

**Progress Report of the Kansas Basement
Rocks Committee and Additional
Precambrian Wells**

by

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PROGRESS REPORT OF THE KANSAS BASEMENT ROCKS COMMITTEE AND ADDITIONAL PRECAMBRIAN WELLS

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ABSTRACT

The Kansas Basement Rocks Committee is actively collecting data pertaining to Precambrian rocks of Kansas. An additional 84 wells known to encounter the Precambrian bring the total number of known Precambrian tests in Kansas to about 2,200 as of December 31, 1961. A generalized configuration map of the surface of Precambrian rocks shows major post-Mississippian structural features in the state. Potassium-argon age dates for five samples range from 1165 to 1460 million years.

INTRODUCTION

Since the first list of Precambrian wells drilled into Precambrian rock in Kansas was published (Cole and others, 1961), many additional wells have encountered basement rocks. Desirability of keeping the list up to date and available for interested workers, because of the considerable present interest in the Precambrian, warrants publication of this first supplement. Information is presented with the same format as that in the earlier publication.

Most of the wells listed in this supplement were drilled in 1961, but a few had been drilled previously. Any information concerning other omissions, additions, and corrections forwarded to Kansas Geological Survey, The University of Kansas, Lawrence, will be appreciated.

The Kansas Basement Rocks Committee, operating under the guidance of the Basement Rocks Project Committee of the American Association of Petroleum Geologists, P. T. Flawn, Chairman, consists of the following members: V. B. Cole, Chairman, L. H. Cornell, P. C. Franks, W. W. Hambleton, P. L. Hilpman, R. P. Lehman, and D. F. Merriam. Objectives of the committee include:

- (1) To collect data and serve a community of interest.
- (2) To facilitate geophysical investigations.
- (3) To explore possibilities of economically valuable deposits.
- (4) To study effects of the basement on overlying units.

One of the most important functions of the committee is to gather available samples and cores and arrange for their permanent storage. This the committee is actively doing, and the material is kept on file in the offices of the Kansas Survey at Lawrence.

Reports on several projects by members of the committee have been published as:

- (1) "Wells Drilled Into Precambrian Rock in Kansas" by V. B. Cole, D. F. Merriam, P. C. Franks, W. W. Hambleton, and P. L. Hilpman: *Kansas Geol. Survey Bull.* 150, p. 1-169, 1961.
- (2) "Distribution of Precambrian Basement Rock Types in Kansas" by D. F. Merriam, V. B. Cole, and W. W. Hambleton: *Am. Assoc. Petroleum Geologists Bull.*, v. 45, no. 12, p. 2018-2024, 1961.
- (3) "Configuration of Precambrian Basement Rocks in Kansas" by V. B. Cole: *Kansas Geol. Survey Oil and Gas Investigations No. 26*, map, 1962.

It is hoped that these preliminary results will encourage others to undertake study of Precambrian problems, especially in Kansas.

