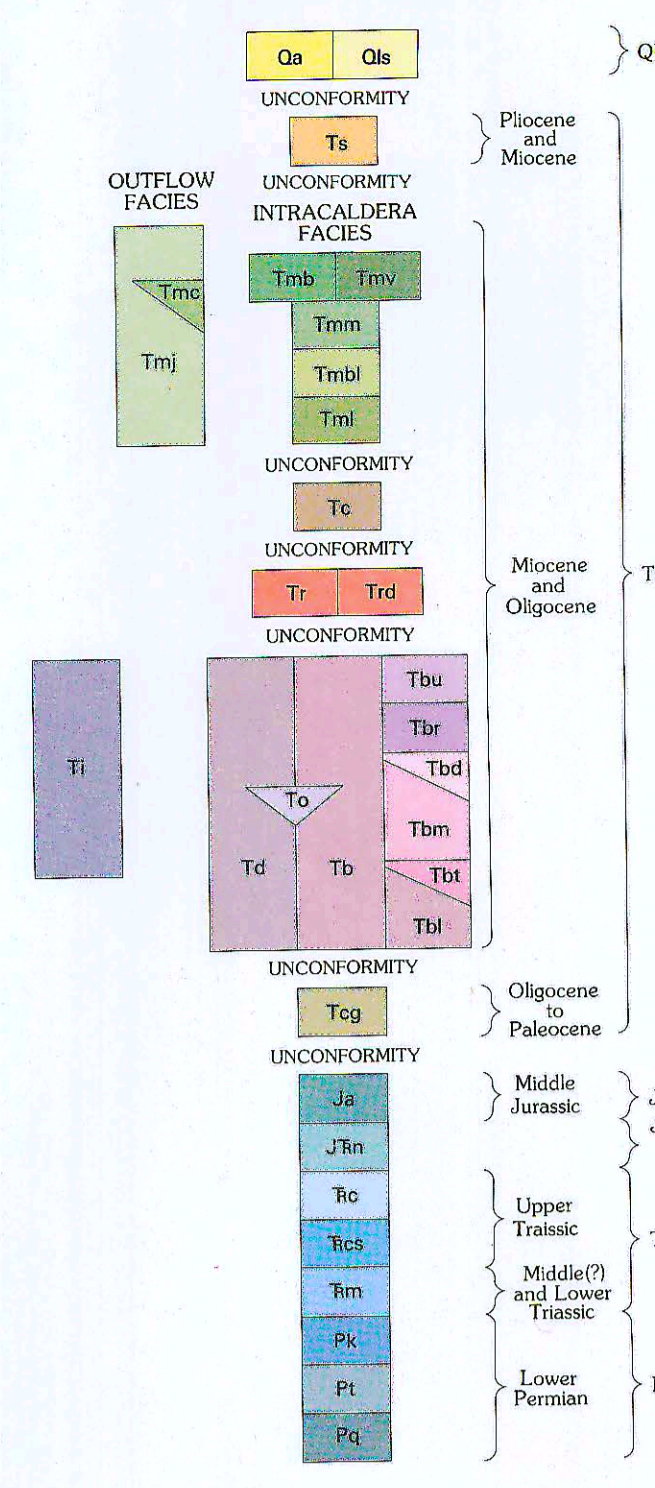


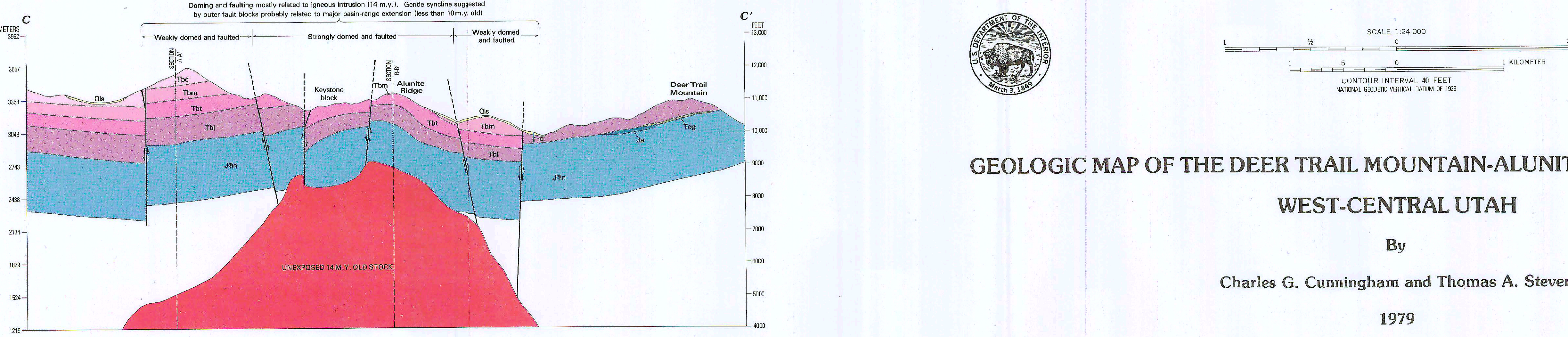
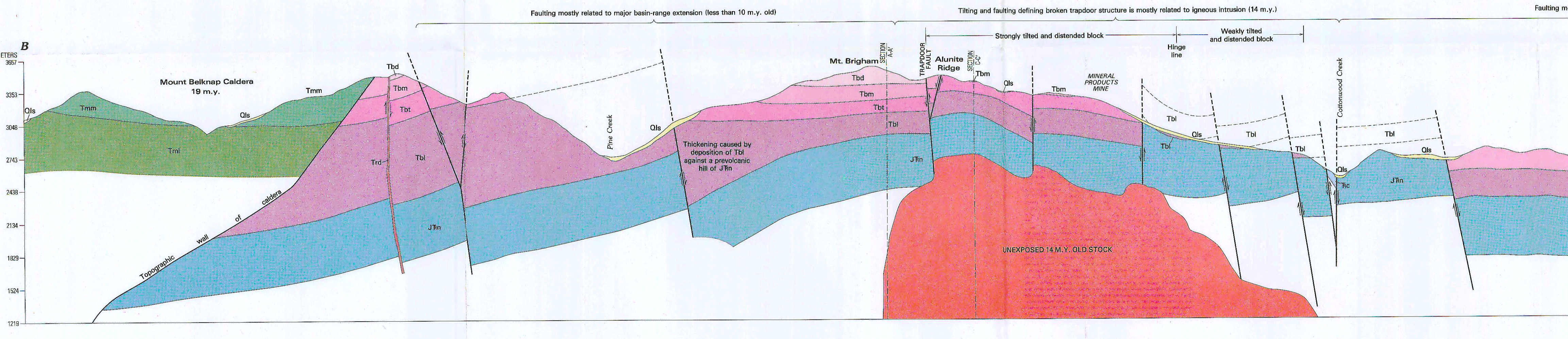
