 98.7 | |
| | | | | 292.60 - 351.20 | 97.4 | 98.5 | | |
| Tiempo de trabajo | Perforación | 181°00' | 29.5% | 26.2% | | | | |
| | Levantado y bajando tubería | 90°00' | 14.8% | 13.0% | | | | |
| | Levantado y bajando T.I. | 86°00' | 14.2% | 12.4% | | | | |
| | Miscelánea | 63°00' | 10.3% | 9.1% | Eficiencia en perforación | | | |
| | Reparación | 96°00' | 15.6% | 13.9% | 351.20m/Período de trabajo | | 7.3m/día | |
| | Otros | 96°00' | 15.6% | 13.9% | 351.20m/Días trabajados | | 8.8m/día | |
| | Total | 612°00' | 100 % | 88.5% | 351.20m/Período de perforación | | 14.0m/día | |
| | Preparación | 32°00' | - | 4.6% | 351.20m/Días netos de perforación | | 20.6m/día | |
| | Traslado | 48°00' | - | 6.9% | Total Trabajadores/351.20m | | | |
| | G. Total | 692°00' | - | 100 % | 3.2 Hombre/m | | | |
| Tubería Casing Colocada | Tamaño tubería y metraje | Longitud colocada % Longitud perforada | Recuperación tubería de Casing | Total Trabajadores de perforación/351.20m | | 1.3 Hombre/m | | |
| | 127mm 5.00m | 1.4% | 100% | Levantado y bajando tubería 35 Times | Levantado y bajando T.I. 341 Times | | | |
| | HW 5.50m | 1.6% | 100% | | | | | |
| | NW 99.00m | 28.2% | 100% | Observaciones | | | | |
| | BW 206.90m | 58.9% | 100% | G : Grande T.I.: Tubería interna | | | | |

A. 3-8 RESULTADOS OPERACIONALES DE UN POZO DE PERFORACION CJM-5

| Período de trabajo | Período | | | No. de días | Días actuales de trabajo | Día libre | Total de trabajadores | |
|-------------------------|--|--|-------------------------------------|---|--|--------------|-----------------------|--------------|
| | Preparación | 05th Nov. '85 - 04th Diciem. '85 | | | 30 | 14 | 16 | 569 |
| | Perforación | 05th Diciem. '85 - 23th Diciem. '85 | | | 19 | 19 | - | 399 |
| | Traslado | 24th Diciem. '85 - 01st Ene. '86 | | | 12 | 7 | 5 | 412 |
| | Total | 05th Nov. '85 - 01st Ene. '86 | | | 61 | 40 | 21 | 1,380 |
| Longitud de perforación | Longitud planeada | 350.00m | Material esteril | 10.50m | Recuperación de núcleos por cada sección de 100 m. | | | |
| | Incremento o decrecimiento en longitud | m | Longitud de núcleo | 346.40m | Profundidad del Pozo (m) | Sección (%) | Total (%) | |
| | Longitud perforada | 350.60m | Recuperación núcleo | 98.8% | 0 - 95.90 | 100 | 100 | |
| | | | | | 95.90 - 192.10 | 100 | 100 | |
| | | | | | 192.10 - 295.90 | 99.5 | 99.7 | |
| | | | | 295.90 - 350.60 | 94.3 | 98.8 | | |
| Tiempo de trabajo | Perforación | 173°00' | 35.5% | 24.9% | | | | |
| | Levantado y bajando tubería | 96°00' | 19.7% | 13.8% | | | | |
| | Levantado y bajando T.I. | 73°00' | 15.0% | 10.5% | | | | |
| | Miscelánea | 114°00' | 23.4% | 16.4% | Eficiencia en perforación | | | |
| | Reparación | - | - % | - % | 350.60m/Período de trabajo | | 5.7m/día | |
| | Otros | 32°00' | 6.4% | 4.6% | 350.60m/Días trabajados | | 8.8m/día | |
| | Total | 488°00' | 100 % | 70.2% | 350.60m/Período de perforación | | 18.5m/día | |
| | Preparación | 66°00' | - | 9.6% | 350.60m/Días netos de perforación | | | |
| | Traslado | 140°00' | - | 20.2% | | | | |
| | G. Total | 694°00' | - | 100 % | Total Trabajadores/350.60m | | 3.9 Hombre/m | |
| Tubería Casing Colocada | Tamaño tubería y metraje | Longitud colocada % Longitud perforada | Recuperación tubería de Casing | Total Trabajadores de perforación/350.60m | | 1.1 Hombre/m | | |
| | 127mm 9.00m | 2.6% | 100% | Levantado y bajando tubería 29 Times | Levantado y bajando T.I. 320 Times | | | |
| | HW 15.00m | 4.3% | 100% | | | | | |
| | NW 96.00m | 27.4% | 100% | | | | | |
| | BW 207.60m | 59.2% | 98.3% | Observaciones | | | | |
| | | | G : Grande T.I.: Tubería interna | | | | | |

A. 3-9 RESUMEN OPERACIONAL DE LOS DATOS PARA CADA POZO

| Pozo No. | Tipo de máquina | Período perforación | Longitud perforada | Múcleo | | No. turno perforación | | | Velocidad de perforación | | Observaciones |
|----------|-----------------|---------------------------------------|--------------------|----------|--------------|-----------------------|--------------|-------|--------------------------|------------|---------------|
| | | | | Longitud | Recuperación | Perforando | Casings otro | Total | * m/turno | ** m/turno | |
| CJM-1 | TOM-3 | 09th Ago. '85 - 24th Sept. '85 | 301.80m | 300.50m | 99.6% | 45 | 7 | 52 | 6.71 | 5.80 | |
| CJM-2 | TOM-3 | 06th Ago. '85 - 28th Ago. '85 | 351.40 | 348.20 | 99.1 | 56 | 13 | 69 | 6.28 | 5.09 | |
| CJM-3 | TOM-3 | 05th Oct. '85 - 22th Oct. '85 | 300.60 | 296.85 | 98.8 | 52 | 6 | 58 | 5.78 | 5.18 | |
| CJM-4 | TOM-3 | 03th Nov. '85 - 27th Nov. '85 | 351.20 | 345.90 | 98.5 | 47 | 9 | 56 | 7.47 | 6.27 | |
| CJM-5 | TOM-3 | 05th Diciem. '85 -23th Diciem. '85 | 350.60 | 346.40 | 98.8 | 54 | 3 | 57 | 6.49 | 6.15 | |
| Total | | | 1,655.60 | 1,637.85 | 98.9 | 254 | 38 | 292 | 6.52 | 5.67 | |

* Perforado en un turno cubriendo operaciones netas de perforación.

** Perforado en un turno cubriendo todos los trabajos

A. 3-10 TIEMPO TRABAJADO EN CADA POZO

| Pozo # | Perforación | Levantando y bajando tubería | | Miscelanea | | | Reparaciones | Otros | Operación traslado | Total |
|--------|-------------|------------------------------|-----------------|----------------|-----------------|---------|--------------|---------|--------------------|-----------|
| | | T. I. Tubería | Tubería interna | Bajando Casing | Limando el pozo | Otros | | | | |
| CJM-1 | 134°00' | 63°00' | 48°00' | 28°00' | 15°00' | 120°00' | - | 64°00' | 112°00' | 584°00' |
| CJM-2 | 198°00' | 102°00' | 79°00' | 46°00' | 25°00' | 106°00' | - | 64°00' | 76°00' | 696°00' |
| CJM-3 | 174°00' | 121°00' | 99°00' | 18°00' | 15°00' | 29°00' | - | 80°00' | 124°00' | 660°00' |
| CJM-4 | 181°00' | 90°00' | 86°00' | 23°00' | 9°00' | 31°00' | 96°00' | 96°00' | 80°00' | 692°00' |
| CJM-5 | 173°00' | 96°00' | 73°00' | 11°00' | 8°00' | 95°00' | - | 32°00' | 206°00' | 694°00' |
| Total | 860°00' | 472°00' | 385°00' | 126°00' | 72°00' | 381°00' | 96°00' | 336°00' | 598°00' | 3,326°00' |
| | | | | 579°00' | | | | | | |

A. 3-11 METRAJE DE PERFORACION CON BROCAS DE DIAMANTE

(1)

| Detalle | Tamaño | Tipo | Broca No. | Metraje de perforación por pozo. | | | | | Total | |
|---------|--------|-------|-----------|----------------------------------|-------|-------|--------|-------|-------|-------|
| | | | | Unidad Metro | | | | | | |
| | | | | CJM-1 | CJM-2 | CJM-3 | CJM-4 | CJM-5 | | |
| Broca | 131mm | 131mm | U-524 | 6.20 | | | | | 6.20 | |
| | | | U-525 | | 5.50 | | | | 5.50 | |
| | | | U-526 | | | 1.80 | | | 1.80 | |
| | | | U-527 | | | | 5.00 | | 5.00 | |
| | | | U-528 | | | | | | 3.90 | 3.90 |
| | | | U-529 | | | | | | 5.10 | 5.10 |
| | | | Total | 6.20 | 5.50 | 1.80 | 5.00 | 9.00 | 27.50 | |
| | HX | HQ-WL | AP-8630 | 24.50 | | | | | 24.50 | |
| | | | AP-8631 | 22.10 | | | | | 22.10 | |
| | | | AP-8632 | 26.20 | | | | | 26.20 | |
| | | | AP-8633 | 23.50 | | | | | 23.50 | |
| | | | AP-8634 | | 29.60 | | | | 29.60 | |
| | | | AP-8635 | | 27.20 | | | | 27.20 | |
| | | | AP-8636 | | 28.90 | | | | 28.90 | |
| | | | AP-8637 | | 26.40 | | | | 26.40 | |
| | | | AP-8638 | | | 23.60 | | | 23.60 | |
| | | | AP-8639 | | | 24.20 | | | 24.20 | |
| | | | AP-8640 | | | 25.10 | | | 25.10 | |
| | | | AP-8641 | | | 24.50 | | | 24.50 | |
| | | | AP-8642 | | | | | 19.20 | 19.20 | |
| | | | AP-8643 | | | | | 16.50 | 16.50 | |
| | | | AP-8644 | | | | | 21.60 | 21.60 | |
| | | | AP-8645 | | | | | 18.20 | 18.20 | |
| | | | AP-8646 | | | | | 18.50 | 18.50 | |
| | | | S-4175 | | | | | | 15.10 | 15.10 |
| | | | S-4176 | | | | | | 16.20 | 16.20 |
| | | | S-4177 | | | | | | 18.00 | 18.00 |
| | S-4178 | | | | | | 17.00 | 17.00 | | |
| | S-4179 | | | | | | 20.70 | 20.70 | | |
| | Total | 96.30 | 112.10 | 97.40 | 94.00 | 87.00 | 486.80 | | | |
| | NX | NQ-WL | B326 | 24.90 | | | | | 24.90 | |
| | | | B327 | 23.20 | | | | | 23.20 | |
| | | | B328 | 25.10 | | | | | 25.10 | |
| B329 | | | 25.60 | | | | | 25.60 | | |
| AP8640 | | | | 29.60 | | | | 29.60 | | |
| AP8641 | | | | 34.10 | | | | 34.10 | | |
| AP8642 | | | | 35.90 | | | | 35.90 | | |
| AP8643 | | | | 35.40 | | | | 35.40 | | |
| AP8644 | | | | | 20.60 | | | 20.60 | | |
| AP8645 | | | | | 18.60 | | | 18.60 | | |
| AP4170 | | | | | 15.20 | | | 15.20 | | |
| AP4171 | | | | | 12.30 | | | 12.30 | | |
| AP4172 | | | | | 14.60 | | | 14.60 | | |
| AP4173 | | | | | 19.00 | | | 19.00 | | |
| AP4174 | | | | | | | 18.60 | 18.60 | | |
| AP4175 | | | | | | | 17.20 | 17.20 | | |

(2)

| Detalle | Tamaño | Tipo | Broca No. | Metraje de perforación por pozo. | | | | | Total | |
|---------|--------|-------|-----------|----------------------------------|--------|--------|--------|--------|--------|--------|
| | | | | Unidad Metro | | | | | | |
| | | | | CJM-1 | CJM-2 | CJM-3 | CJM-4 | CJM-5 | | |
| Broca | NX | NQ-WL | 185557 | | | | 16.20 | | 16.20 | |
| | | | 185558 | | | | 19.10 | | 19.10 | |
| | | | 185559 | | | | 20.10 | | 20.10 | |
| | | | 185560 | | | | 16.70 | | 16.70 | |
| | | | 185561 | | | | | 27.60 | 27.60 | |
| | | | 185562 | | | | | 28.10 | 28.10 | |
| | | | 185563 | | | | | 29.10 | 29.10 | |
| | | | 185564 | | | | | 26.80 | 26.80 | |
| | | | Total | | | 98.80 | 135.00 | 100.30 | 107.90 | 111.60 |
| | BX | BQ-WL | 275280 | 20.60 | | | | | | 20.60 |
| | | | 275281 | 19.80 | | | | | | 19.80 |
| | | | 275282 | 21.10 | | | | | | 21.10 |
| | | | 275283 | 17.90 | | | | | | 17.90 |
| | | | 275284 | 21.10 | | | | | | 21.10 |
| | | | 275285 | | 29.10 | | | | | 29.10 |
| | | | 275286 | | 33.60 | | | | | 33.60 |
| | | | 275287 | | 36.10 | | | | | 36.10 |
| | | | 275288 | | | | 20.10 | | | 20.10 |
| | | | 275289 | | | | 19.60 | | | 19.60 |
| | | | 275290 | | | | 17.50 | | | 17.50 |
| | | | 275291 | | | | 9.60 | | | 9.60 |
| | | | 275292 | | | | 6.10 | | | 6.10 |
| | | | 275293 | | | | 7.10 | | | 7.10 |
| | | | 275294 | | | | 4.10 | | | 4.10 |
| | | | 275295 | | | | | 17.00 | | 17.00 |
| | | | 275296 | | | | | | 20.10 | 20.10 |
| | | | 275297 | | | | | | 21.20 | 21.20 |
| | | | 275298 | | | | | | 18.60 | 18.60 |
| | | | 275299 | | | | | | 19.10 | 19.10 |
| | | | 175408 | | | | | | 22.30 | 22.30 |
| | | | 175409 | | | | | | 21.10 | 21.10 |
| | | | 175410 | | | | | | 21.90 | 21.90 |
| | | | 175411 | | | | | | | 19.60 |
| 175412 | | | | | | | 20.20 | 20.20 | | |
| 175413 | | | | | | | 18.10 | 18.10 | | |
| 175414 | | | | | | | 21.10 | 21.10 | | |
| 175415 | | | | | | | 22.60 | 22.60 | | |
| 175416 | | | | | | | 18.70 | 18.70 | | |
| 175417 | | | | | | | 22.70 | 22.70 | | |
| Total | | | 100.50 | 98.80 | 101.10 | 144.30 | 143.00 | 587.70 | | |

A. 3-12 ESPECIFICACIONES DE LAS BROCAS DE DIAMANTE

(1)

| Tamaño | Tipo | Qilates por broca | Matriz | Piedras por Qilate | Via agua | Número | Observaciones |
|--------|-------|-------------------|--------|--------------------|------------|---------|---------------|
| 131mm | 131mm | 43 | Z | 1/30 | 6 | U-524 | Reengastar |
| | | 43 | Z | 1/30 | 6 | U-525 | Reengastar |
| | | 43 | Z | 1/30 | 6 | U-526 | Reengastar |
| | | 43 | Z | 1/30 | 6 | U-527 | Reengastar |
| | | 43 | Z | 1/30 | 6 | U-528 | Reengastar |
| | | 43 | Z | 1/30 | 6 | U-529 | Reengastar |
| HX | HQ-WL | 45 | A-65 | 35 malla | 6 | AP-8630 | Reengastar |
| | | 45 | A-65 | 35 malla | 6 | AP-8631 | Reengastar |
| | | 45 | A-65 | 35 malla | 6 | AP-8632 | Reengastar |
| | | 45 | A-65 | 35 malla | 6 | AP-8633 | Reengastar |
| | | 45 | A-65 | 35 malla | 6 | AP-8634 | Reengastar |
| | | 45 | A-75 | 35 malla | 6 | AP-8635 | Reengastar |
| | | 45 | A-75 | 35 malla | 6 | AP-8636 | Reengastar |
| | | 45 | A-75 | 35 malla | 6 | AP-8637 | Reengastar |
| | | 45 | A-75 | 35 malla | 6 | AP-8638 | Reengastar |
| | | 45 | A-75 | 35 malla | 6 | AP-8639 | Reengastar |
| | | 45 | A-75 | 35 malla | 6 | AP-8640 | Reengastar |
| | | 45 | A-85 | 40 malla | 6 | AP-8641 | Reengastar |
| | | 45 | A-85 | 40 malla | 6 | AP-8642 | Reengastar |
| | | 45 | A-85 | 40 malla | 6 | AP-8643 | Reengastar |
| | | 45 | A-85 | 40 malla | 6 | AP-8644 | Reengastar |
| | | 45 | A-85 | 40 malla | 6 | AP-8645 | Reengastar |
| | | 45 | A-85 | 40 malla | 6 | AP-8646 | Reengastar |
| | | 40 | X | 1/30 | 6 | S-4175 | Reengastar |
| | | 40 | X | 1/30 | 6 | S-4176 | Reengastar |
| | | 40 | Y | 1/30 | 6 | S-4177 | Reengastar |
| 40 | Y | 1/30 | 6 | S-4178 | Reengastar | | |
| 40 | Z | 1/30 | 6 | S-4179 | Reengastar | | |
| NX | NQ-WL | 35 | A-65 | 35 malla | 6 | B-326 | Reengastar |
| | | 35 | A-65 | 35 malla | 6 | B-327 | Reengastar |
| | | 35 | A-65 | 35 malla | 6 | B-328 | Reengastar |
| | | 35 | A-65 | 35 malla | 6 | B-329 | Reengastar |
| | | 35 | A-75 | 35 malla | 6 | AP-8640 | Reengastar |
| | | 35 | A-75 | 35 malla | 6 | AP-8641 | Reengastar |
| | | 35 | A-75 | 35 malla | 6 | AP-8642 | Reengastar |
| | | 35 | A-75 | 35 malla | 6 | AP-8643 | Reengastar |
| | | 35 | A-75 | 35 malla | 6 | AP-8644 | Reengastar |
| | | 35 | A-75 | 35 malla | 6 | AP-8645 | Reengastar |
| | | 35 | A-85 | 40 malla | 6 | AP-4170 | Reengastar |
| | | 35 | A-85 | 40 malla | 6 | AP-4171 | Reengastar |
| | | 35 | A-85 | 40 malla | 6 | AP-4172 | Reengastar |
| | | 35 | A-85 | 40 malla | 6 | AP-4173 | Reengastar |
| | | 35 | A-85 | 40 malla | 6 | AP-4174 | Reengastar |
| | | 35 | A-85 | 40 malla | 6 | AP-4175 | Reengastar |
| | | 30 | C | 1/30 | 6 | 185557 | Reengastar |
| | | 30 | C | 1/30 | 6 | 185558 | Reengastar |
| | | 30 | C | 1/30 | 6 | 185559 | Reengastar |