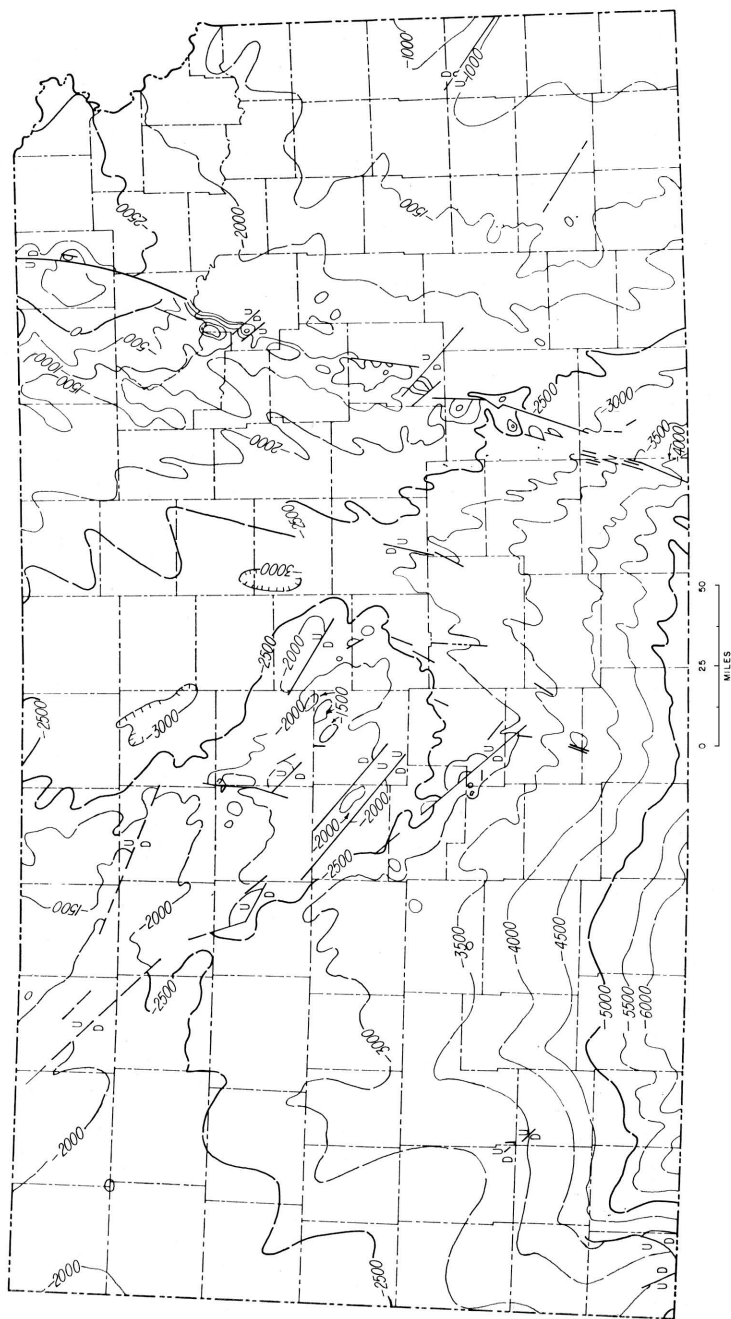


FIG. 1.—Configuration of surface of Precambrian rocks in Kansas (contour interval—500 feet). The map is generalized from one prepared by Cole (1962).

Acknowledgments.—We thank Miss Polly Peterson of Phillips Petroleum Company and Miss Polly Smith of the Kansas Geological Survey for help in compiling and checking the list of wells. The Oil and Gas Division of the Kansas Survey keeps current a list of Precambrian wells and this was most helpful. J. Laurence Kulp of Lamont Geological Observatory of Columbia University made the age determinations on five Precambrian core samples. Several members of the Basement Rocks Committee offered suggestions and help in matters concerning special problems and reviewed the manuscript.

CONFIGURATION OF PRECAMBRIAN SURFACE

A generalized map prepared by Cole (1962) of the configuration of the surface of Precambrian rocks has been generalized at reduced scale for inclusion here (Fig. 1). Major structures of the state are evident. The surface is highest in northeastern Kansas at about 500 feet above sea level and lowest in southwestern Kansas at about 6000 feet below sea level.

Techniques of presentation of the configuration map are being investigated; one such method, using inclined profiles and shading, is reproduced as Figure 2. The cartographic work is under the general supervision of George F. Jenks, Department of Geography, University of Kansas. In addition, a 3D model of the surface is being prepared for permanent display.