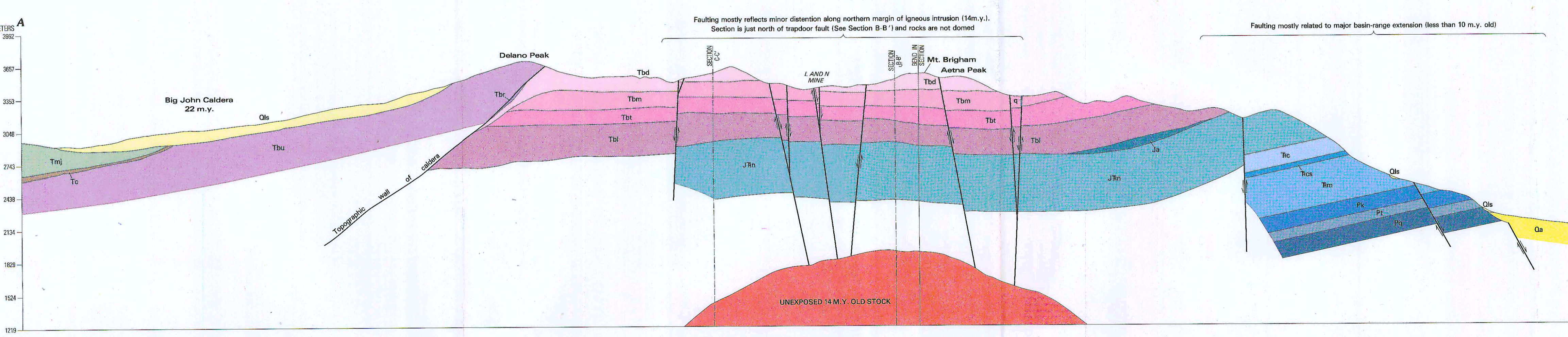
CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