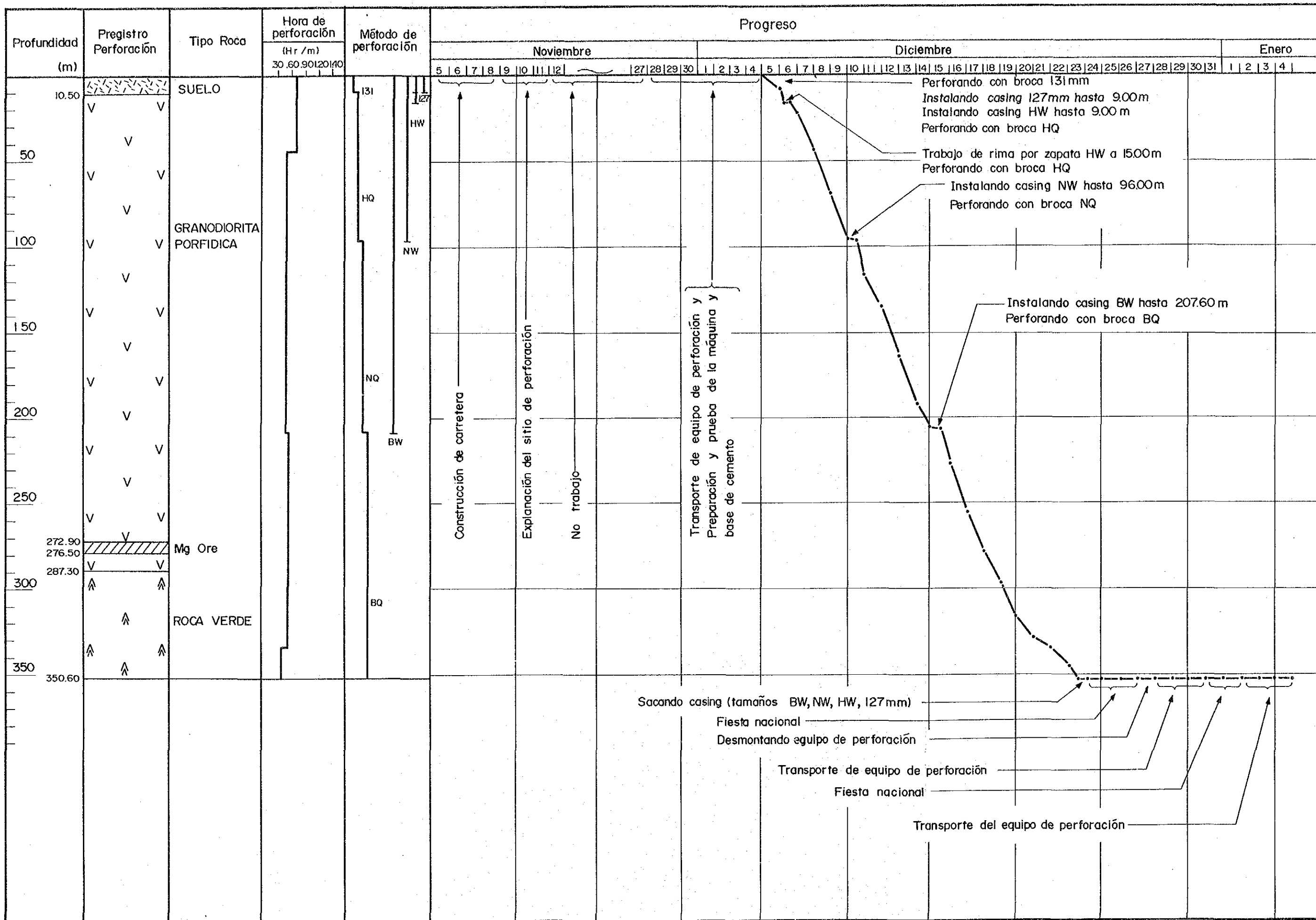
(2)

| Tamaño | Tipo | Qilates por broca | Matriz | Piedras por Qilate | Via agua | Número | Observaciones |
|--------|-------|-------------------|--------|--------------------|------------|--------|---------------|
| NX | NQ-WL | 30 | C | 1/30 | 6 | 185560 | Reengastar |
| | | 30 | B | 1/30 | 6 | 185561 | Reengastar |
| | | 30 | B | 1/30 | 6 | 185562 | Reengastar |
| | | 30 | B | 1/30 | 6 | 185563 | Reengastar |
| | | 30 | B | 1/30 | 6 | 185564 | Reengastar |
| BX | BQ-WL | 16 | J-7 | 35 malla | 6 | 275280 | Reengastar |
| | | 16 | J-7 | 35 malla | 6 | 275281 | Reengastar |
| | | 16 | J-7 | 35 malla | 6 | 275282 | Reengastar |
| | | 16 | J-7 | 35 malla | 6 | 275283 | Reengastar |
| | | 16 | J-7 | 35 malla | 6 | 275284 | Reengastar |
| | | 16 | J-7 | 35 malla | 6 | 275285 | Reengastar |
| | | 16 | J-7 | 35 malla | 6 | 275286 | Reengastar |
| | | 16 | J-7 | 35 malla | 6 | 275287 | Reengastar |
| | | 16 | J-7 | 35 malla | 6 | 275288 | Reengastar |
| | | 16 | J-7 | 35 malla | 6 | 275289 | Reengastar |
| | | 23 | HH-85 | 40 malla | 6 | 275290 | Reengastar |
| | | 23 | HH-85 | 40 malla | 6 | 275291 | Reengastar |
| | | 23 | HH-85 | 40 malla | 6 | 275292 | Reengastar |
| | | 23 | HH-85 | 40 malla | 6 | 275293 | Reengastar |
| | | 23 | HH-85 | 40 malla | 6 | 275294 | Reengastar |
| | | 23 | HH-85 | 40 malla | 6 | 275295 | Reengastar |
| | | 23 | HH-85 | 40 malla | 6 | 275296 | Reengastar |
| | | 23 | HH-85 | 40 malla | 6 | 275297 | Reengastar |
| | | 23 | HH-85 | 40 malla | 6 | 275298 | Reengastar |
| | | 23 | HH-85 | 40 malla | 6 | 275299 | Reengastar |
| | | 20 | C | 1/30 | 6 | 175408 | Reengastar |
| | | 20 | C | 1/30 | 6 | 175409 | Reengastar |
| | | 20 | C | 1/30 | 6 | 175410 | Reengastar |
| | | 20 | C | 1/30 | 6 | 175411 | Reengastar |
| | | 20 | C | 1/30 | 6 | 175412 | Reengastar |
| | | 20 | C | 1/30 | 6 | 175413 | Reengastar |
| | | 20 | C | 1/30 | 6 | 175414 | Reengastar |
| 20 | C | 1/30 | 6 | 175415 | Reengastar | | |
| 20 | C | 1/30 | 6 | 175416 | Reengastar | | |
| 20 | C | 1/30 | 6 | 175417 | Reengastar | | |

A. 3-13 REGISTRO PROGRESIVO DE PERFORACION CJM-1

| Profundidad (m) | Registro Perforación | Tipo Roca | Hora de perforación (Hr / m) | Método de perforación | Progreso | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------|----------------------|------------------------|------------------------------|-----------------------|--------------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|--|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | | | | | Agosto | | | | | | | | | | | | | Septiembre | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 4.90 | V | ZONA METEORIZADA | | 131 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 50 | V | GRANODIORITA PORFIDICA | | 127 | Perforando con broca 131 mm | | | | | | | | | | | | | Instalación de casing 127mm hasta 6.20m | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | V | | | 127 | Instalación de casing HW hasta 7.00m | | | | | | | | | | | | | Perforando con broca HQ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | V | | | HQ | Instalando casing NW hasta 102.50m | | | | | | | | | | | | | Perforando con broca NQ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 100 | V | | | NW | Domingo | | | | | | | | | | | | | Construcción de carretera | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | V | | | NW | Domingo | | | | | | | | | | | | | Explanación del sitio de perforación | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 142.00 | V | SHALE | | BW | Domingo | | | | | | | | | | | | | Transporte del equipo de perforación | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 150 | V | | | BW | Domingo | | | | | | | | | | | | | Preparación y prueba de la máquina y base de cemento | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 180.00 | V | | | NQ | Domingo | | | | | | | | | | | | | Instalación de casing BW hasta 201.50m | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 200 | V | | | BQ | Domingo | | | | | | | | | | | | | Perforando con broca BQ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 250 | V | | | BQ | Domingo | | | | | | | | | | | | | Sacando casing (tamaños BW, NW, HW, 127mm) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 300 | V | | | BQ | Domingo | | | | | | | | | | | | | Desmontando equipo de perforación | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 301.80 | V | | | BQ | Domingo | | | | | | | | | | | | | Domingo | | | | | | | | | | | | | | | | | | | | | | | | | | |

A. 3-17 REGISTRO PROGRESIVO DE PERFORACION CJM-5



A. 3-18 ANALISIS QUIMICO DE LOS NUCLEOS
DE PERFORACIONES

(1)

| Muestra No | Profundidad m | Au ppm | Ag ppm | Mo ppm | Cu ppm | Pb ppm | Zn ppm | Fe % |
|---------------|------------------|-----------|-----------|-----------|-----------|-----------|-----------|---------|
| CJM-1 | 15.0 - 16.5 | 0.14 | <1 | 6 | 121 | 7 | 24 | |
| CJM-1 | 30.0 - 31.5 | 0.20 | <1 | 3 | 153 | 8 | 22 | |
| CJM-1 | 45.0 - 46.5 | 0.08 | <1 | 3 | 30 | 8 | 34 | |
| CJM-1 | 60.0 - 61.5 | 0.10 | <1 | 3 | 27 | 8 | 30 | |
| CJM-1 | 75.0 - 76.5 | 0.24 | <1 | 3 | 39 | 8 | 22 | |
| CJM-1 | 90.0 - 91.5 | 0.24 | <1 | 3 | 26 | 8 | 23 | |
| CJM-1 | 105.0 - 106.5 | 0.20 | <1 | 4 | 234 | 6 | 20 | |
| CJM-1 | 120.0 - 121.5 | 0.10 | <1 | 4 | 35 | 8 | 11 | |
| CJM-1 | 135.0 - 136.5 | 0.08 | <1 | 5 | 107 | 7 | 24 | |
| CJM-1 | 150.0 - 151.5 | 0.12 | <1 | 12 | 283 | 8 | 10 | |
| CJM-1 | 165.0 - 166.5 | 0.08 | <1 | 22 | 99 | 10 | 12 | |
| CJM-1 | 180.0 - 181.5 | 0.34 | <1 | 3 | 47 | 6 | 20 | |
| CJM-1 | 195.0 - 196.5 | 0.46 | <1 | 3 | 252 | 4 | 25 | |
| CJM-1 | 210.0 - 211.5 | 0.08 | <1 | 2 | 94 | 6 | 25 | |
| CJM-1 | 225.0 - 226.5 | 0.12 | <1 | 2 | 381 | 4 | 27 | |
| CJM-1 | 240.0 - 241.5 | 0.12 | <1 | 3 | 387 | 3 | 23 | |
| CJM-1 | 255.0 - 256.5 | 0.20 | <1 | 16 | 256 | 5 | 28 | |
| CJM-1 | 270.0 - 271.5 | 0.18 | <1 | 5 | 181 | 9 | 24 | |
| CJM-1 | 285.0 - 286.5 | 0.14 | <1 | 2 | 262 | 6 | 25 | |
| CJM-1 | 300.0 - 301.5 | 0.20 | <1 | 2 | 135 | 7 | 22 | |
| CJM-2 | 15.0 - 16.5 | 0.08 | 1 | 5 | 253 | 11 | 20 | |
| CJM-2 | 30.0 - 31.5 | 0.10 | 1 | 10 | 362 | 13 | 23 | |
| CJM-2 | 45.0 - 46.5 | 0.06 | 1 | 6 | 237 | 9 | 22 | |
| CJM-2 | 60.0 - 61.5 | 0.08 | 1 | 9 | 186 | 8 | 23 | |
| CJM-2 | 76.0 - 76.5 | 0.22 | 2 | 26 | 740 | 44 | 36 | |
| CJM-2 | 90.0 - 91.5 | 0.10 | 1 | 18 | 348 | 11 | 22 | |
| CJM-2 | 105.0 - 106.5 | 0.06 | 1 | 15 | 294 | 10 | 19 | |
| CJM-2 | 120.0 - 121.5 | 0.12 | 1 | 22 | 660 | 16 | 10 | |
| CJM-2 | 135.0 - 136.5 | 0.30 | 2 | 37 | 1440 | 9 | 18 | |
| CJM-2 | 150.0 - 151.5 | 0.10 | 1 | 4 | 294 | 7 | 19 | |
| CJM-2 | 165.0 - 166.5 | 0.08 | 1 | 6 | 148 | 6 | 18 | |
| CJM-2 | 180.0 - 181.5 | 0.22 | 1 | 48 | 157 | 11 | 18 | |

(2)

| Muestra No | Profundidad m | Au ppm | Ag ppm | Mo ppm | Cu ppm | Pb ppm | Zn ppm | Fe % |
|------------|---------------|--------|--------|--------|--------|--------|--------|------|
| CJM-2 | 195.0 - 196.5 | 0.28 | 1 | 15 | 460 | 11 | 18 | |
| CJM-2 | 210.0 - 211.5 | 0.12 | 1 | 4 | 367 | 7 | 15 | |
| CJM-2 | 225.0 - 226.5 | 0.10 | 1 | 3 | 276 | 6 | 16 | |
| CJM-2 | 240.0 - 241.5 | 0.08 | < 1 | 7 | 312 | 12 | 17 | |
| CJM-2 | 255.0 - 256.5 | 0.08 | 1 | 31 | 420 | 8 | 14 | |
| CJM-2 | 270.0 - 271.5 | 0.12 | 1 | 9 | 261 | 10 | 18 | |
| CJM-2 | 285.0 - 286.5 | 0.08 | 1 | 2 | 323 | 6 | 16 | |
| CJM-2 | 300.0 - 301.5 | 0.14 | 1 | 2 | 188 | 9 | 28 | |
| CJM-2 | 315.0 - 316.5 | 0.10 | 1 | 7 | 268 | 7 | 16 | |
| CJM-2 | 330.0 - 331.5 | 0.08 | 1 | 5 | 540 | 7 | 14 | |
| CJM-2 | 345.0 - 346.5 | 0.06 | 1 | 6 | 248 | 12 | 18 | |
| CJM-3 | 15.0 - 16.6 | 0.06 | 1 | 2 | 61 | 7 | 24 | |
| CJM-3 | 28.5 - 30.0 | 0.01 | 1 | 3 | 126 | 9 | 18 | |
| CJM-3 | 46.5 - 48.0 | 0.14 | 3 | 3 | 910 | 8 | 21 | |
| CJM-3 | 58.5 - 60.0 | 0.01 | 1 | 2 | 108 | 8 | 36 | 20 |
| CJM-3 | 75.0 - 76.5 | 0.16 | 1 | 14 | 210 | 12 | 23 | |
| CJM-3 | 90.0 - 91.5 | 0.08 | 1 | 9 | 340 | 7 | 17 | |
| CJM-3 | 104.0 - 105.5 | 0.10 | 1 | 11 | 370 | 6 | 15 | |
| CJM-3 | 120.0 - 121.5 | 0.04 | < 1 | 5 | 149 | 6 | 11 | |
| CJM-3 | 135.0 - 136.5 | 0.06 | 1 | 13 | 375 | 62 | 182 | |
| CJM-3 | 150.0 - 151.5 | 0.12 | 1 | 6 | 250 | 8 | 15 | |
| CJM-3 | 165.0 - 166.5 | 0.01 | 2 | 7 | 550 | 9 | 15 | |
| CJM-3 | 180.0 - 181.5 | 0.02 | 1 | 11 | 270 | 10 | 17 | |
| CJM-3 | 195.0 - 196.5 | 0.01 | 1 | 6 | 280 | 8 | 13 | |
| CJM-3 | 211.5 - 213.0 | 0.06 | 1 | 3 | 123 | 10 | 22 | |
| CJM-3 | 225.7 - 226.9 | 0.42 | 3 | 6 | 180 | 42 | 58 | |
| CJM-3 | 240.0 - 241.5 | 0.96 | 1 | 9 | 290 | 7 | 11 | |
| CJM-3 | 255.0 - 256.5 | 0.10 | 1 | 7 | 480 | 10 | 23 | |
| CJM-3 | 281.0 - 281.9 | 0.20 | 2 | 6 | 59 | 25 | 28 | |
| CJM-3 | 291.0 - 292.5 | 0.06 | 1 | 6 | 250 | 9 | 15 | |
| CJM-4 | 15.0 - 16.5 | 0.045 | 0.4 | 1 | 170 | 1 | 19 | |
| CJM-4 | 30.0 - 31.5 | 0.060 | 0.7 | 1 | 405 | 2 | 14 | |
| CJM-4 | 45.0 - 46.5 | 0.070 | 0.5 | 1 | 157 | 1 | 12 | |
| CJM-4 | 60.0 - 61.5 | 0.335 | 0.4 | 1 | 106 | 1 | 22 | |