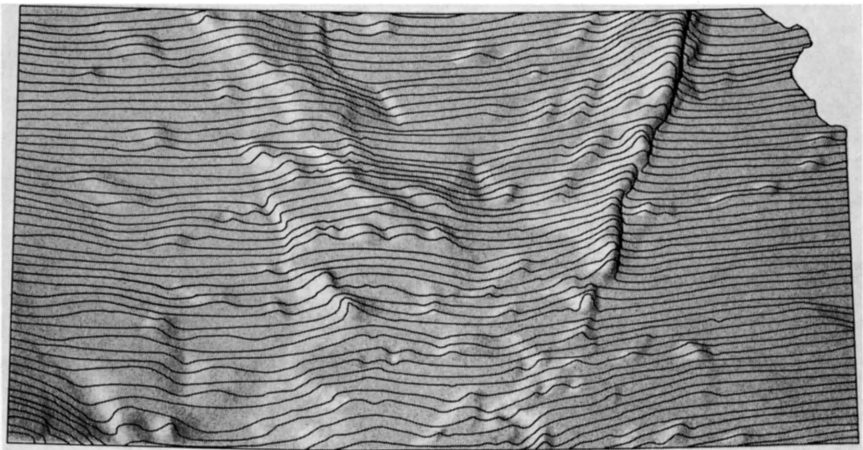


FIG. 2.—Configuration of surface of Precambrian rocks shown by inclined profiles and shading; map prepared by George F. Jenks. Inclined-plane profiles were developed by Professor Tanaka Kitiro; further adaption of the technique was developed by Professor Arthur H. Robinson of the Department of Geography, University of Washington.

PRECAMBRIAN AGE DATES

Potassium-argon ages of five samples from Barton, Rush, and Morris Counties were determined by J. Laurence Kulp of Lamont Geological Observatory of Columbia University. Dates obtained range from 1165 to 1460 million years, comparable to ages elsewhere in the central United States (J. L. Kulp, personal communication to W. W. Hambleton, October 17, 1961). Source of the material dated is in Table 1 and Figure 3.

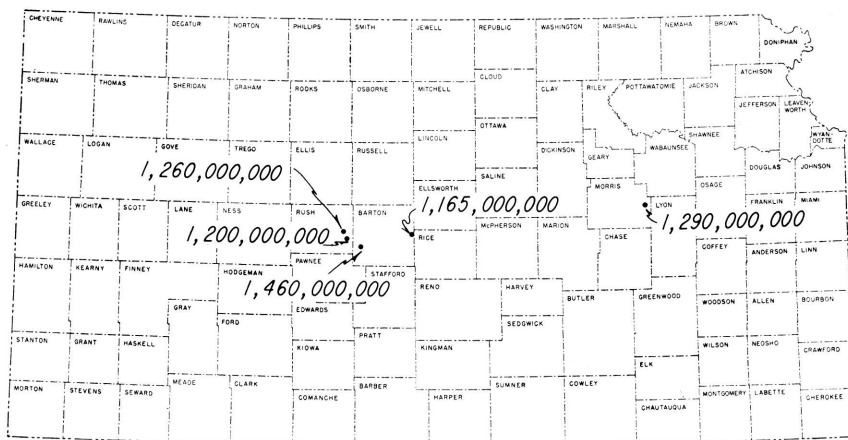


FIG. 3.—Location of wells from which samples were obtained for dating by potassium-argon method (determined by Dr. J. L. Kulp).

LIST OF PRECAMBRIAN WELLS

The list (Table 2), which is arranged by township in west and east ranges, includes name of the well, location, surface elevation, depth to Precambrian rock, datum of Precambrian surface, total depth, lithology of Precambrian rock penetrated, and sedimentary rock unit resting on Precambrian. These data have been compiled from electric and radioactivity logs, top cards, drillers logs, sample logs, and logs of the Kansas Sample Log Service.

All wells have been verified by information from at least two sources. Every effort has been made to cite correct information, but elevation, Precambrian rock type, and sedimentary rock unit overlying the Precambrian surface were difficult items to check.

Subsequent additions to the list of wells drilled to Precambrian rock in Kansas will be published in the Kansas Geological Survey's oil and gas development reports, which are issued annually. In this way, it will be possible to keep the list up to date for those who are interested, but will not necessitate the issuance of a separate publication.

TABLE 1.—Potassium-argon dates of samples of Kansas Precambrian rocks (determined by J. L. Kulp).

