UNLV/FLYNN
MS-22

ID #: A:MS22
DATE: 10-09-86

Production well #1
T= 210°F San Emidio Project / Mike Mercer / Empire

| SPECIES | CONCENTRATION (ppm) | ANALYTICAL METHOD | DETECTION LIMITS | CONCENTRATION (MOL/L) |
|---|---|---|---|---|
| Na | 1400.63 | 1 | .49 | .609E-01 |
| K | 119.56 | 1 | .61 | .306E-02 |
| Ca | 148.47 | 1 | .18 | .370E-02 |
| Mg | .17 | 1 | .16 | .697E-05 |
| Fe | .34 | 1 | .02 | .611E-05 |
| Al | N.D. | 1 | .61 | < .226E-04 |
| SiO2 | 207.95 | 1 | .52 | .346E-02 |
| B | 5.85 | 1 | .05 | .541E-03 |
| Li | 2.04 | 1 | .04 | .294E-03 |
| Sr | 8.83 | 1 | .01 | .101E-03 |
| Zn | N.D. | 1 | .06 | < .932E-06 |
| Ag | N.D. | 1 | .05 | < .452E-06 |
| As | N.D. | 1 | .49 | < .651E-05 |
| Au | N.D. | 1 | .10 | < .495E-06 |
| Ba | N.D. | 1 | .30 | < .222E-05 |
| Be | N.D. | 1 | .00 | < .135E-06 |
| Bi | N.D. | 1 | 2.44 | < .117E-04 |
| Cd | N.D. | 1 | .05 | < .434E-06 |
| Ce | N.D. | 1 | .24 | < .174E-05 |
| Co | N.D. | 1 | .02 | < .414E-06 |
| Cr | N.D. | 1 | .12 | < .234E-05 |
| Cu | N.D. | 1 | .06 | < .959E-06 |
| La | N.D. | 1 | .12 | < .878E-06 |
| Mn | N.D. | 1 | .24 | < .444E-05 |
| Mo | N.D. | 1 | .61 | < .635E-05 |
| Ni | N.D. | 1 | .12 | < .208E-05 |
| Pb | N.D. | 1 | .24 | < .118E-05 |
| Sn | N.D. | 1 | .12 | < .103E-05 |
| Sb | N.D. | 1 | .73 | < .601E-05 |
| Te | N.D. | 1 | 1.22 | < .955E-05 |
| Th | N.D. | 1 | 2.44 | < .105E-04 |
| Ti | N.D. | 1 | .12 | < .255E-05 |
| U | N.D. | 1 | 6.09 | < .256E-04 |
| V | N.D. | 1 | 1.22 | < .239E-04 |
| W | N.D. | 1 | .12 | < .663E-06 |
| Zr | N.D. | 1 | .12 | < .134E-05 |

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| SPECIES | CONCENTRATION (ppm) | ANALYTICAL METHOD | DETECTION LIMITS | CONCENTRATION (MOL/L) |
|---|---|---|---|---|
| TOTAL ALKALINITY AS | | | | |
| HCO3 | 49.00 | 2 | 1.00 | .803E-03 |
| CO3 | 3.00 | 2 | 1.00 | .500E-04 |
| Cl | 2320.00 | 2 | 1.00 | .654E-01 |
| F | 5.20 | 5 | .05 | .274E-03 |
| SO4 | 220.00 | 11 | 1.00 | .229E-02 |
| Br | N.A. | 2 | 1.00 | < .125E-04 |
| I | N.A. | 2 | .10 | < .788E-06 |
| NO3 | N.A. | 9 | .10 | < .161E-05 |
| S | N.A. | 2 | 1.00 | < .312E-04 |
| PO4 | N.D. | 1 | 1.84 | < .194E-04 |
| TOTAL DISSOLVED SOLIDS | | | | |
| MEASURED | 4304.00 | 4 | 4.00 | |
| CALCULATED | 4466.14 | 6 | | |
| 100*MEAS/CALC | 96.37 | | | |
| pH | 8.70 | 7 | | |

ADDITIONAL ANALYSIS:

| | |
|---|---|
| EC | 7800 μMHOS/CM |
| Hg | 0.3 PPB |
| Se | < 0.5 PPB |

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ANALYTICAL METHODS:

1. INDUCTIVELY COUPLED PLASMA SPECTROMETER
2. TITRATION (LABORATORY)
3. TITRATION (FIELD)
4. GRAVIMETRIC
5. SPECIFIC ION ELECTRODE
6. METHOD OF HEM (1970, USGS Water Supply Paper 1473)
7. pH METER (LABORATORY)
8. pH METER (FIELD)
9. COLORIMETRIC
10. ATOMIC ABSORPTION
11. TURBIDIMETRIC

N.D. - NOT DETECTED
N.A. - NOT ANALYZED

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| | Milliequivalents/Liter |
|---|---|
| CATIONS | |
| Na | 60.92744 |
| K | 3.05714 |
| Ca | 7.40886 |
| Mg | .01394 |
| Fe | .01222 |
| Li | .29440 |
| Sr | .20165 |
| SUM OF CATIONS: | 71.91566 |
| ANIONS | |
| HCO3 | .80311 |
| CO3 | .09999 |
| Cl | 65.44720 |
| F | .27373 |
| SO4 | 4.58040 |
| SUM OF ANIONS: | 71.20442 |
| CATION-ANION BALANCE | .71124 |
| BALANCE DIFF. CATION + ANION | .50 |

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TRILINEAR DIAGRAM COORDINATES