(3)

| Muestra No | Profundidad m | Au ppm | Ag ppm | Mo ppm | Cu ppm | Pb ppm | Zn ppm | Fe % |
|------------|---------------|--------|--------|--------|--------|--------|--------|------|
| CJM-4 | 75.0 - 76.5 | 0.135 | 0.4 | 2 | 91 | 1 | 21 | |
| CJM-4 | 90.0 - 91.5 | 0.030 | 0.1 | 1 | 56 | 1 | 27 | |
| CJM-4 | 105.0 - 106.5 | 0.040 | 0.1 | 1 | 81 | 1 | 22 | |
| CJM-4 | 120.0 - 121.5 | 0.320 | 0.2 | 1 | 77 | 1 | 18 | |
| CJM-4 | 135.0 - 136.5 | 0.220 | 0.1 | 1 | 71 | 1 | 23 | |
| CJM-4 | 150.0 - 151.5 | 0.125 | 0.4 | 1 | 177 | 1 | 27 | |
| CJM-4 | 165.0 - 166.5 | 0.100 | 0.1 | 5 | 147 | 1 | 12 | |
| CJM-4 | 178.5 - 180.0 | 0.130 | 0.3 | 8 | 510 | 1 | 11 | |
| CJM-4 | 195.0 - 196.5 | 0.035 | 0.1 | 1 | 137 | 1 | 10 | |
| CJM-4 | 210.0 - 211.5 | 0.080 | 0.1 | 8 | 271 | 22 | 11 | |
| CJM-4 | 225.0 - 226.5 | 0.065 | 0.1 | 8 | 219 | 1 | 12 | |
| CJM-4 | 240.0 - 241.5 | 0.030 | 0.1 | 6 | 231 | 1 | 13 | |
| CJM-4 | 255.0 - 256.5 | 0.015 | 0.1 | 1 | 200 | 1 | 12 | |
| CJM-4 | 270.0 - 271.5 | 0.055 | 0.1 | 2 | 385 | 1 | 10 | |
| CJM-4 | 285.0 - 286.5 | 0.030 | 0.3 | 1 | 500 | 1 | 16 | |
| CJM-4 | 300.0 - 301.5 | 0.140 | 0.9 | 1 | 720 | 1 | 20 | |
| CJM-4 | 315.0 - 316.5 | 0.025 | 0.7 | 6 | 705 | 1 | 25 | |
| CJM-4 | 330.0 - 331.5 | <0.005 | 0.1 | 1 | 90 | 1 | 25 | |
| CJM-5 | 15.0 - 16.5 | 0.020 | 0.1 | 2 | 47 | 1 | 19 | |
| CJM-5 | 30.0 - 31.5 | 0.040 | 0.1 | 2 | 45 | 1 | 19 | |
| CJM-5 | 45.0 - 46.5 | 0.115 | 0.9 | 18 | 620 | 1 | 18 | |
| CJM-5 | 60.0 - 61.5 | 0.060 | 0.4 | 4 | 386 | 1 | 70 | |
| CJM-5 | 75.0 - 76.5 | 0.045 | 0.5 | 10 | 370 | 1 | 21 | |
| CJM-5 | 90.0 - 91.5 | 0.060 | 0.5 | 4 | 372 | 1 | 12 | |
| CJM-5 | 105.0 - 106.5 | 0.040 | 0.1 | 1 | 161 | 1 | 16 | |
| CJM-5 | 120.0 - 121.5 | 0.070 | 0.3 | 5 | 256 | 1 | 13 | |
| CJM-5 | 135.0 - 136.5 | 0.105 | 1.1 | 5 | 400 | 1 | 28 | |
| CJM-5 | 150.0 - 151.5 | 0.075 | 0.2 | 1 | 345 | 1 | 21 | |
| CJM-5 | 165.0 - 166.5 | 0.035 | 0.1 | 14 | 188 | 1 | 15 | |
| CJM-5 | 180.0 - 181.5 | 0.030 | 0.2 | 5 | 615 | 1 | 13 | |
| CJM-5 | 195.0 - 196.5 | 0.110 | 0.3 | 24 | 780 | 1 | 12 | |
| CJM-5 | 210.0 - 211.5 | 0.085 | 0.3 | 6 | 600 | 1 | 14 | |
| CJM-5 | 225.0 - 226.5 | 0.040 | 0.2 | 5 | 400 | 1 | 12 | |
| CJM-5 | 240.0 - 241.5 | 0.080 | 0.1 | 12 | 380 | 1 | 15 | |

(4)

| Muestra No | Profundidad m | Au ppm | Ag ppm | Mo ppm | Cu ppm | Pb ppm | Zn ppm | Fe % |
|------------|---------------|--------|--------|--------|--------|--------|--------|------|
| CJM-5 | 255.0 - 256.5 | 0.055 | 0.2 | 11 | 385 | 1 | 19 | |
| CJM-5 | 270.0 - 271.5 | 1.030 | 0.3 | 11 | 375 | 1 | 24 | |
| CJM-5 | 285.0 - 286.5 | 0.070 | 0.1 | 6 | 296 | 1 | 17 | |
| CJM-5 | 300.0 - 301.5 | 0.135 | 0.8 | 51 | 1450 | 1 | 20 | |
| CJM-5 | 315.0 - 316.5 | 0.020 | 0.1 | 6 | 205 | 1 | 18 | |
| CJM-5 | 330.0 - 331.5 | 0.015 | 0.2 | 150 | 179 | 19 | 18 | |
| CJM-5 | 345.0 - 346.5 | 0.005 | 0.1 | 45 | 103 | 2 | 12 | |

Nota: CJM-1, CJM-2, CJM-3 estan analizado en el laboratorio de INGEOMINAS y CJM-4, CJM-5 estan analizado en Chemex Lab. Ltd, Canada.

A. 3-19(1) REUSLTADOS DE LOS ESTUDIOS PETROGRAFICOS DE LAS SECCIONES RESUL (1)

| No Muestra | Coordenadas | Cristalinidad, textura, estructura | Minerales | Clasificación | Nota |
|-------------------------|---------------------------|------------------------------------|---|------------------------|--|
| CJM-1 66.8 - 66.9m | X= 732,720 Y=1,027,560 | Porfirítica | Principales : cuarzo, ortoclasa y plagioclasa Accesorios : carbonata y apatita Matriz : mezcla de cuarzo, ortoclasa y plagioclasa Alteración : carbonata, clorita y cuarzo | Pórfido granodiorítico | Alteración propilitica carbonatación y cloritación |
| CJM-1 98.6 - 98.7m | X= 732,720 Y=1,027,560 | Porfirítica | Principales : biotita, cuarzo y plagioclasa Accesorios : minerales opacos, apatita y circon Matriz : mezcla de cuarzo, ortoclasa, plagioclasa y minerales opacos Alteración : biotita, carbonata y clorita | Pórfido granodiorítico | Alteración propilitica |
| CJM-1 148.0 - 148.1m | X= 732,720 Y=1,027,560 | | Principales : cuarzo, ortoclasa y plagioclasa Accesorios : minerales opacos y circon Alteración : clorita, sericita, cuarzo y carbonato | Arenisca | Alteración propilitica |
| CJM-1 175.8 - 176.0m | X= 732,720 Y=1,027,560 | Porfirítica | Principales : biotita y plagioclasa Accesorios : minerales opacos y apatita Matriz : cuarzo, plagioclasa y ortoclasa Alteración : biotita, cuarzo, clorita, carbonata, epidota y sericita | Pórfido granítico | Silicificación y biotitización |

(2)

| No Muestra | Coordenadas | Cristalinidad, textura, estructura | Minerales | Clasificación | Nota |
|-------------------------|---------------------------|------------------------------------|---|------------------------|---|
| CJM-1 232.5 - 232.6m | X= 732,720 Y=1,027,560 | Porfirítica | Principales : biotita, plagioclasa y cuarzo Accesorios : ortoclasa, apatita, circon y minerales opacos Matriz : mezcla de cuarzo, ortoclasa y plagioclasa Alteración : carbonata, sericita, clorita, biotita, cuarzo y epidota | Pórfido granodiorítico | Carbonatación, biotitización |
| CJM-1 260.9 - 261.0m | X= 732,720 Y=1,027,560 | Porfirítica | Principales : biotita, plagioclasa, cuarzo Accesorios : ortoclasa, apatita, circon y minerales opacos Matriz : mezcla de cuarzo, ortoclasa y plagioclasa Alteración : sericita, carbonata, clorita, epidota y biotita | Pórfido granodiorítico | Sericitización carbonatada y biotitización débil |
| CJM-1 298.4 - 298.5m | X= 732,720 Y=1,027,560 | Porfirítica | Principales : biotita, cuarzo, plagioclasa y ortoclasa Accesorios : apatita, circon y minerales opacos Matriz : mezcla de cuarzo, ortoclasa y plagioclasa Alteración : carbonata, cuarzo y clorita | Pórfido granodiorítico | Alteración débiles de carbonatación, cloritización y silicificación |

(3)

| No Muestra | Coordenadas | Cristalinidad, textura, estructura | Minerales | Clasificación | Nota |
|-----------------------|---------------------------|------------------------------------|--|------------------------|--|
| CJM-2 39.6 - 39.8m | X= 733,000 Y=1,027,080 | Porfirítica | Principales : biotita, plagioclasa y cuarzo Accesorios : circon y minerales opacos Matriz : mezcla de cuarzo y plagioclasa Alteración : cuarzo, biotita, epidota, y clorita | Granodiorita | Fuerte alteración de silicificación y biotitización |
| CJM-2 53.1 - 53.2m | X= 733,000 Y=1,027,080 | Porfirítica | Principales : hornblenda, plagioclasa y cuarzo Accesorios : circon y minerales opacos Matriz : mezcla de cuarzo y plagioclasa Alteración : carbonata, biotita, epidota, cuarzo y clorita | Granodiorita | Carbonatación común. Alteraciones debiles de silicificación, epidotización y cloritización |
| CJM-2 94.2 - 94.4m | X= 733,000 Y=1,027,080 | Porfirítica | Principales : hornblenda, biotita plagioclasa y cuarzo Accesorios : circon, esfena y minerales opacos Matriz : mezcla de cuarzo y plagioclasa Alteración : biotita, cuarzo, epidota clorita y carbonata | Pórfido granodiorítico | Biotitización fuerte con silicificación, epidotización y cloritización |

(4)

| No Muestra | Coordenadas | Cristalinidad, textura, estructura | Minerales | Clasificación | Nota |
|-------------------------|---------------------------|------------------------------------|---|------------------------|--|
| CJM-2 248.2 - 248.3m | X= 733,000 Y=1,027,080 | Porfirítica | Principales : hornblenda, biotita, plagioclasa y cuarzo Accesorios : apatita, esfena y minerales opacos Matriz : mezcla de cuarzo y plagioclasa Alteración : cuarzo, plagioclasa | Pórfido granodiorítico | Biotitización fuerte con silicificación, epidotización y carbonatación |
| CJM-2 299.9 - 300.0m | X= 733,000 Y=1,027,080 | Porfirítica | Principales : hornblenda, biotita plagioclasa y cuarzo Accesorios : minerales opacos, esfena y apatita Matriz : mezcla de cuarzo y plagioclasa Alteración : biotita, carbonata clorita, epidota y cuarzo | Pórfido granodiorítico | Alteración de biotitización y carbonatación |
| CJM-2 348.4 - 348.5m | X= 733,000 Y=1,027,080 | Porfirítica | Principales : biotita, plagioclasa cuarzo y ortoclasa Accesorios : minerales opacos, circon y apatita Matriz : mezcla de cuarzo, plagioclasa y ortoclasa Alteración : carbonata, cuarzo sericita y clorita | Pórfido granodiorítico | Carbonatación, silicificación y sericitización |

(5)

| No Muestra | Coordenadas | Cristalinidad, textura, estructura | Minerales | Clasificación | Nota |
|-----------------------|---------------------------|------------------------------------|--|---------------|--|
| CJM-3 25.5 - 25.6m | X= 733,030 Y=1,026,480 | textura granular y hipidomorfica | Principales : plagioclasa y cuarzo Accesorios : apatita, circon y minerales opacos Matriz : mezcla de plagioclasa y cuarzo Alteración : cuarzo, biotita, carbonata, clorita y epidota | Pórfido | Alteracion avanzada de silicificación, biotitización, carbonatación, cloritización y epidotización |
| CJM-3 148.0m | X= 733,030 Y=1,026,480 | | Principales : cuarzo y plagioclasa minerales opacos Alteración : cuarzo, carbonata, clorita, ortoclase y sericita | Roca alterada | textura original esta enmascarada con alteración de silicificación, carbonatación y cloritización |
| CJM-3 296.3m | X= 733,030 Y=1,026,480 | | Principales : hornblenda, plagioclasa y minerales opacos Alteración : cuarzo, carbonata, clorita y epidota | Roca alterada | textura original esta cambiada completamente |

A. 3-19(2) RESULTADOS DE LOS ESTUDIOS DE LAS SECCIONES PULIDAS (1)

| No muestra | CJM-1 12.2 - 12.3m | | CJM-1 148.0 - 148.1m | | CJM-1 175.8 - 176.0m | | CJM-1 298.4 - 298.5m | |
|------------------------|---|-----------|---|-----------|--|-----------|--|-----------|
| Tipo de mineralización | diseminación | | diseminación | | diseminación | | diseminación | |
| Localidad coordenadas | Piedra Sentada X=732,720 Y=1,027,560 | | Piedra Sentada X=732,720 Y=1,027,560 | | Piedra Sentada X=732,720 Y=1,027,560 | | Piedra Sentada X=732,720 Y=1,027,560 | |
| Minerales | Sim-bolo | Canti-dad | Descripción | Canti-dad | Descripción | Canti-dad | Descripción | Canti-dad |
| calcopirita | Cp | ++ | diseminadas, contorno de Py | ++ | diseminadas, contorno de Py | + | diseminadas, contorno de Py | ++ |
| bornita | Bn | | | | | | | |
| cubanita | Cub | + | coexiste con Cp | + | coexiste con Cp | | | |
| tetraedrita | Td | | | | | | | |
| burnonita | Bo | + | coexiste con Cp | | | | | |
| esfalerita | Sp | + | grano fino en Py | + | grano fine en Py | | | |
| molibdenita | Mo | | | | | | | |
| pirita | Py | ++ | diseminadas, en cristales anhedral - euhedrales | ++++ | en cristales anhedral - euhedrales, agregación y diseminadas | +++ | en cristales anhedral - euhedrales, agregación y diseminadas | ++ |
| pirotita | Po | + | grano fin en Py | + | coexiste con Cp en Py cristales | + | grano fino en Py | + |
| magnetita | Mag | | | | | + | grano fino en Py | |
| hematita | Hem | | | | | + | grano fino en Py | |
| millerita | Ml | | | + | coexiste con Cp | | | |