Well name	Location	County	Rock type	Age, million years
Atlantic No. 10A Patzner	E2 W2 SE sec. 36, T. 17 S., R. 11 W.	Barton	Altered chialstolite (?) schist	1165
Skelly No. 1 Betz	NE SE SW sec. 5, T. 18 S., R. 16 W.	Rush	Gneissic granite	1260
Skelly No. 4 Dyer	NE SE NW sec. 21, T. 18 S., R. 16 W.	Rush	Quartz-sericite schist	1200
Skelly No. 7 Schultz	NW NW NE sec. 5, T. 19 S., R. 15 W.	Barton	Quartz-sericite schist	1460
Leslie No. 1A McConnell	SE SE SE sec. 14, T. 16 S., R. 9 E.	Morris	Quartz-sericite schist	1290

TABLE 2.—Additional boreholes drilled to Precambrian rocks in Kansas.

County	Company, well number, and farm	Location	Surface elevation, feet	Depth to Precambrian, feet	Elevation of Precambrian, feet	Precambrian rock type	Rock unit on basement	Total depth, feet
Norton	Sinclair No. 1 Rorabaugh	20-1-22W C SE NE	2417	3794	-1377	granite wash	Arbuckle	3800
Do	Empire & Shields No. 1 Browne	34-1-24W SW SW SE	2441	3675	-1234	10 ft. granite wash on granite	Pennsylvanian	3688
Do	British American No. 1 Ervin	13-1-25W C NE NE	2401	3544	-1143	5 ft. granite wash on granite	Reagan	3556
Do	British American No. 1 "C" Meyers	24-1-25W C SE NE	2417	3570	-1153	39 ft. granite wash on granite	Reagan	3617
Do	Woodman & Iannitti No. 1 Goss	35-1-25W C NW NW	2513	3700	-1187	34 ft. granite wash on granite	Pennsylvanian	3751
Decatur	Imperial No. 1 Knutson	11-1-26W C SE NW	2477	3606	-1129	19 ft. granite wash on granite	Reagan	3631
Do	Sauvage No. 1 Lawson	11-1-26W C NE SW	2476	3608	-1132	wash on granite	Reagan	3614
Do	Sauvage No. 2 Lawson	11-1-26W C SE SW	2449	3578	-1129	granite	Reagan	3587
Do	Empire No. 1 Kelly	21-1-26W C SW SW	2506	3570	-1064	8 ft. granite wash on granite	Pennsylvanian	3583
Do	Woodman & Iannitti No. 1 Van Gundy	36-1-26W C SE SW	2514	3763	-1249	7 ft. granite wash on granite	Pennsylvanian	3773

Do	Gower No. 1 Osburn	6-1-27W C SE SE	2662	3734	-1072	39 ft. granite wash on granite	Pennsylvanian	3778
Do	Savage No. 1 Kilzer	16-1-27W SW SW SW	2504	3589	-1085	33 ft. granite wash on granite	Reagan	3640
Do	Empire No. 1 Katha	7-1-28W C SE NE	2687	4085	-1398	7 ft. granite wash on granite	Reagan	4095
Do	Farmer & Appleman No. 1 Southwick	17-1-28W SE SE SE	2693	4119	-1426	28 ft. granite wash on granite	Reagan	4152
Rawlins	Leben & Amerada No. 1 Peterson	8-1-33W C NW NE	3025	4662	-1637	quartzite	Arbuckle	4680
Do	Allan No. 1 Ohlson	3-1-34W C SE NE	3129	4669	-1540	quartzite	Pennsylvanian	4674
Norton	Sinclair No. 1 Melroy	3-2-23W NW SE SE	2393	3680	-1287	14 ft. granite wash on granite	Pennsylvanian	3773
Do	Empire & Shields No. 1 "A" Meier	1-2-24W SE SE SE	2467	3741	-1274	granite	Reagan	3747
Do	Sinclair No. 1 Thiele	20-2-24W NE NW NE	2471	3724	-1253	22 ft. granite wash on granite	Reagan	3775
Do	Raymond and Murfin No. 1 Schulze	24-2-24W C SW SE	2431	3690	-1259	23 ft. granite wash on granite	Pennsylvanian	3725
Decatur	Murfin No. 1 Carter	21-2-26W C SW SW	2614	3913	-1299	granite	Reagan	3928
Do	Murfin No. 1 Miller	12-2-28W C NE SW	2490	3930	-1440	32 ft. granite wash on granite	Arbuckle	4040
Do	Savage No. 1 Adelman	1-2-29W C SE NW	2748	4231	-1483	14 ft. granite wash on granite	Reagan	4247
Norton	Empire No. 1 LeBeau	27-3-23W C NE SW	2423	3735	-1312	41 ft. granite wash on granite	Pennsylvanian	3779
Do	Gore No. 9 Lawson	30-3S-23W E2 E2 NW	2382	3706	-1324	granite wash	Reagan	3710
Do	Ferguson No. 1 Ankenman	29-3-24W C NE NW	2341	3679	-1338	20 ft. granite wash on granite	Reagan	3725
Do	Sinclair No. 1 Robbins	14-3-25W SW NE NW	2460	3737	-1277	53 ft. granite wash on weathered granite	Pennsylvanian	3848
Do	Union Texas No. 1 Wilftong	15-3-25W NW NW SW	2448	3810	-1362	10 ft. granite wash on granite	Reagan	3830