- Qa** ALLUVIAL DEPOSITS (QUATERNARY)—Silt, sand, and gravel in alluvial fans, alluvial slope wash, and stream alluvium.
- Qc** LANDSLIDE DEBRIS (QUATERNARY)—Includes talus and colluvium.
- Ts** SEVERE RIVER FORMATION, PLEISTOCENE AND MIOCENE—Locally to moderately consolidated gray to tan conglomerate, sandstone, siltstone, and shale.
- Tm** MOUNT BELKNAP VOLCANICS (MIOCENE)—Crystalline andesite and rhyolite ash-flow tuff containing 30 percent phenocrysts of quartz (5 percent), anorthoclase, sodic plagioclase (25 percent), and biotite (8 percent). Outflow facies from the Mount Belknap caldera (Cunningham and Steven, 1979; K-Ar age is 19.1 ± 1.2 m.y.).
- Tm1** Mount Baldy Rhyolite Member—Crystalline rhyolite ash-flow tuff containing largely of a fine granular matrix of quartz and alkali feldspar, and minor plagioclase, biotite, and hematite. Intracaldera facies of the Mount Belknap caldera.
- Tm2** Volcaniclastic rocks—Dominantly volcaniclastic breccia derived from nearby lava flows of the Mount Baldy Rhyolite Member (Tm1). Some landslide debris and fluvial sand and gravel are mapped with unit. Intracaldera facies of the Mount Belknap caldera.
- Tm3** Joe Lott Tuff Member—Partly welded, crystalline rhyolite ash-flow tuff containing 12 percent phenocrysts of quartz, sodic plagioclase, and sanidine, and traces of biotite. Outflow facies of the Mount Belknap caldera.
- Tm4** Middle tuff member—Partly welded, crystal-poor alkali-rhyolite ash-flow tuff. Intracaldera facies of the Mount Belknap caldera (Cunningham and Steven, 1979). Lithologically similar to the Joe Lott Tuff Member (Tm3).
- Tm5** Blue Lake Rhyolite Member—Crystalline rhyolite ash-flow tuff lithologically similar to those in the Mount Baldy Rhyolite Member (Tm1). Concentrated flow facies are common. Intracaldera facies of the Mount Belknap caldera.
- Tm6** Lower tuff member—Moderately welded, crystal-poor alkali-rhyolite ash-flow tuff lithologically similar to the Joe Lott Tuff Member (Tm3). Intracaldera facies of the Mount Belknap caldera.
- Tc** CONGLOMERATE (MIOCENE)—Conglomerate and sandstone. Most rounded clasts were derived from the Bullhorn Canyon Volcanics. Locally marks the location of the reactivated topographic wall of the Big John caldera.
- Tr** RHYOLITE Dikes (MIOCENE)—White to light yellow rhyolite containing phenocrysts of quartz with bimodal morphology, partly sericitized sanidine, and minor sodic plagioclase in a matrix of altered andesite and quartz. K-Ar age is 21.9 ± 1.2 m.y. (Cunningham and others, 1978).
- Td** RHYOLITE Dikes (MIOCENE)—Light-gray rhyolite containing phenocrysts of Ca-alkali feldspar, andesite, quartz with bimodal morphology, and oriented hornblende in a matrix of altered andesite, quartz, and minor accessory minerals and apatite.
- Ti** INTRUSIVE ROCKS (MIOCENE)—Dark gray and dark brown, equigranular to porphyritic intrusive rock, largely quartz monzonite, consisting of plagioclase, orthoclase, quartz, and biotite, with or without hornblende and biotite. Accessory minerals are zircon, apatite, and Fe-Titanite.
- Tf** MOUNT MATTOK FORMATION (MIOCENE AND OLIGOCENE)—Dark gray, dark brown, and black lava flows, flow breccias, and volcanic mudflow breccias. Largely rhyolite and andesite containing phenocrysts of quartz and apatite.