+++ ... Abundante ++ ... Medio ++ ... Escaso + ... Esporádico

(2)

| No muestra | CJM-2 39.6 - 39.8m | | CJM-2 156.4 - 156.5m | | CJM-2 190.0 - 190.1m | | CJM-2 248.2 - 248.3m | |
|------------------------|---|-----------|--|-----------|---|-----------|---|-----------|
| Tipo de mineralización | diseminación | | diseminación | | diseminación | | diseminación | |
| Localidad coordenadas | Piedra Sentada X=733,000 Y=1,027,080 | | Piedra Sentada X=733,000 Y=1,027,080 | | Piedra Sentada X=733,000 Y=1,027,080 | | Piedra Sentada X=733,000 Y=1,027,080 | |
| Minerales | Sim-bolo | Canti-dad | Descripción | Canti-dad | Descripción | Canti-dad | Descripción | Canti-dad |
| calcopirita | Cp | ++ | diseminadas, | ++ | diseminadas, | ++ | diseminadas | ++ |
| bornita | Bn | + | coexiste con Cp | + | coexiste con Cp | + | coexiste con Cp | + |
| cubanita | Cub | | | | | | | |
| tetraedrita | Td | | | | | | | |
| burnonita | Bo | | | | | | | |
| esfalerita | Sp | | | | | | | |
| molibdenita | Mo | + | foliado, diseminadas en cristales | ++ | foliado, diseminadas anhedrales, venillas y diseminadas | ++ | foliado, diseminadas anhedrales, diseminadas | ++ |
| pirita | Py | ++ | anhedrales - anhedrales, venillas y diseminadas | ++ | anhedrales, venillas, diseminadas | ++ | anhedrales, diseminadas | ++ |
| pirotita | Po | + | grano fino en Py | + | | + | coexiste con Cp en cristales de Py | + |
| magnetita | Mag | ++ | en forma de acicular tabular reemplazo cristales de Mag | ++ | diseminadas | + | grano fino en cristales de Py | |
| hematita | Hem | ++ | | ++ | reemplazo cristales de Mag | | | |

+++ ... Abundante ++ ... Medio + ... Escaso + ... Esporádico

(3)

| No muestra | CJM-3 25.5 - 25.6m | | CJM-3 148.0m | | CJM-3 281.2m | |
|------------------------|---|-----------|---|-----------|--|--|
| Tipo de mineralización | diseminación | | diseminación | | diseminación | |
| Localidad coordenadas | Piedra Sentada X=733,030 Y=1,026,480 | | Piedra Sentada X=733,030 Y=1,026,480 | | Piedra Sentada X=733,030 Y=1,024,480 | |
| Minerales | Sim-bolo | Canti-dad | Descripción | Canti-dad | Descripción | Descripción |
| calcopirita | Cp | + | diseminadas | ++ | diseminadas | diseminadas |
| bornita | Bn | | | | | |
| cubanita | Cub | | | | | |
| tetraedrita | Td | | | | | |
| burnonita | Bo | | | | | |
| esfalerita | Sp | | | | | |
| molibdenita | Mo | ++ | diseminadas | ++ | en cristales - anhedrales - euhedrales, diseminadas | en cristales - anhedrales - euhedrales, venilla, diseminadas |
| pirita | Py | | | | | grano fino en cristales de Py |
| pirotita | Po | | | + | grano fino en cristales de Py | |
| magnetita | Mag | +++ | agregación, diseminadas | | | |
| hematita | Hem | ++ | reemplazo cristales de Mag | | | |
| millerita | Ml | | | | | |

+++ ... Abundante ++ ... Medio ++ ... Escaso + ... Esparádico

A. 3-20 LISTA DEL RESULTADOS DE DIFRACCION RAYOS X

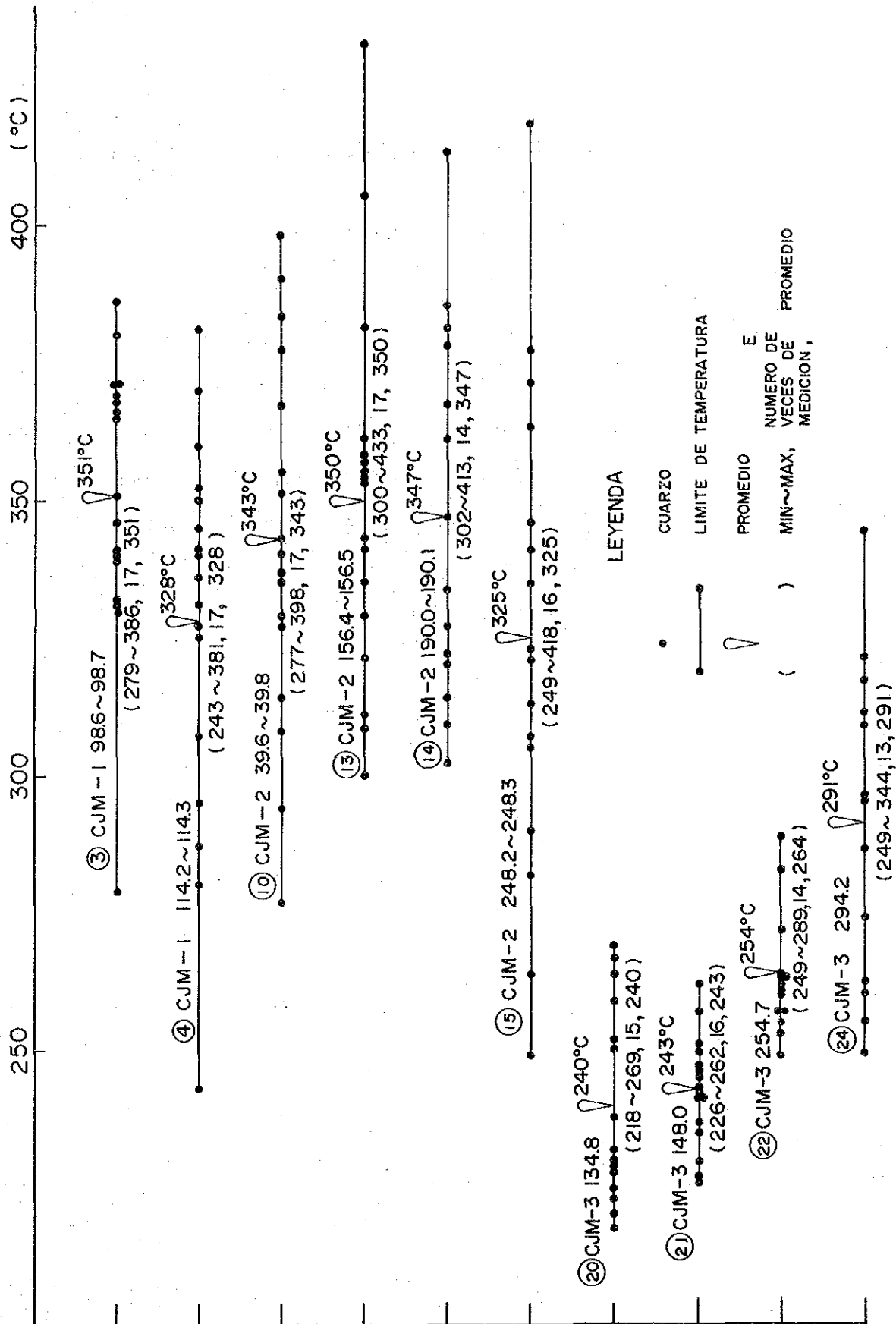
| muestra | mineral (inglés) y español | Cuarzo (Quartz) | Calcita (Calcite) | Ankerita (Ankerite) | Siderita (Siderite) | Plagioclasa (Plagioclase) | Feldespato-K (K-feldspar) | Biotita (Biotite) | Hornblenda (Hornblende) | Sericita (Sericate) | Clorita (Chlorite) | Pirita (Pyrite) |
|---------|----------------------------------|--------------------|----------------------|------------------------|------------------------|------------------------------|------------------------------|----------------------|----------------------------|------------------------|-----------------------|--------------------|
| CJM-1 | 98.6 - 98.7 | ++++ | | | | +++ | | ++ | | | ++ | ++ |
| CJM-1 | 175.8 - 176.0 | +++ | | | | +++ | | +++ | | | ++ | ++ |
| CJM-1 | 298.4 - 298.5 | ++++ | | | | +++ | ++ | | | | + | |
| CJM-2 | 39.6 - 39.8 | +++ | | | | +++ | | +++ | | | + | |
| CJM-2 | 156.4 - 156.5 | +++ | | | | ++++ | | ++ | | | + | |
| CJM-2 | 299.9 - 300.0 | +++ | | | | +++ | + | ++ | ++ | | + | + |
| CJM-2 | 348.4 - 348.5 | +++ | | | | +++ | ++ | ++ | | | + | + |
| CJM-3 | 25.5 - 25.6 | ++++ | | | | +++ | | ++ | + | | ++ | + |
| CJM-3 | 148.0 | ++++ | ++ | | | ++ | ++ | | | | ++ | + |
| CJM-3 | 281.2 | +++ | | ++ | + | ++ | | | | ++ | ++ | + |

++++ Abundante +++ Medio ++ Escaso + Esporádico

A. 3-21 VALOR DE MEDIDA DE TEMPERATURA DE TEMPERATURA HOMOGENIZACION

| MUESTRA (m) | MINERAL MEDIDO | NUMERO DE VECES DE MEDICION | MEDICION DE TEMPERATURA (°C) | LIMITE DE TEMPERATURA (°C) | PROMEDIO (°C) | NOTA |
|---------------------|----------------|-----------------------------|---|----------------------------|---------------|-------------------------------|
| CJM-1 98.6 ~ 98.7 | CUARZO | 17 | 332,340,346,351,365,371,380,279,330,339,341,386,331,366,368,369,371 | 279 ~ 386 | 351 | CUARZO BLANCO DE GRANO FINO |
| CJM-1 114.2 ~ 114.3 | CUARZO | 17 | 287,295,307,327,331,243,336,340,341,345,280,325,350,352,360,370,381 | 243 ~ 381 | 328 | CUARZO BLANCO DE GRANO MEDIO |
| CJM-2 39.6 ~ 39.8 | CUARZO | 17 | 277,314,335,340,355,367,376,383,329,337,343,351,390,294,308,327,398 | 277 ~ 398 | 343 | CUARZO BLANCO DE GRANO MEDIO |
| CJM-2 156.4 ~ 156.5 | CUARZO | 17 | 308,321,329,335,343,311,353,354,355,357,358,361,300,341,381,405,433 | 300 ~ 433 | 350 | CUARZO BLANCO DE GRANO MEDIO |
| CJM-2 190.0 ~ 190.1 | CUARZO | 14 | 314,327,367,385,302,309,347,413,320,322,334,361,378,381 | 302 ~ 413 | 347 | CUARZO BLANCO DE GRANO MEDIO |
| CJM-2 248.2 ~ 248.3 | CUARZO | 16 | 305,313,371,418,307,321,335,341,346,377,249,264,282,290,323,363 | 249 ~ 418 | 325 | CUARZO BLANCO DE GRANO MEDIO |
| CJM-3 134.8 | CUARZO | 15 | 229,232,238,252,250,259,264,267,269,218,220,223,225,228,230 | 218 ~ 269 | 240 | CUARZO BLANCO DE GRANO FINO |
| CJM-3 148.0 | CUARZO | 16 | 227,242,247,250,262,226,230,235,241,243,245,237,241,246,251,257 | 226 ~ 262 | 243 | CUARZO BLANCO DE GRANO GRUEZO |
| CJM-3 254.7 | CUARZO | 14 | 257,260,262,263,249,253,255,261,264,257,264,272,283,289 | 249 ~ 289 | 264 | CUARZO BLANCO DE GRANO MEDIO |
| CJM-3 294.2 | CUARZO | 13 | 262,296,311,317,344,249,255,260,274,286,295,309,321 | 249 ~ 344 | 291 | CUARZO BLANCO DE GRANO MEDIO |

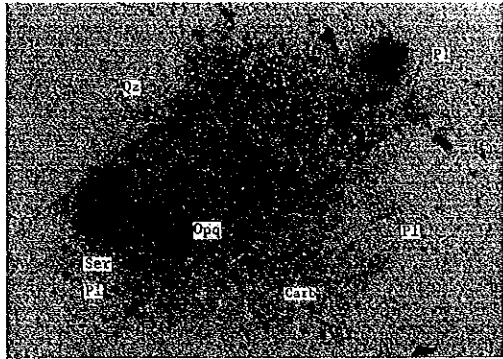
A. 3-22 TEMPERATURA HOMOGENIZACION DE INCLUSION FLUIDA DE MINERAL CUARZO



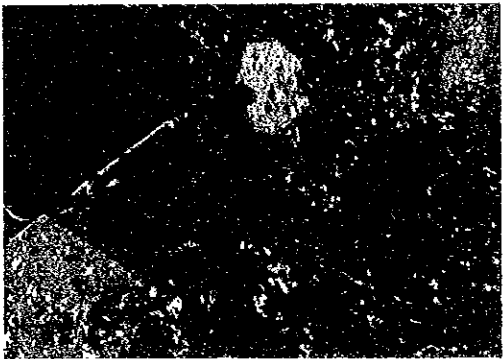
A. 3-23(1) MICROFOTOGRAFIAS DE LAS SECCIONES

ABREVIACION

| | | | |
|------------|-------------|-------------|---------------|
| Qz ; 石 英 | cuarzo | Carb; 炭酸塩鉱物 | carbonata |
| Pl ; 斜 長 石 | plagioclasa | Ser ; 絹 雲 母 | sericita |
| Kf ; カリ長石 | ortoclasa | Chl ; 緑 泥 石 | clorita |
| Bi ; 黒 雲 母 | biotita | Ep ; 緑れん石 | epidota |
| Hb ; 普通角閃石 | hornblende | Amp ; 角 閃 石 | anfibolita |
| Ap ; 磷 灰 石 | apatita | Opq ; 不透明鉱物 | mineral opaco |
| Zr ; シルコン | circon | | |



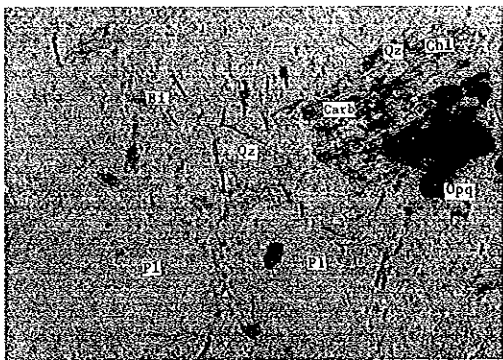
nicos abiertos 0 0.5mm



nicos cruzados 0 0.5mm

CJM-1 66.8 ~ 66.9 m

La textura porfídica se asienta con la presencia de fenocristales de cuarzo y plagioclasa. Minerales de sericita y carbonato estan esparcidos en todo la roca.



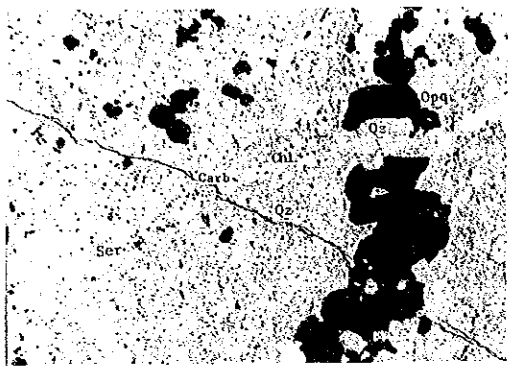
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nicos cruzados 0 0.5mm

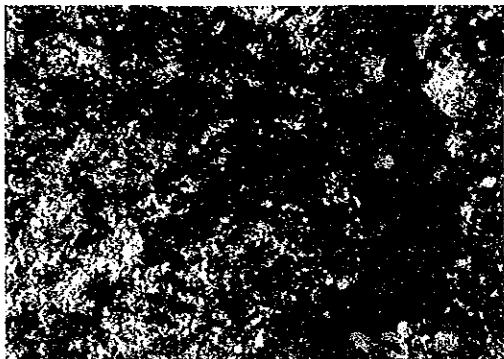
CJM-1 98.6 ~ 98.7 m

Se muestran evidentes texturas porfídicas. Los fenocristales y la matriz son emplazados por cristales diminutos secundarios de cuarzo, clorita, biotita y calcita. El mineral opaco puede ser calcita.



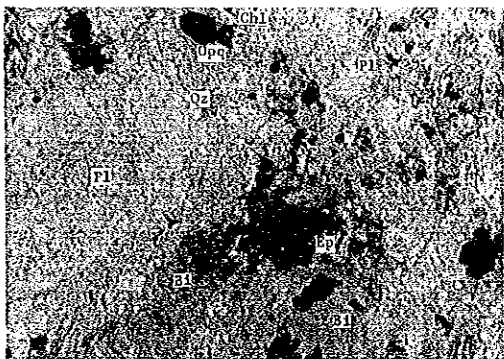
nicoles abiertos

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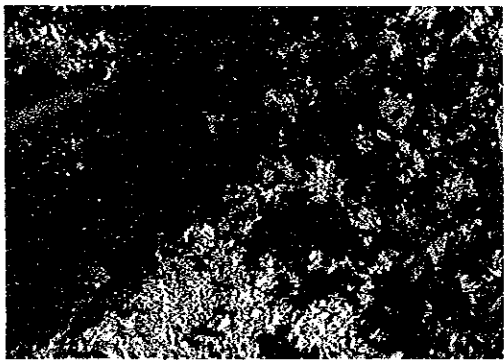
nicoles cruzados

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nicoles abiertos

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nicoles cruzados

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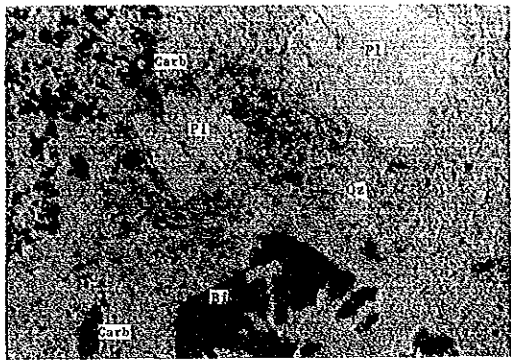
CJM-1 148.0 ~ 148.1 m

Se observa alteración fuerte por silicificación, sericitización y cloritización.