TABLE 2.—Additional boreholes drilled to Precambrian rocks in Kansas (continued).

County	Company, well number, and farm	Location	Surface elevation, feet	Depth to Precambrian, feet	Elevation of Precambrian, feet	Precambrian rock type	Rock unit on basement	Total depth, feet
Decatur	Empire & Shields No. 1 Brooks	24-3-26W NE NE NE	2537	3954	-1417	granite	Reagan	3956
Do	Farmer No. 1 Johnson	27-3-27W C NE NW	2624	4213	-1589	weathered granite? granite?	Reagan	4218
Norton	B & R No. 1 Archer	8-5-21W NW NE NW	2061	3575	-1514	granite wash	Reagan	3583
Do	Hansen No. 1 Hemphill	4-5-22W NW NE NW	2216	3712	-1496	granite	Reagan	3729
Rooks	Sierra & Houston No. 1 Long	5-7-19W SE SE SW	1988	3556	-1568	15 ft. granite wash on granite	Reagan	3572
Ellis	Alpine No. 2 "B" Leinmiller	2-12-19W NE NW SW	2151	4211	-2060	granite wash	Reagan	4215
Do	Hinkle No. 2 "A" Brungardt	25-13-16W NW SW SW	1914	3512	-1598	granite wash	Arbuckle	3525
Do	Bell Brothers No. 6 Von Lintel	26-13-17W SW NE NW	1964	3982	-2018	granite	Reagan	3983
Russell	Keystone No. 2 Boxberger	2-14-14W NE SW NW	1826	3320	-1494	granite	Arbuckle	3321
Do	Leben No. 1 Williams	9-14-14W SE SE SW	1871	3254	-1383	21 ft. granite wash on granite	Pennsylvanian	3291
Do	Addis No. 4 "C" Boxberger	16-14-14W E2 SW NE	1877	3280	-1403	granite wash	Pennsylvanian	3285
Do	Addis No. 5 "C" Boxberger	16-14-14W W2 NE NE	1877	3281	-1404	granite wash	Pennsylvanian	3286
Do	Addis No. 6 "C" Boxberger	16-14-14W NE NW NE	1874	3279	-1405	granite wash	Pennsylvanian	3316
Do	Shumaker Estate No. 7 Coady	16-14-14W NE SW SW	1870	3284	-1414	granite wash	Pennsylvanian	3290
Do	Cities Service No. 23 "B" Ebel	24-14-14W NE SE SE	1737	3134	-1397	granite wash	Pennsylvanian	3136