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| | Meq / L | Percent (Meq / L) |
|---|---|---|
| CATIONS | | |
| Na | 60.92744 | 85.32374 |
| K | 3.05714 | 4.28126 |
| Ca | 7.40886 | 10.37549 |
| Mg | .01394 | .01952 |
| TOTAL | 71.40738 | 100.00000 |
| ANIONS | | |
| HCO3 | .80311 | 1.13225 |
| CO3 | .09999 | .14097 |
| SO4 | 4.58040 | 6.45757 |
| Cl | 65.44720 | 92.26922 |
| TOTAL | 70.93069 | 100.00000 |

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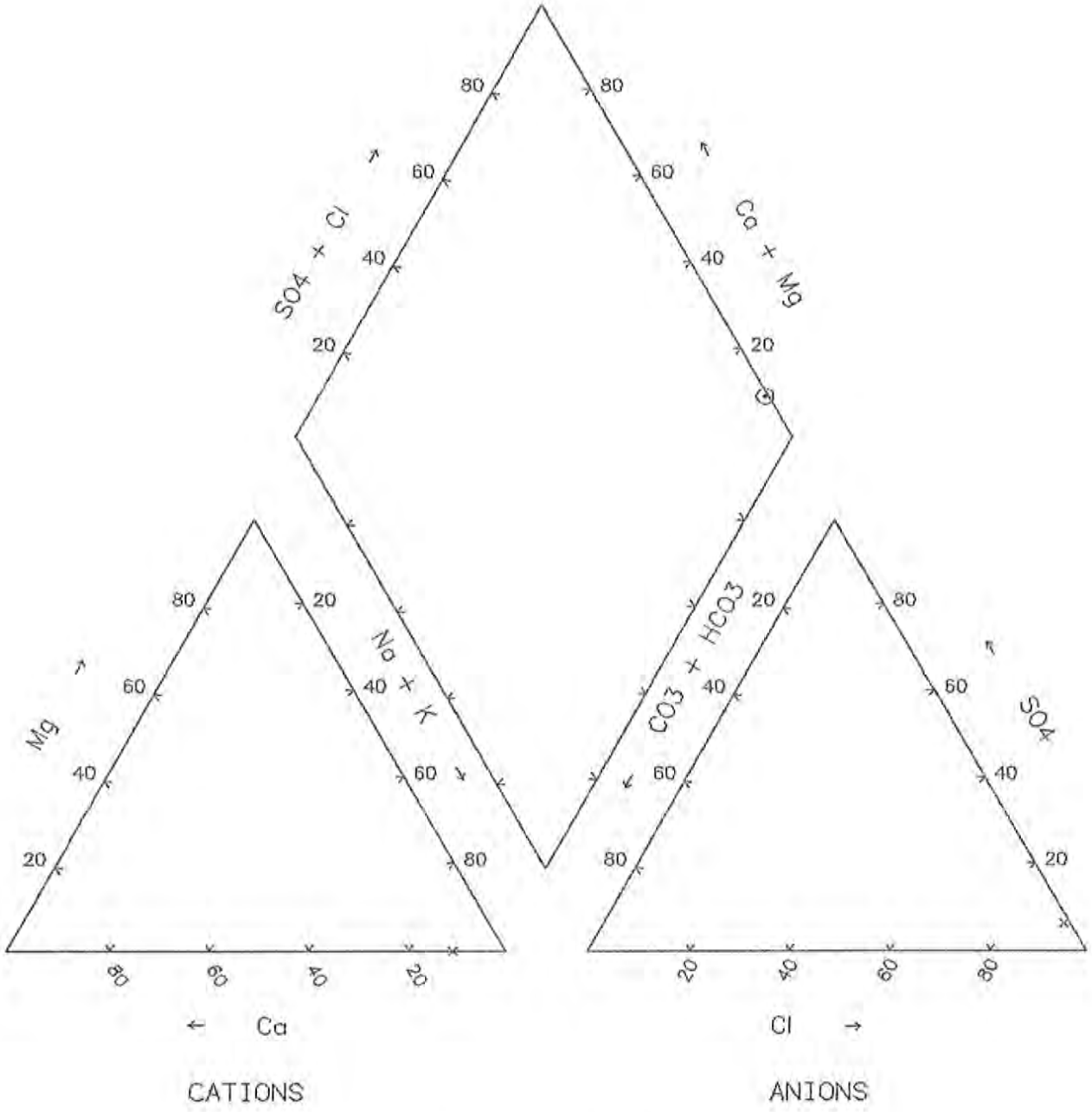


PERCENT OF TOTAL
MILLIEQUIVALENTS PER LITER

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GEOTHERMOMETERS

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| Geothermometer | Temp (deg C) | | Reference |
|---|---|---|---|
| Quartz (no steam loss) | 183. | | Fournier (1981) |
| Quartz (maximum steam loss) | 170. | | Fournier (1981) |
| Chalcedony | 162. | | Fournier (1981) |
| alpha-Cristobalite | 133. | | Fournier (1981) |
| beta-Cristobalite | 83. | | Fournier (1981) |
| Amorphous Silica | 59. | | Fournier (1981) |
| Na/K (Fournier) | 204. | | Fournier (1979) |
| Na/K (Truesdell) | 171. | | Fournier (1981) |
| Na-K-Ca | 192. | beta= .33 | Fournier and Truesdell(1974) |
| Na-K-Ca with Mg correction | 128. | R= .13 | Fournier and Potter (1979) |
| Na/Li | 38. | | Fouillac and Michard(1981) |