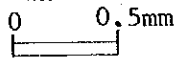
Se reconoce una pequeña venilla de carbonato.

CJM-1 175.8 ~ 176.0 m

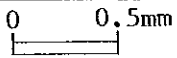
Se observa textura porfídica y una matriz de grano ligeramente grueso. Se observa fuerte biotización acompañada en menor proporción de silicificación, cloritización y epidotización.



nicoles abiertos



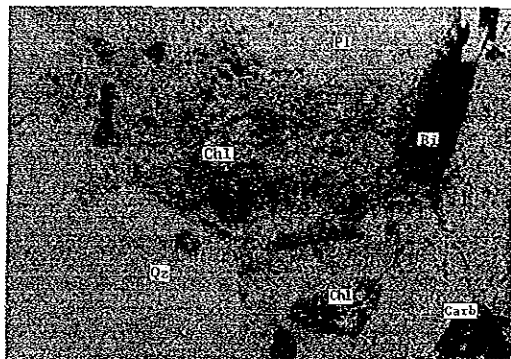
nicoles cruzados



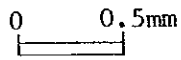
CJM-1 232.5 ~ 232.6 m

Textura porfídica
caracterizada por feno-
cristales euhedrales
de biotita.

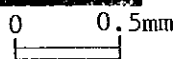
La alteración esta
representada por car-
bonitización.



nicoles abiertos



nicoles cruzados



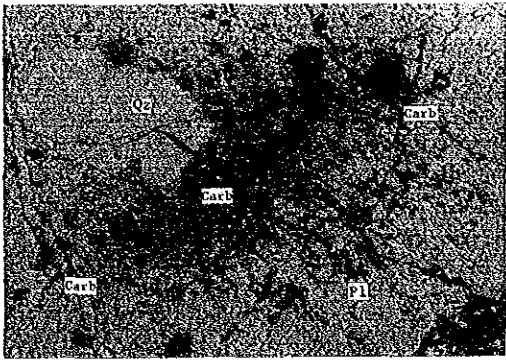
CJM-1 260.9 ~ 261.0 m

Textura porfídica muy
notorio.

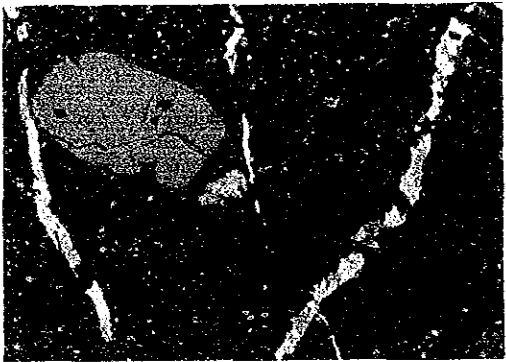
Cloritización y carbo-
nitización estan muy
avanzada en la matriz.

CJM-1 298.4 ~ 298.5 m

Textura porfídica.
Fenocristales de cuarzo
corroidos y fractuados
son muy notorios así
como en textura fractuada.



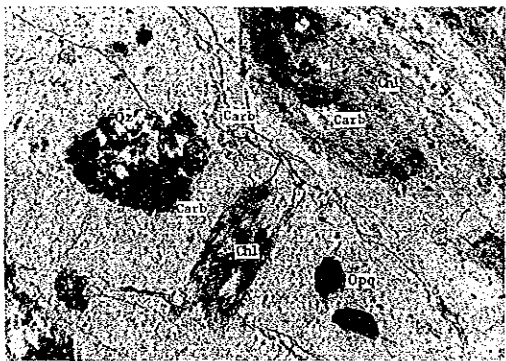
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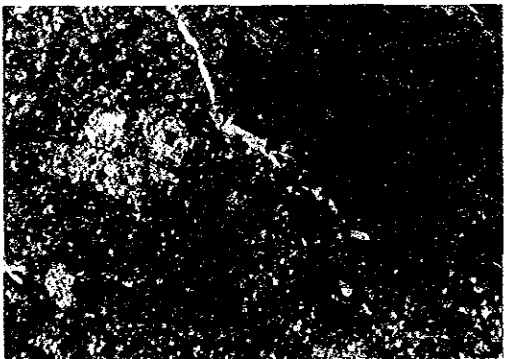
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CJM-1 298.4 ~ 298.5 m

Se muestra alteración
por silicificación,
cloritización y carboni-
tización.



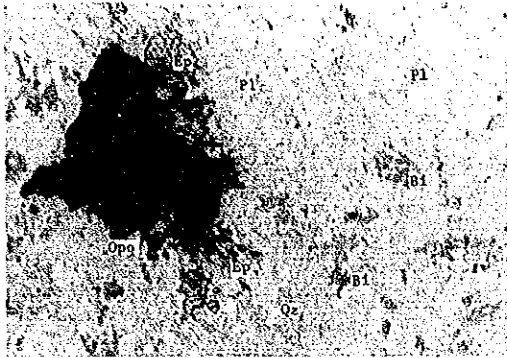
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nicoles cruzados 0 0.5mm

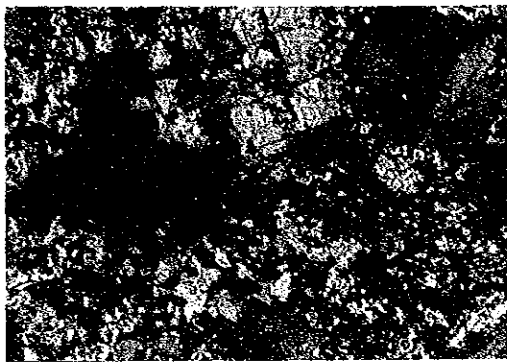
CJM-2 39.6 ~ 39.8 m

Se observa alteración por silicificación, epidotización y biotización.



nicoles abiertos

0 0.5mm

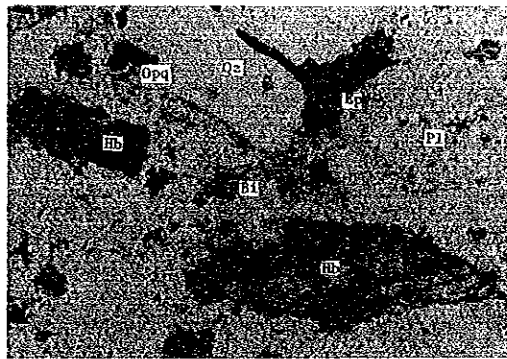


nicoles cruzados

0 0.5mm

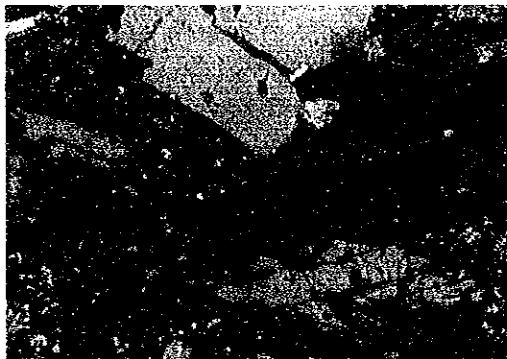
CJM-2 53.1 ~ 53.2 m

Textura porfídica característica. Se observan cristales euhedrales de hornblenda.



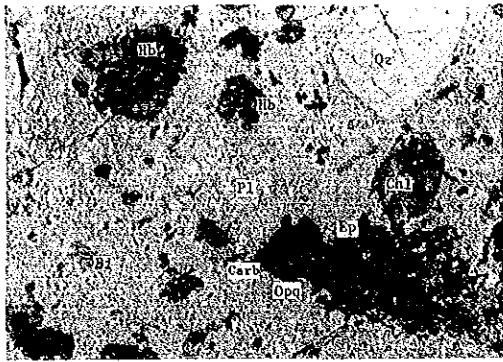
nicoles abiertos

0 0.5mm



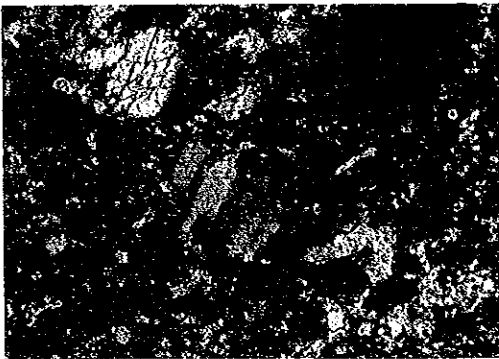
nicoles cruzados

0 0.5mm



nicoles abiertos

0 0.5mm

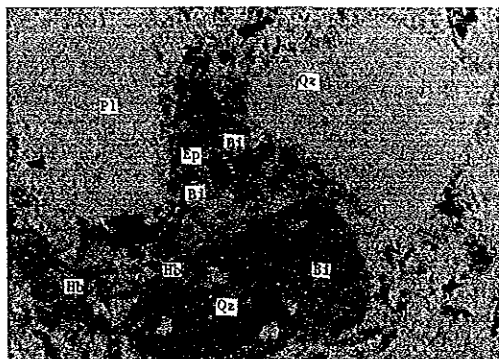


nicoles cruzados

0 0.5mm

CJM-2 94.2 ~ 94.4 m

La roca sufrió alteración por biotización cloritización y epidotización.

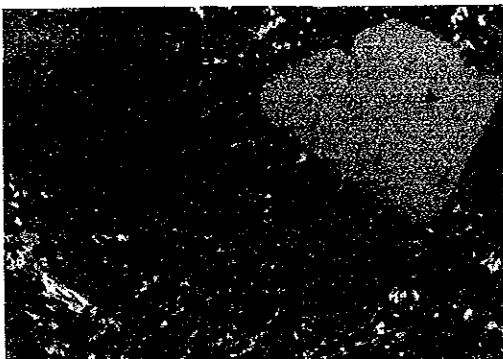


nicoles abiertos

0 0.5mm

CJM-2 248.2 ~ 248.3 m

Textura porfídica muy marcada.
La roca sufrió silicificación y epidotización.

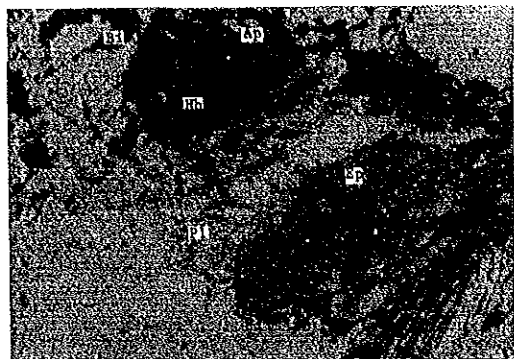


nicoles cruzados

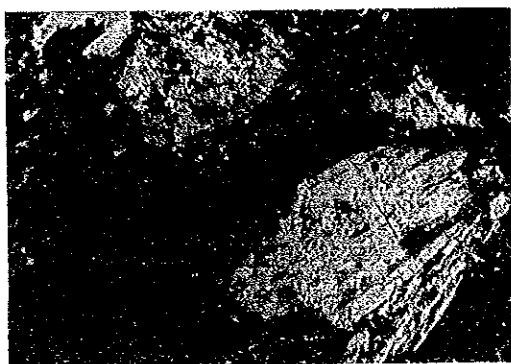
0 0.5mm

CJM-2 248.2 ~ 248.3 m

La roca sufrió biotitización y epidotización.



nicoles abiertos 0 0.5mm

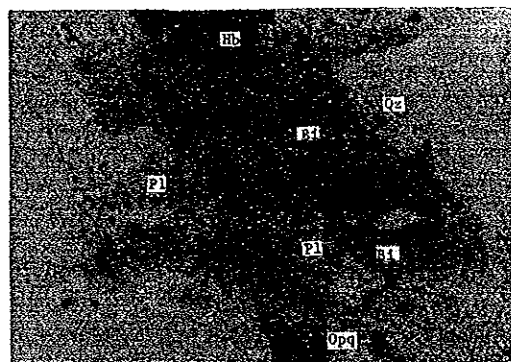


nicoles cruzados 0 0.5mm

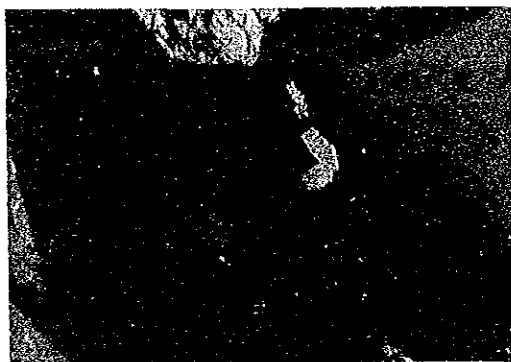
CJM-2 299.9 ~ 300.0 m

Textura porfídica característica.

La roca contiene minerales colorados tales como biotita y hornblenda. Los fenocristales de cuarzo muestran bordes corroídos.



nicoles abiertos 0 0.5mm



nicoles cruzados 0 0.5mm

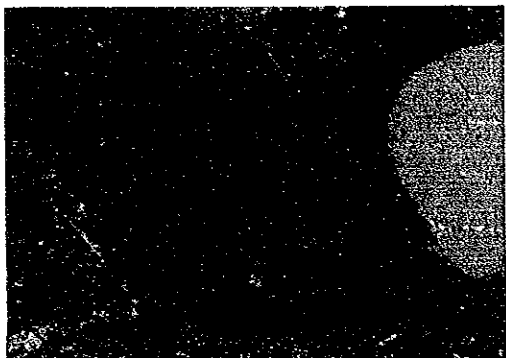


nicoles abiertos

0 0.5mm

CJM-2 348.4 ~ 348.5 m

Textura porfídica muy
mercada. Fenocristales
de biotita euhedral.
Lo roca sufrió silici-
ficación y carboniti-
zación.

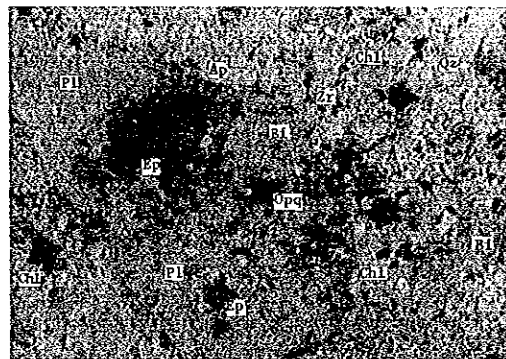


nicoles cruzados

0 0.5mm

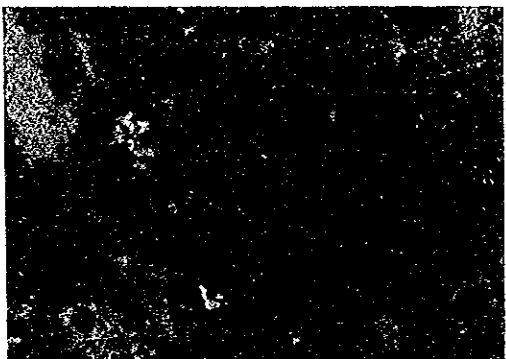
CJM-3 25.5 ~ 25.6 m

La roca sufrió fuerte
alteración por silicifi-
cación, biotización,
epidotización y cloritiz-
ación.