Do	Addis No. 6 Mills	4-14-15W NE SE NE	1894	3288	-1394	granite wash	Pennsylvanian	3318
Do	Lario	26-14-15W NE NE SE	1746	3247	-1501	55 ft. granite wash on granite quartzite	Reagan	3325
Ellis	No. 2 Waudby Brunson	31-14S-19W SW SW NE	2102	3826	-1724		Reagan	3828
Do	No. 1 Ward Bea	11-14-20W NW SE NE	2231	3940	-1709	granite wash	Reagan	3941
Wallace	No. 5 Befort Texaco	18-14-38W C NE NE	3559	6019	-2460	8 ft. granite wash on granite quartzite	Reagan	6059
Russell	No. 1 Pierce Birmingham-Bartlett	19-15-11W NW SE SW	1848	3254	-1406		Pennsylvanian	3258
Do	No. 1 "A" Driscoll Birmingham-Bartlett	19-15-11W SE NW SW	1859	3293	-1434	quartzite	Pennsylvanian	3299
Do	No. 2 "A" Driscoll Birmingham-Bartlett	26-15-12W NW NW NE	1841	3330	-1489	quartzite	Arbuckle	3332
Do	No. 1 "A" Standing Birmingham-Bartlett	26-15-12W NW SE NW	1815	3201	-1386	quartzite	Arbuckle	3226
Ellis	No. 1 "G" Standing Kaiser-Francis	10-15-18W SW SE SE	2003	3857	-1854	granite wash?	Reagan	3862
Do	No. 3 Wassinger Woodman & Iannitti	1-15-20W NW NW SE	2047	3722	-1675	granite	Reagan	3723
Rush	No. 1 Simmons Lario	5-16-17W NE SW SE	1990	3700	-1710	granite wash	Reagan	3758
Do	No. 1 Basgall Petroleum, Inc.	27-16-18W C SW NW	2033	3578	-1545	granite wash	Pennsylvanian	3652
Ellsworth	No. 1 "D" Kuhn Gulf Interstate	31-17-9W SW SW NE	1766	3698	-1932	granite	Reagan	3714
Rush	No. 2 Bushton Frontier	13-17-17W NE SW SW	2069	3554	-1485	granite wash	Pennsylvanian	3580
Do	No. 1 Schneider Frontier	15-17-17W SW NE NW	2081	3567	-1486	granite wash	Pennsylvanian	3603
Do	No. 1 Bieber Frontier	22-17-17W NE SW SE	2060	3570	-1510	granite wash	Pennsylvanian	3586
Do	No. 1 Reichel Frontier	24-17-17W NE SW SE	2042	3530	-1488	granite wash	Pennsylvanian	3551

TABLE 2.—Additional boreholes drilled to Precambrian rocks in Kansas (concluded).

County	Company, well number, and farm	Location	Surface elevation, feet	Depth to Precambrian, feet	Elevation of Precambrian, feet	Precambrian rock type	Rock unit on basement	Total depth, feet
Rush	Frontier No. 1 Kleweno	25-17-17W NE SW NW	2056	3557	-1501	granite wash	Pennsylvanian	3616
Do	Frontier No. 1 Thalheim	26-17-17W NE SW NW	2050	3558	-1508	granite wash	Pennsylvanian	3570
Do	Farmer No. 1 Strecker	28-17-18W SW SW SE	2079	4008	-1929	granite wash?	Reagan	4014
Rice	Phil-Han, Adair, & Morton, No. 1 Spotis	23-18-10W W2 SE SE	1743	3288	-1545	quartzite	Arbuckle	3289
Rush	Hines No. 4 Roth	20-18-16W NW SW NE	1954	3581	-1627	quartz porphyry	Reagan	3606
Do	Farmer No. 1 Sueser	5-18-17W NW NW NW	2027	3691	-1664	granite wash	Reagan	3711
Barton	Nixon No. 1 Schartz	26-19-15W SE SW SW	1922	3460	-1538	quartzite	Pennsylvanian	3479
Do	Bove et al. No. 3 Button	35-19-15W E2 NW NW	1922	3482	-1560	quartzite	Pennsylvanian	3483
Do	Bove et al. No. 4 Button	35-19-15W NW NW NW	1924	3573	-1649	quartzite	Arbuckle	3575
Stafford	Virginia & Isern No. 4 "A" Mueller	29-21-12W N2 NE SE	1857	4230	-2373	granite wash	Reagan?	4231
Do	G.M.R. (Stanolind) No. 1 Baier	25-21-14W NE SE NE	1920	4412	-2492	granite wash	Reagan?	4413
Hodgeman	Sunray Mid-Continent No. 1 Hoagland	10-21-22W C NE NE	2189	4720	-2531	rhyolite	Arbuckle	4730
Stafford	Stanolind No. 2 Mellies	1-22-12W W2 SW NE	1814	4277?	-2463?	granite wash?	Reagan?	4278
Do	San Rogue No. 1 Kachelman	36-25-14W SW NE SW	1988	5145	-3157	diabase	Reagan	5216
Nemaha	Kaufman & Heim No. 1 Smith	22-1-11E S2 S2 SW	1250?	719	+531?	104 ft. granite wash on granite	Pennsylvanian	913