- To** OGBURN TUFF (MIOCENE)—Gray and reddish-brown, densely welded, crystalline ash-flow tuff. Phenocrysts consist of andesite (55 percent), biotite (2 percent), and 1 percent each of quartz, orthoclase, and Fe-Titanite. K-Ar age is about 22 m.y. (Flick and others, 1978).
- Tb** BILLION CANYON VOLCANICS (MIOCENE AND OLIGOCENE)—Heterogeneous lava flows, flow breccias, volcanic mudflow breccias, and rhyolite and andesite. Lava flows and clasts in breccia range from rhyolite porphyry containing phenocrysts of plagioclase, biotite, and clinopyroxene, to fine-grained, dark-gray rocks of intermediate composition containing small phenocrysts of plagioclase and clinopyroxene.
- Tu** Upper member—Moderately welded, crystalline rhyolite ash-flow tuff.
- Tu1** Red lacustrine tuff member—Thin and mafic breccia, densely welded ash-flow tuff that overlies the Delano Peak Tuff Member (Tdl) and flows down the topographic wall of the Big John caldera.
- Tu2** Delano Peak Tuff Member (Miocene)—Densely welded, crystalline quartz ash-flow tuff containing phenocrysts of andesite (32 percent), hornblende (9 percent), biotite (4 percent), and less than 1 percent each of quartz, orthoclase, and apatite. Intracaldera facies of the Big John caldera. K-Ar age is 21.8 ± 1.0 m.y. (Steven and others, 1979).
- Tu3** Middle member—Moderately welded, light gray and brown, crystalline rhyolite ash-flow tuff containing phenocrysts of plagioclase (35 percent), hornblende (9 percent), biotite (3 percent), and quartz (2 percent). Fe-Titanite, sanidine, and other accessory minerals occur in traces. K-Ar age is 27 m.y. (Steven and others, 1979).
- Tu4** Lower member—Moderately welded, light gray and brown, and silty-sandstone and siltstone.
- Tp** Lower member—Nodular volcanic mudflow breccias, flow breccias, and silty-sandstone and siltstone that occur below the Three Creeks Tuff Member (Tt3).
- Tol** CONGLOMERATE (OLIGOCENE TO PALEOCENE)—Light-gray to buff pebbly conglomerate containing rounded clasts of sandstone and limestone derived from Mesozoic and Paleozoic rocks. Locally contains silty-sandstone.
- Jm** ARAPEN FORMATION (MIDDLE JURASSIC)—Light gray limestone and shale and locally interbedded red to brown sandstone and micaceous limestone conglomerate layers.
- Jn** NAVAJO SANDSTONE (JURASSIC AND TRIASSIC)—Fine-grained buff well-sorted, crossbedded sandstone. The crossbedding dips south.
- Tr** CHENEY FORMATION (UPPER TRIASSIC)—Green, purple, and red sandstone, siltstone, and mudstone. Laminated and thin bedded.
- Tm** Stearns Member—Light brown to brownish-gray crossbedded poorly sorted sandstone. Crossbedding dips northward.
- Tm** MONTGOMERY FORMATION (MIDDLE AND LOWER TRIASSIC)—Greenish gray and purple, fine-grained sandstone and underlying red siltstone and shale. Includes a prominent gray limestone bed near the base.
- Px** KARALI Limestone (LOWER PERMIAN)—Light to dark gray limestone and dolomite.
- Tp** TOROWEAP FORMATION (LOWER PERMIAN)—Light-gray dolomite and yellowish-gray limestone, sandstone, and quartzite.
- Pl** QUANTOWEAP SANDSTONE OF McNAR, 1951 (LOWER PERMIAN)—Light tan, well-sorted, crossbedded orthoquartzite.

See from U.S. Geological Survey
Map No. 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.



GEOLOGIC MAP OF THE DEER TRAIL MOUNTAIN-ALUNITE RIDGE MINING AREA,
WEST-CENTRAL UTAH

By
Charles G. Cunningham and Thomas A. Steven

1979

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