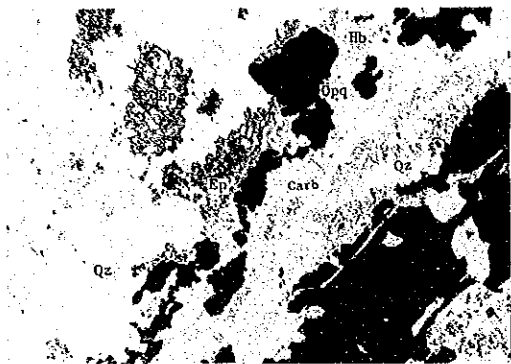
nicoles abiertos

0 0.5mm



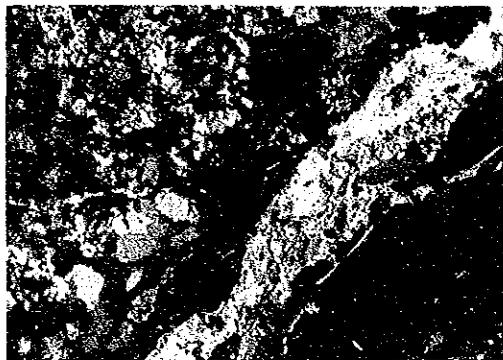
nicoles cruzados

0 0.5mm



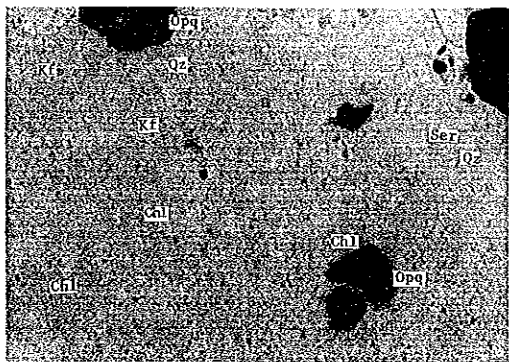
nicoles abiertos

0 0.5mm



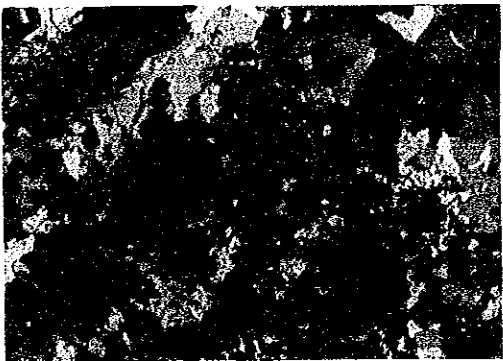
nicoles cruzados

0 0.5mm



nicoles abiertos

0 0.5mm



nicoles cruzados

0 0.5mm

CJM-3 25.5 ~ 25.6 m

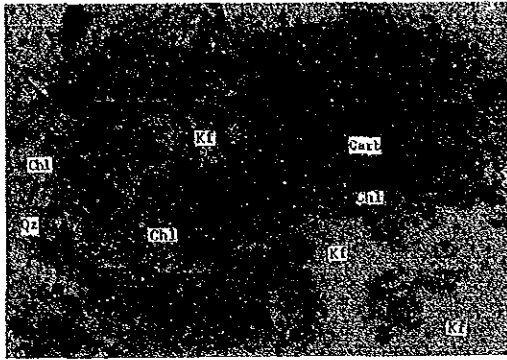
La roca sufrió silicificación y epidotización. Pequeños venillas de cuarzo, calcita y minerales opacos están bien desarrolladas.

CJM-3 148.0 m

Se observa claramente alteración por silicificación, feldespato K y carbonización.

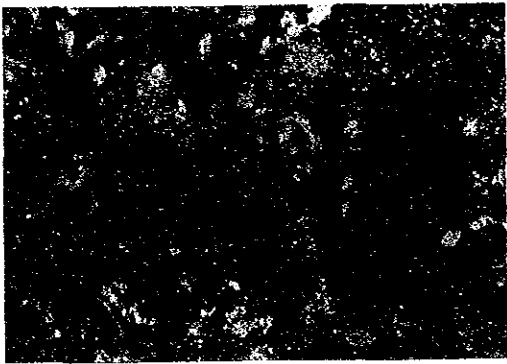
CJM-3 148.0 m

Se muestra fuerte alteración por silicificación, feldespato K y carbonitización.



nicoles abiertos

0 0.5mm



nicoles cruzados

0 0.5mm

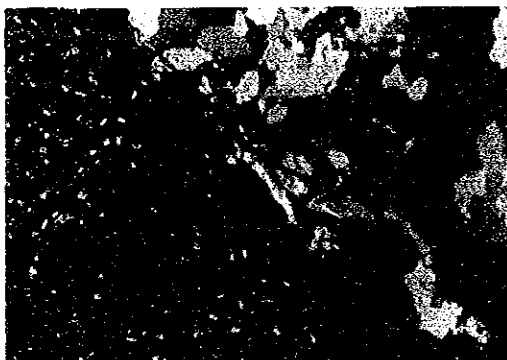
CJM-3 296.3 m

Se observa alteración fuerte por silicificación y carbonitización.



nicoles abiertos

0 0.5mm



nicoles cruzados

0 0.5mm

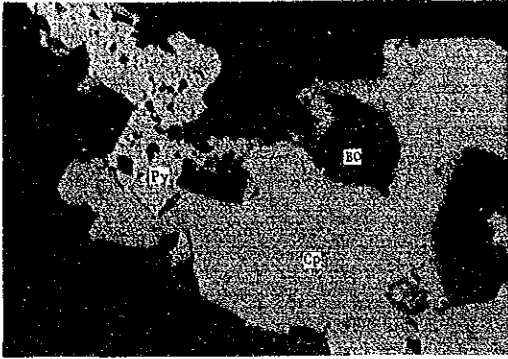
A. 3-23(2) MICROFOTOGRAFIAS DE LAS SECCIONES PULIDAS

ABREVIACION

| | |
|-------------|--|
| Cp ; 黄銅鉍 | calcopirita CuFeS_2 |
| Bn ; 斑銅鉍 | bornita Cu_5FeS_4 |
| Cub; キューバ鉍 | cubanita $\text{Cu}_2\text{S}, \text{Fe}_4\text{S}_5$ |
| Td ; 四面銅鉍 | tetraedrite $5\text{Cu}_2\text{S}, 2(\text{CuFe})\text{S}, 2\text{Sb}_2\text{S}_3$ |
| Bo ; 車骨鉍 | burnonita $\text{Cu}_2\text{S}, 2\text{PbS}, \text{Sb}_2\text{S}_3$ |
| Sp ; 閃亜鉛鉍 | esfalerita ZnS |
| Mo ; 輝水鉛鉍 | molibdenita MoS_2 |
| Py ; 黄鉄鉍 | pirita FeS_2 |
| Po ; 磁硫鉄鉍 | pirotita Fe_{1-x}S |
| Mag; 磁鉄鉍 | magnetita Fe_3O_4 |
| Hem; 赤鉄鉍 | hematita Fe_2O_3 |
| MI ; 針ニッケル鉍 | millerita NiS |

CJM-1 12.2 ~ 12.3m

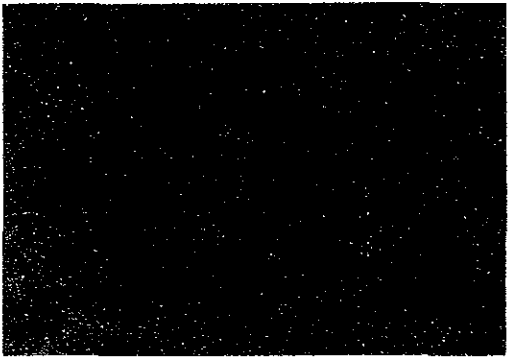
Coexistencia de
calcopirita y burnonita.



0 0.04mm

(nicol normal)

Cristal anisotrópico:
burnonita.

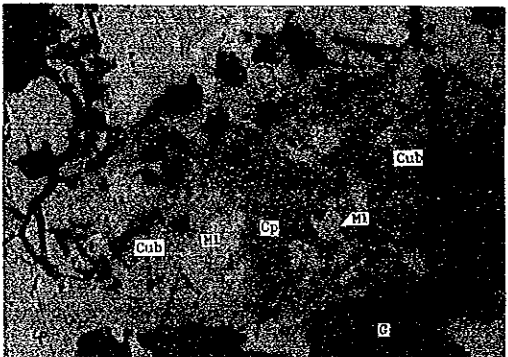


0 0.04mm

(nicoses cruzados)

CJM-1 148.0 ~ 148.1m

Coexistencia de cubanita,
calcopirita y millerita



0 0.04mm

(nicol normal)

Cristales anisotrópico:
millerita

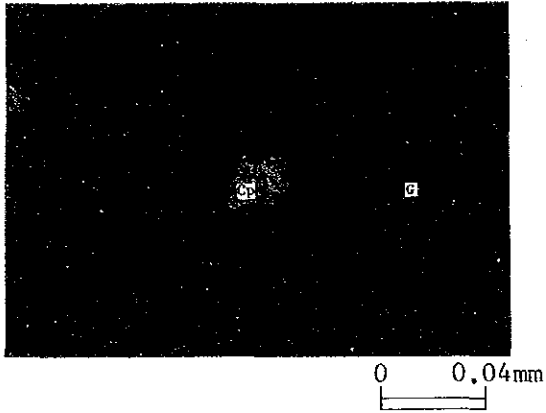


0 0.04mm

(nicoses cruzados)

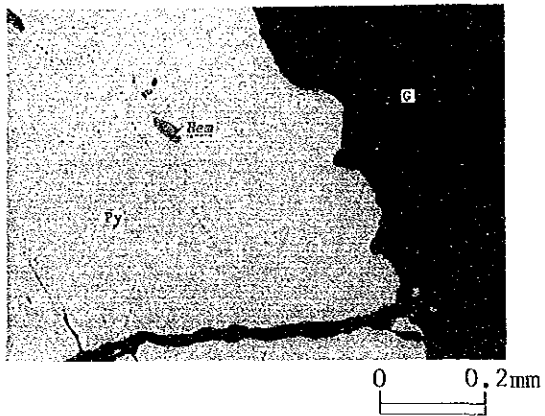
CJM-1 175.8 ~ 176.0m

Calcopirita diseminada



(nicol normal)

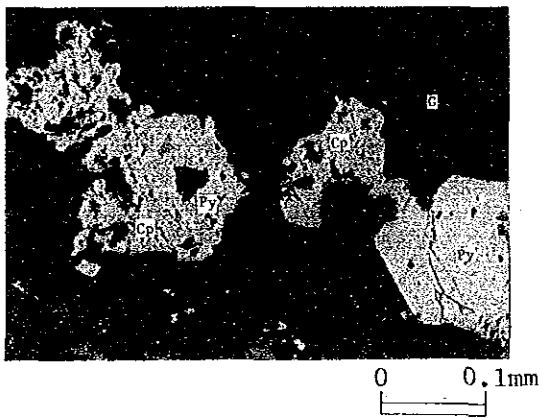
Inclusiones de hematita
en pirita



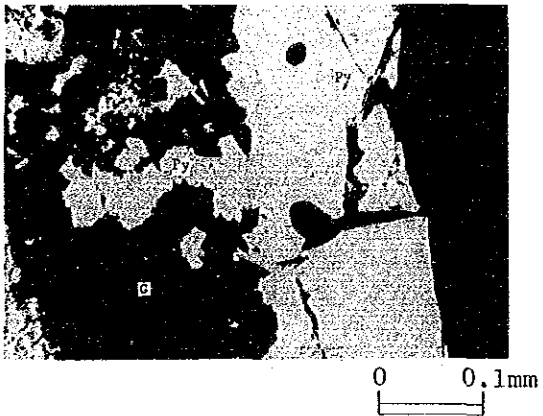
(nicol normal)

CJM-1 298.4 ~ 298.5m

Intercrecimiento de
pirita y calcopirita
Pirita acompañada de
minerales de ganga



(nicol normal)



(nicol normal)

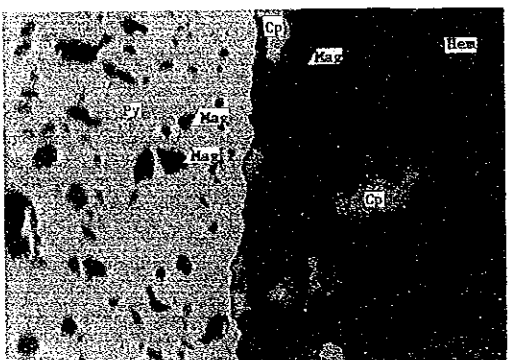


CJM-2 39.6 ~ 39.8m

Calcopirita generado
en bordes de reacción
entre pirita y oxides
de hierro: mognetita
y hematita

(nicol normal)

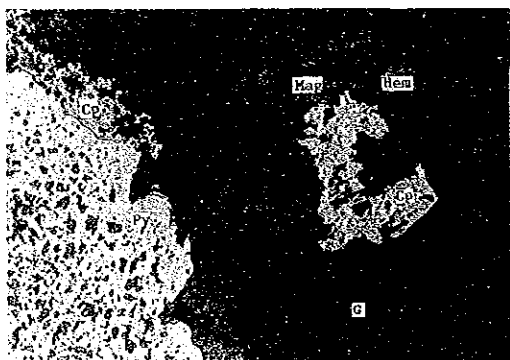
0 0.2mm



Detalle: Magnificado
de la
anterior

(nicol normal)

0 0.04mm

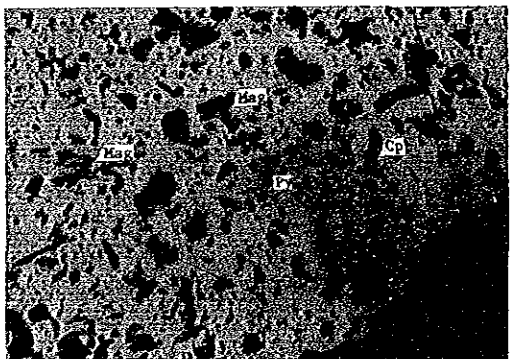


CJM-2 39.6 ~ 39.8m

Calcopirita en bordes de
reaccion de pirita con
oxidos de hierro: magnetita
y hematita, Calcopirita
generada en el contacto entre
oxidos de hierro y material
de ganga.

(nicol normal)

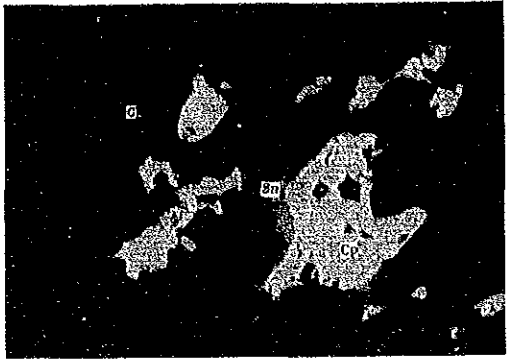
0 0.2mm



Calcopirita y
magnetita incluidas en
cristales de pirita

(nicol normal)

0 0.1mm

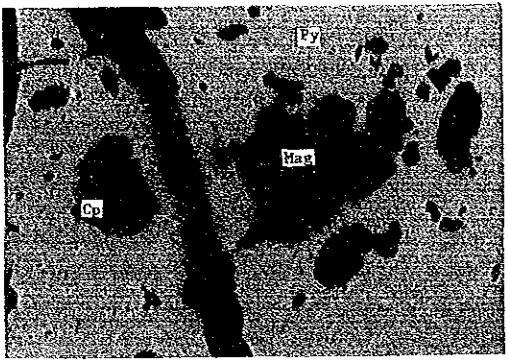


CJM-2 156.4 ~ 156.5m

Bornita generada en
bordes de reacción en
cristales de calcopirita

(nicol normal)

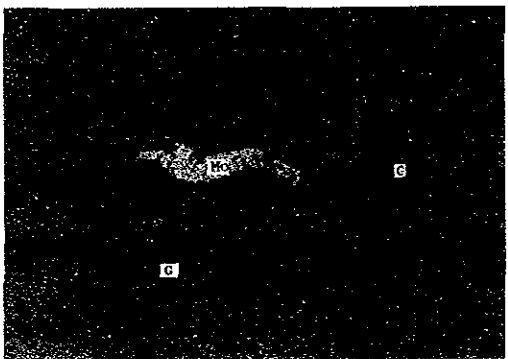
0 0.04mm



Asociación de calcopirita-
magnetita en cristales de
pirita

(nicol normal)

0 0.1mm

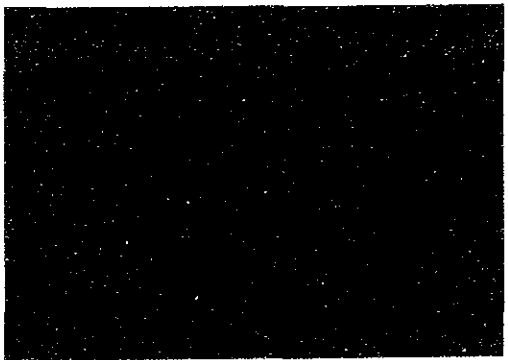


CJM-2 190.0 ~ 190.1m

Molibdenita en
minerales de ganga

(nicol normal)

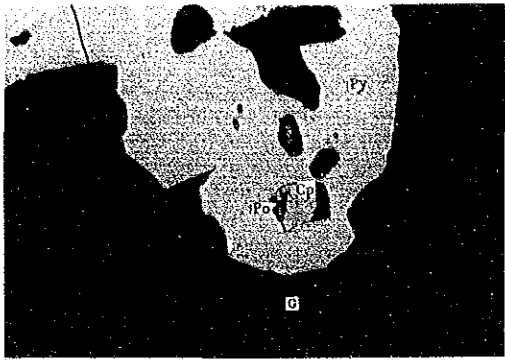
0 0.1mm



Anisotropía de la
molibdenita

(nicos cruzados)

0 0.1mm

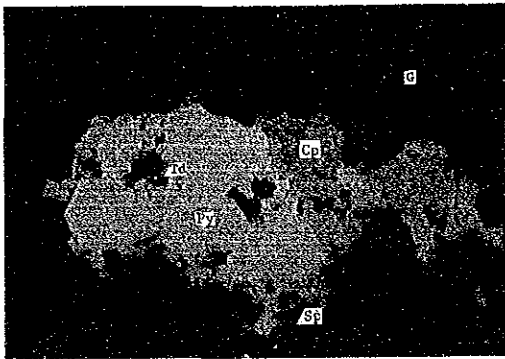


CJM-2 190.0 ~ 190.1m

Calcopirita y pirrotita
en cristales de pirita

(nicol normal)

0 0.04mm

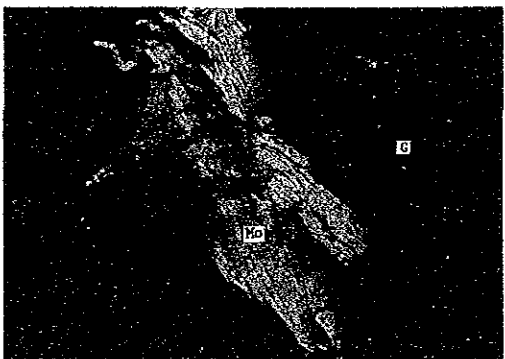


CJM-2 248.2 ~ 248.3m

Pirita (Py) generada en
bordes de reacción, con
calcopirita (Cp).