Marshall	Five Nations No. 1 Seemaster	24-3-8E C NW NW	1240	1470	-230	clastics	Simpson	1627
Do	Five Nations No. 1 Sandman	8-3-9E C SE SE	1280	1391	-111	granite	Simpson	1478
Pottawatomie	Five Nations No. 1 Orsborn	28-7-10E C NE NE	1317	1572	-255	granite	Simpson	1601
Do	K & E No. 1 Edwards	15-8-10E SE SE SW	1154	1076	+78	24 ft. granite wash on weathered granite	Pennsylvanian	1157
Riley	White & Ellis No. 1 Kimbell	5-11-9E NW NW SE	1056	1026	+30	granite	Pennsylvanian	1031
Greenwood	Cities Service No. 99-S Teeeter	16-23-9E SW NE SW	1595	3634	-2039	granite	Arbuckle	3663
Butler	Cities Service No. 289 Koogler	20-26-5E N2 N2 NE	1327	3276	-1949	9 ft. granite wash on granite	Reagan	3286
Elk	Kenny & Cox No. 1 Bryant	33-31-13E NW NE SE	1000?	2690	-1690?	granite	Arbuckle	2701

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- PART 1. METHODS OF CHEMICAL ANALYSIS FOR CARBONATE AND SILICATE ROCKS, by Walter E. Hill, Jr., Wanda N. Waugh, O. Karmie Galle, and Russell T. Runnels, p. 1-30, fig. 1, July 15, 1961.
- PART 2. PLASTIC FLOWAGE OF SALT IN MINES AT HUTCHINSON AND LYONS, KANSAS, by James D. Snyder and Louis F. Dellwig, p. 31-46, fig. 1-7, pl. 1-2, September 15, 1961.
- PART 3. THE MINERAL INDUSTRY IN KANSAS IN 1960, by Walter H. Schoewe, p. 47-90, fig. 1-3, December 30, 1961.
- PART 4. RELATIVE AGES OF VISIBLY CRYSTALLINE CALCITE IN LATE PALEOZOIC LIMESTONES, by John W. Harbaugh, p. 91-126, fig. 1-10, pl. 1-10, December 31, 1961.
- PART 5. FACTORS INFLUENCING THE PRECIPITATION OF DOLOMITIC CARBONATES, by Fred-eric R. Siegel, p. 127-158, fig. 1-9, December 31, 1961.

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- PART 1. THE DECEMBER 25, 1961 EARTHQUAKES IN NORTHWESTERN MISSOURI AND NORTH-EASTERN KANSAS, by Louis F. Dellwig and Lee C. Gerhard, p. 1-12, fig. 1-3, March 31, 1962.
- PART 2. PROGRESS REPORT OF THE KANSAS BASEMENT ROCKS COMMITTEE AND ADDI-TIONAL PRECAMBRIAN WELLS, by Virgil B. Cole and Daniel F. Merriam, p. 1-11, fig. 1-3, April 15, 1962.