(nicol normal)

0 0.04mm

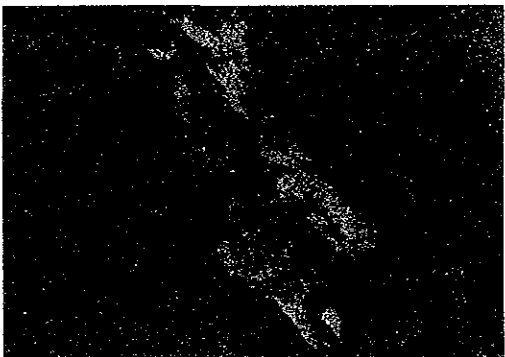


CJM-2 248.2 ~ 248.3m

Molibdenita (Mo) en
forma de laminos
(estructura en hojas)

(nicol normal)

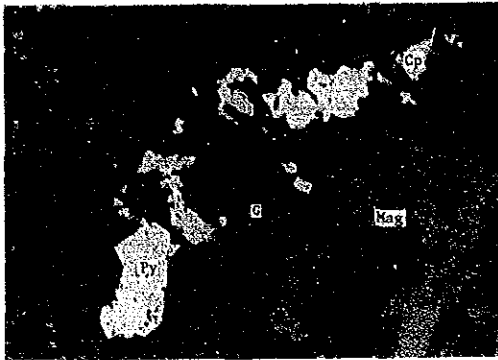
0 0.2mm



La misma estructura
anterior con luz
polarizada.

(nicos cruzados)

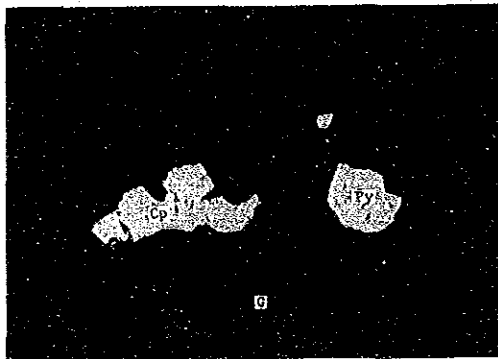
0 0.2mm



CJM-3 25.5 ~ 25.6m

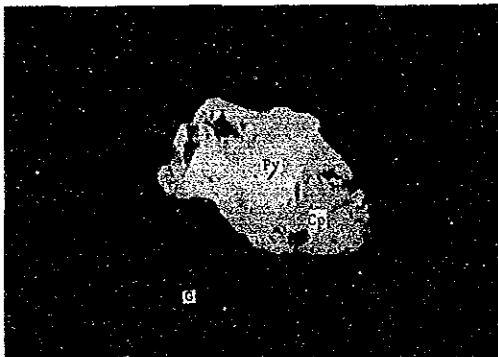
Cristales disseminados de piritita (Py), calcopirita (Cp) y magnetita (Mag), en la ganga.

(nicol normal)



Cristales de piritita (Py) y calcopirita (Cp) en forma de venillas disseminados en la ganga.

(nicol normal)



CJM-3 148.0m

Cristales de piritita (Py) rodeados por calcopirita (Cp).

(nicol normal)



CJM-3 281.2m

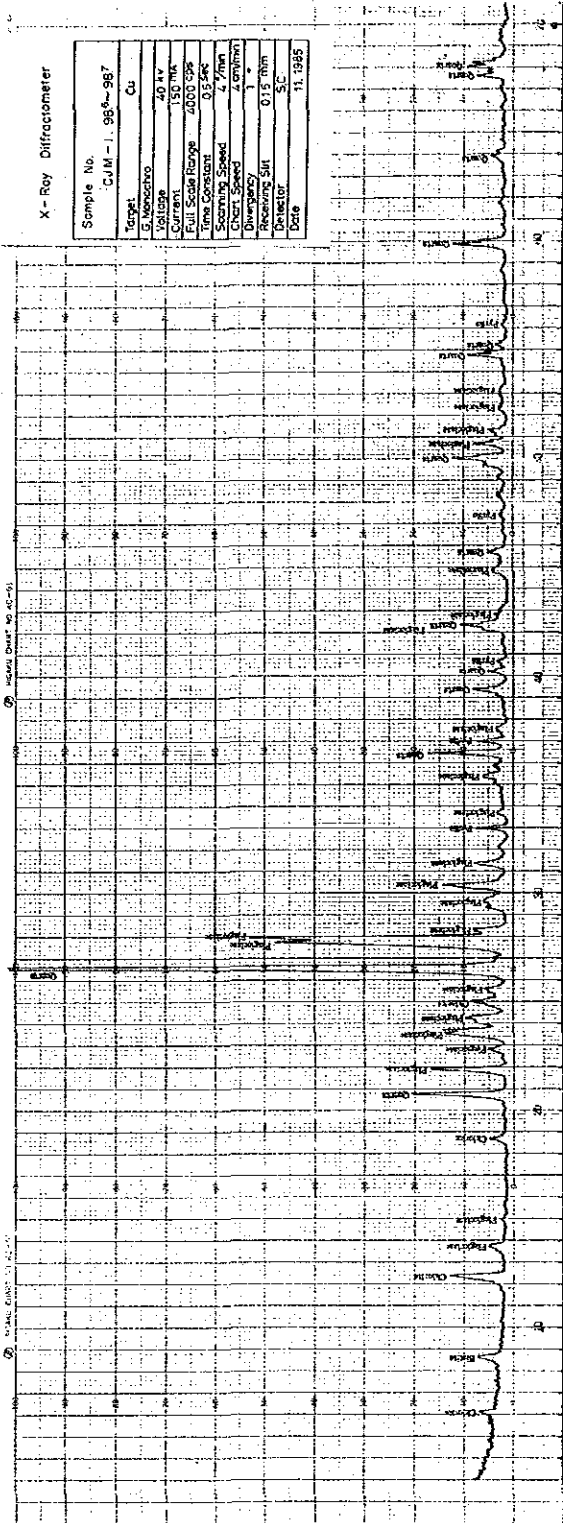
Calcopirita (Cp) disseminado en la ganga.

(nicol normal)

A. 3-24 LAS CARTAS DE DIFRACCION RAYOS X

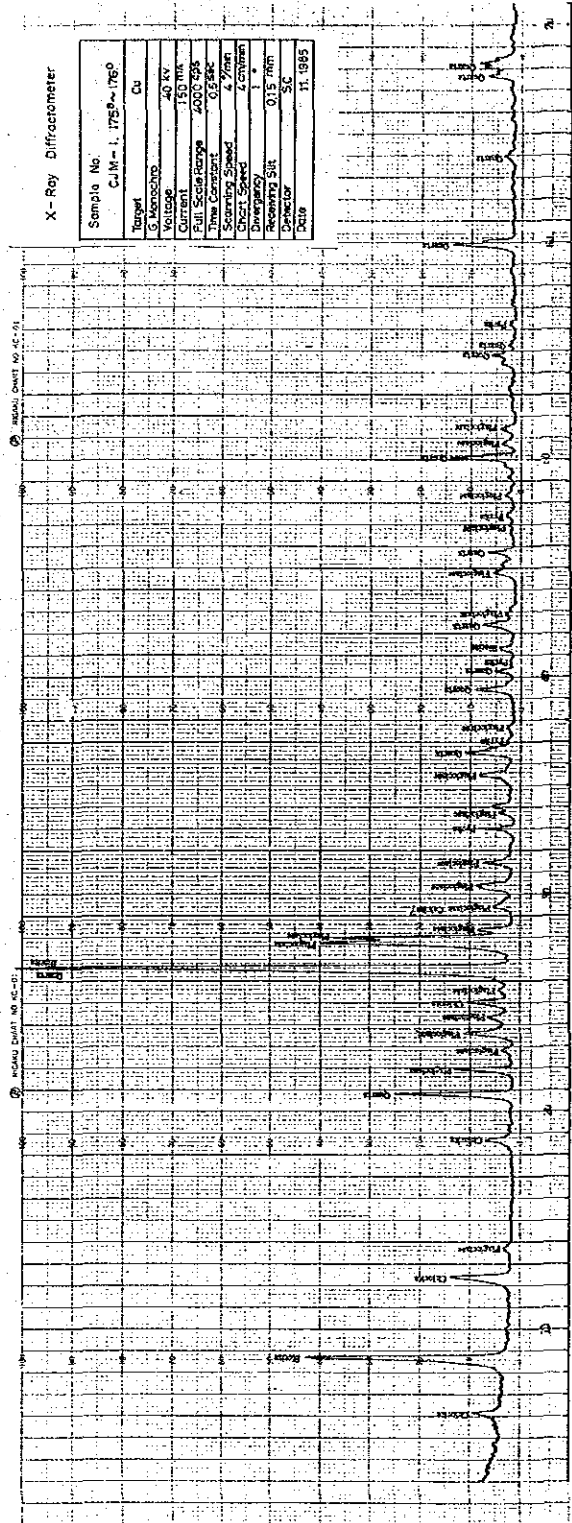
X-Ray Diffractometer

| | |
|------------------|------------------|
| Sample No. | CUM - 1, 986-987 |
| Target | Cu |
| G. Monochro | |
| Voltage | 40 kV |
| Current | 150 mA |
| Full Scale Range | 4000 CPS |
| Time Constant | 0.5 sec |
| Scanning Speed | 4.7 mm |
| Chart Speed | 2 cm/min |
| Divergency | 1° |
| Receiving slit | 0.15 mm |
| Detector | SC |
| Date | 11, 1985 |



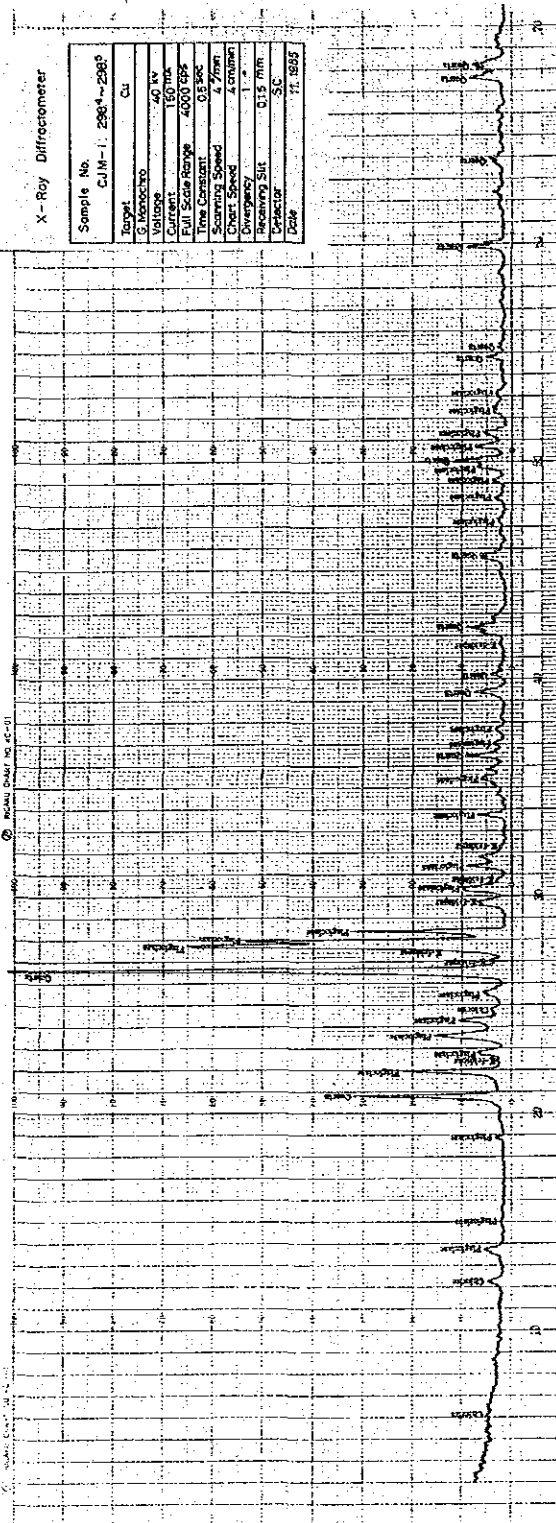
X-Ray Diffractometer

| | |
|------------------|--------------------|
| Sample No. | CUM - 1, 1758-1760 |
| Target | Cu |
| G. Monochro | |
| Voltage | 40 kV |
| Current | 150 mA |
| Full Scale Range | 4000 CPS |
| Time Constant | 0.5 sec |
| Scanning Speed | 4.7 mm |
| Chart Speed | 2 cm/min |
| Divergency | 0.15 mm |
| Receiving slit | SC |
| Detector | SC |
| Date | 11, 1985 |



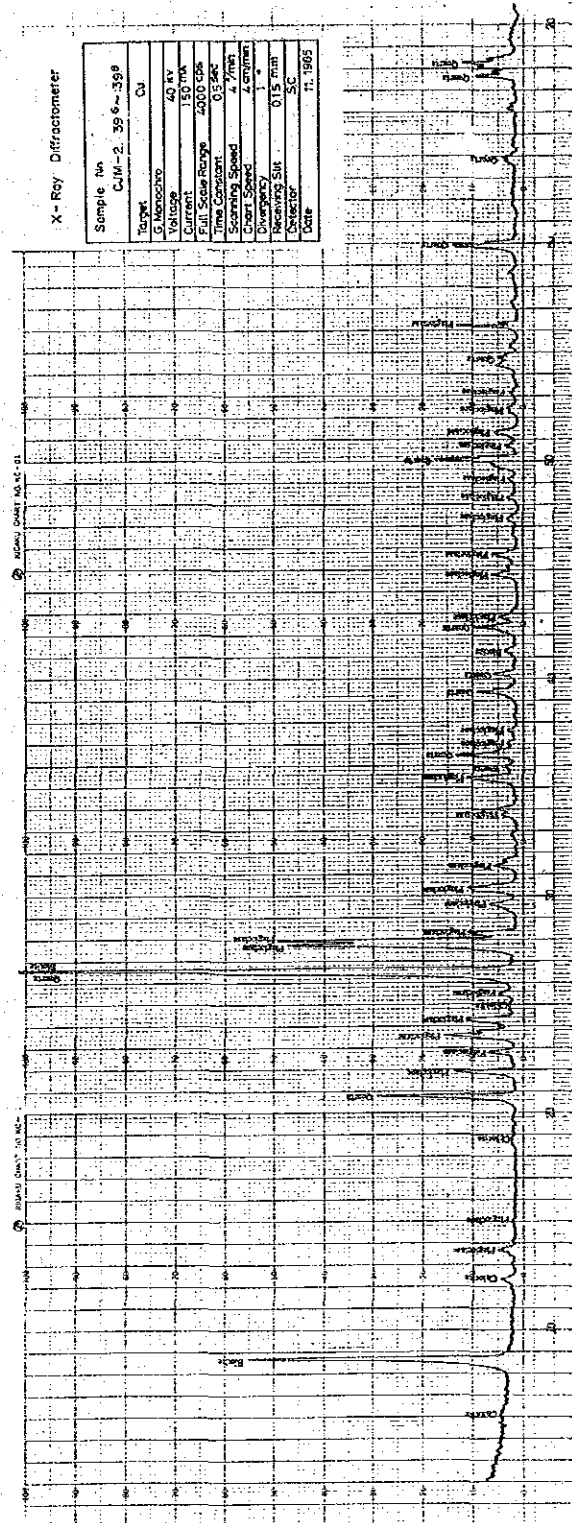
X-Ray Diffractometer

| | |
|------------------|------------------|
| Sample No. | CJM-1, 2884-2885 |
| Target | Cu |
| G Monochro | |
| Voltage | 40 KV |
| Current | 150 mA |
| Full Scale Range | 4000 cps |
| Time Constant | 0.5 sec |
| Scanning Speed | 4.77mm |
| Chart Speed | 4.77mm |
| Slit | 0.15 mm |
| Divergency Slit | 0.15 mm |
| Detector | SC |
| Scale | 71.8887 |



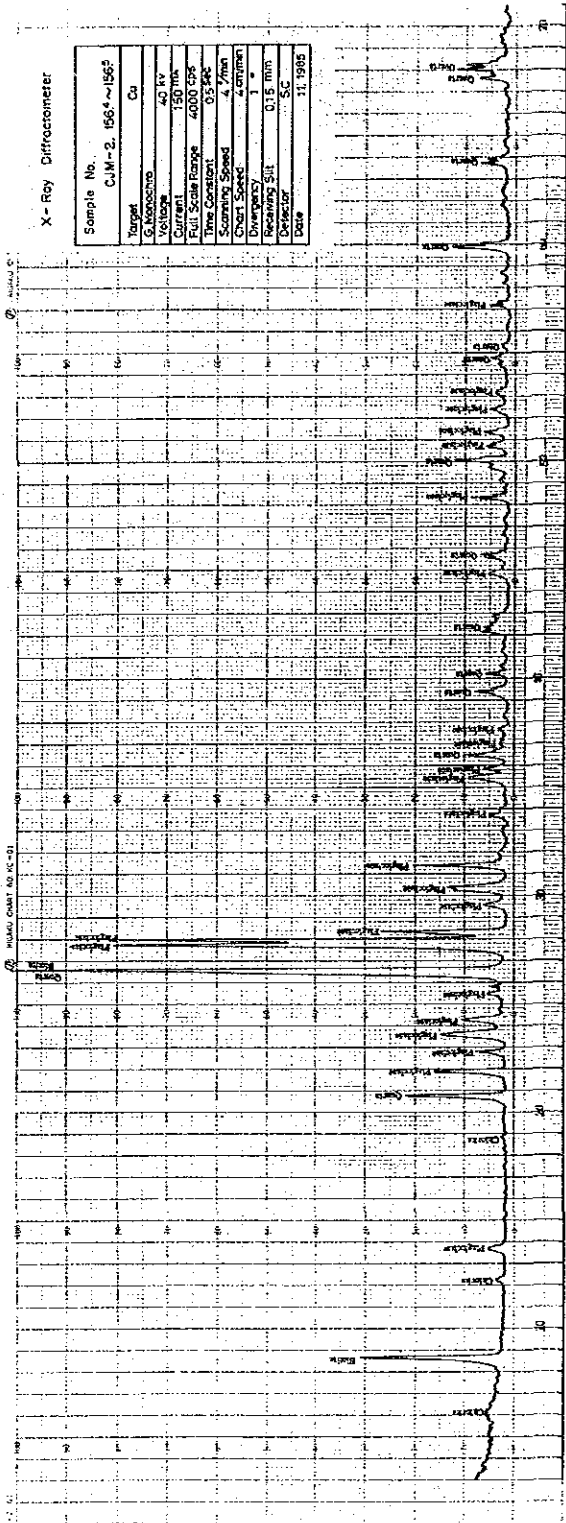
X-Ray Diffractometer

| | |
|------------------|----------------|
| Sample No. | CJM-2, 386-388 |
| Target | Cu |
| G Monochro | |
| Voltage | 40 KV |
| Current | 150 mA |
| Full Scale Range | 4000 cps |
| Time Constant | 0.5 sec |
| Scanning Speed | 4.77mm |
| Chart Speed | 4.77mm |
| Slit | 0.15 mm |
| Divergency Slit | 0.15 mm |
| Detector | SC |
| Date | 11. 1965 |



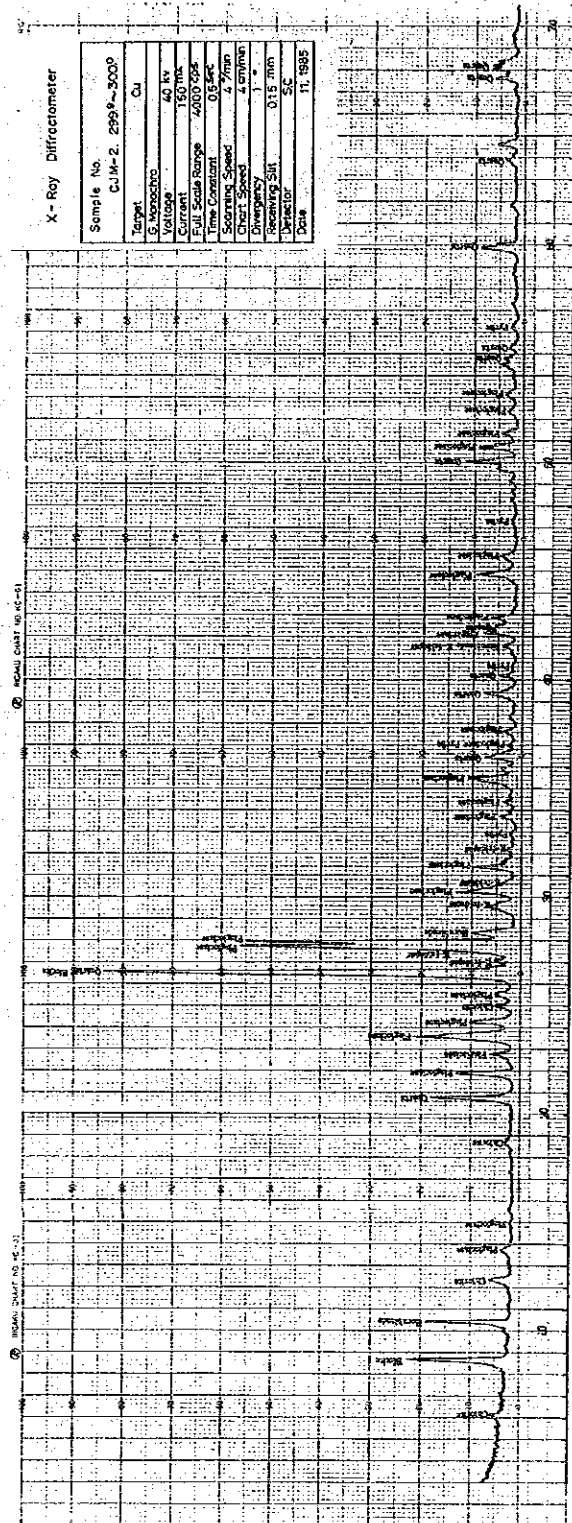
X - Ray Diffractometer

| | |
|------------------|--------------------|
| Sample No. | CUM-2, 1964 ~ 1965 |
| Target | Cu |
| G. Monochrome | |
| Voltage | 40 kv |
| Current | 150 ma |
| Full Scale Range | 4000 CPS |
| Time Constant | 0.15 sec |
| Chart Speed | 4 mm |
| Chart Size | 4 in |
| Divergency | 1° |
| Receiving Slit | 0.15 mm |
| Detector | SC |
| Date | 11, 1985 |



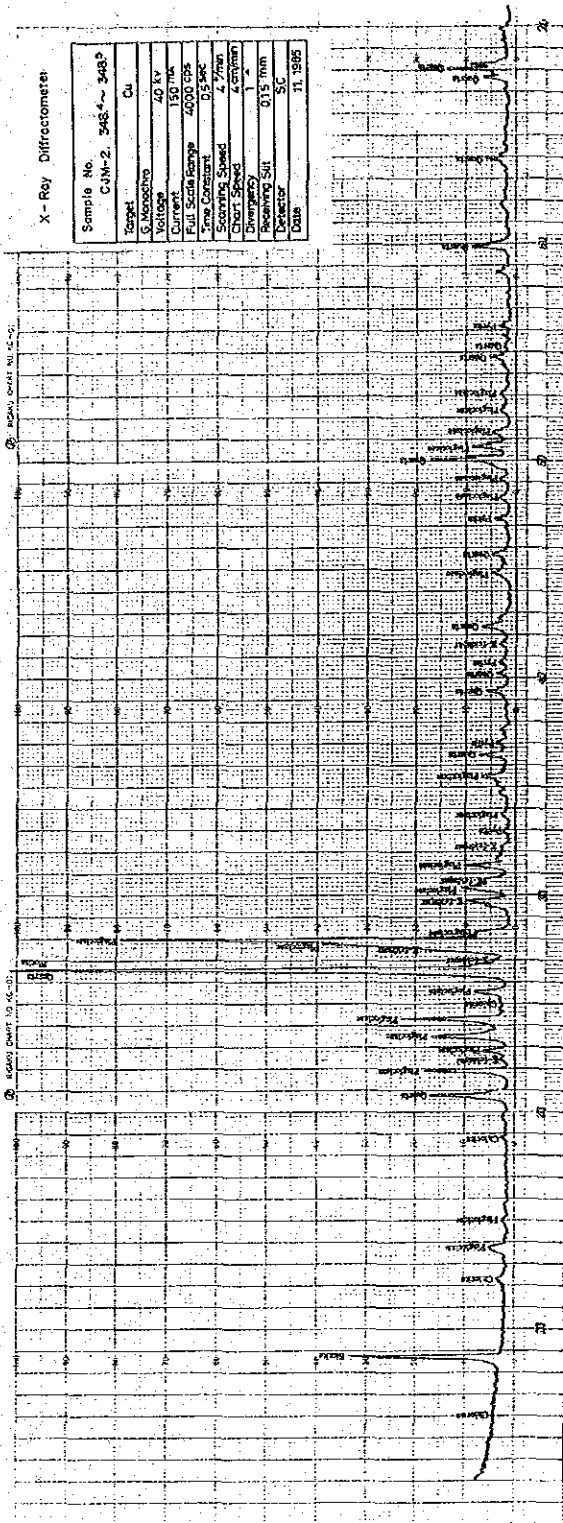
X - Ray Diffractometer

| | |
|------------------|--------------------|
| Sample No. | CUM-2, 2999 ~ 3000 |
| Target | Cu |
| G. Monochrome | |
| Voltage | 40 kv |
| Current | 150 ma |
| Full Scale Range | 4000 CPS |
| Time Constant | 0.15 sec |
| Chart Speed | 4 mm |
| Chart Size | 4 in |
| Divergency | 1° |
| Receiving Slit | 0.15 mm |
| Detector | SC |
| Date | 11, 1985 |



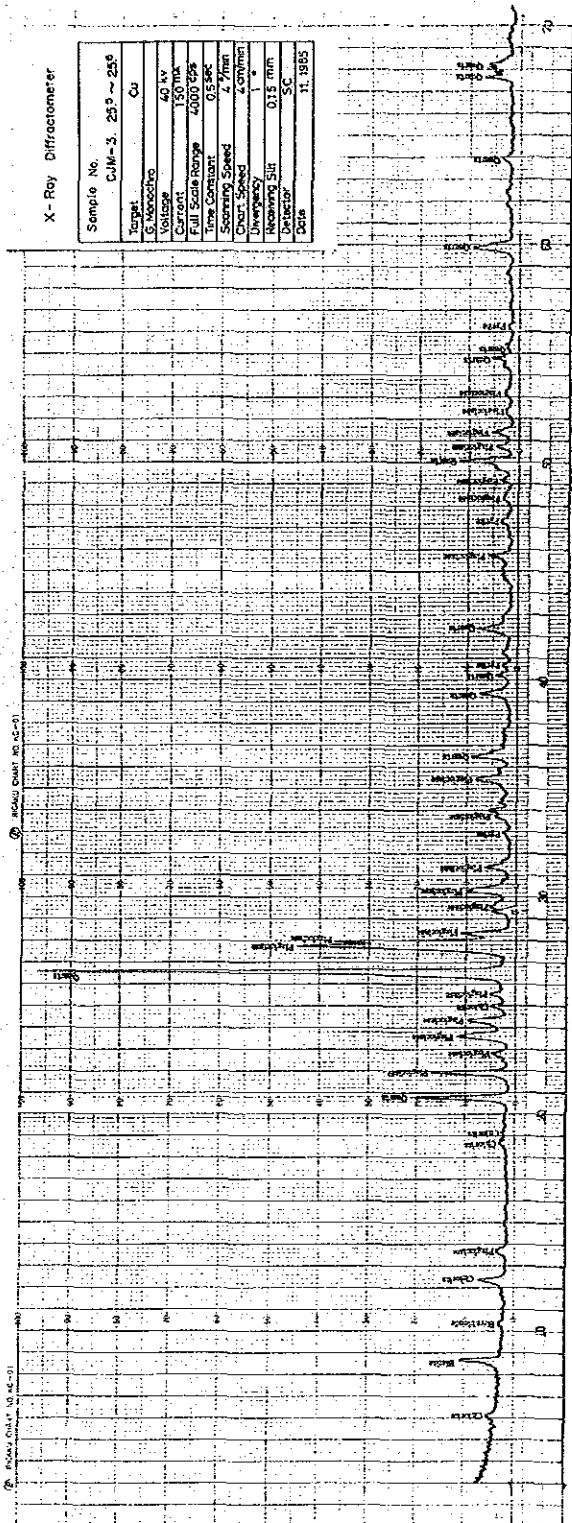
X-Ray Diffractometer

| | |
|------------------|----------------------|
| Sample No. | CUM-2, 348.4 ~ 348.3 |
| Target | Cu |
| G. Monochro | 40 kV |
| Voltage | 150 mA |
| Current | 4000 cps |
| Full Scale Range | 0.5 sec |
| Time Constant | 4.7/min |
| Scanning Speed | 4 cm/min |
| Chart Speed | 1 |
| Divergency | 0.15 mm |
| Receiving Slit | 5C |
| Detector | 5C |
| Date | 11. 1985 |



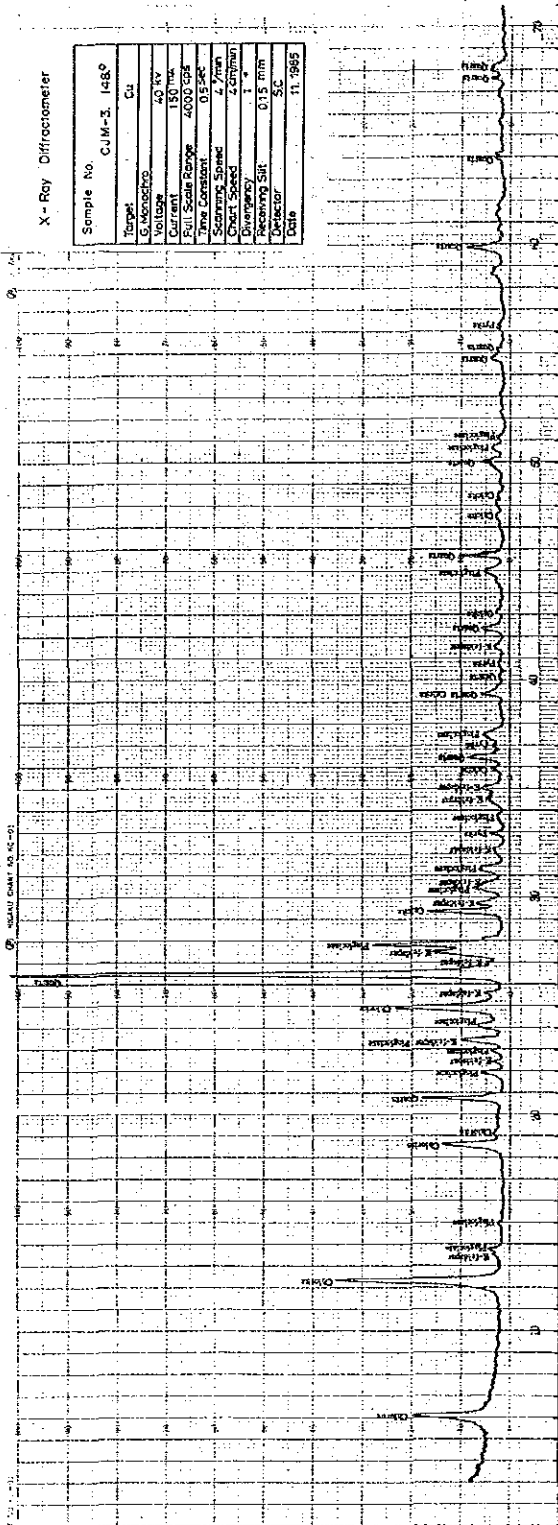
X-Ray Diffractometer

| | |
|------------------|--------------------|
| Sample No. | CUM-3, 25.9 ~ 25.6 |
| Target | Cu |
| G. Monochro | 40 kV |
| Voltage | 150 mA |
| Current | 4000 cps |
| Full Scale Range | 0.5 sec |
| Time Constant | 4.7/min |
| Scanning Speed | 4 cm/min |
| Chart Speed | 1 |
| Divergency | 0.15 mm |
| Receiving Slit | 5C |
| Detector | 5C |
| Date | 11. 1985 |



X-Ray Diffractometer

| | |
|------------------|-------------|
| Sample No. | CJM-3, 1480 |
| Target | Cu |
| G. Monochro | |
| Voltage | 40 kv |
| Current | 150 ma |
| Full Scale Range | 4000 cps |
| Time Constant | 0.5 sec |
| Scanning Speed | 2.7/min |
| Chart Speed | 4.0/min |
| Divergency | 1° |
| Receiving Slit | 0.15 mm |
| Detector | SC |
| Date | 11, 1965 |



X-Ray Diffractometer

| | |
|------------------|--------------|
| Sample No. | CJM-3, 281.2 |
| Target | Cu |
| G. Monochro | |
| Voltage | 40 kv |
| Current | 150 ma |
| Full Scale Range | 4000 cps |
| Time Constant | 0.5 sec |
| Scanning Speed | 2.7/min |
| Chart Speed | 4.0/min |
| Divergency | 1° |
| Receiving Slit | 0.15 mm |
| Detector | SC |
| Date | 11, 1965 |

