

EXPLANATION

STRUCTURE CONTOUR SYMBOLS

- CONTROL FROM OIL WELL DATA
- CONTROL BY SURFACE MAPPING AND ADJUSTED INTERVAL BETWEEN TOP OF COLORADO SHALE AND MADISON LIMESTONE
- CONTROL INADEQUATE, POSITION OF CONTOUR INFERRED
- DEPRESSION CONTOUR

THE INTERVAL FROM CONTOURED HORIZON TO TOP OF COLORADO SHALE VARIES FROM 2,350 TO 2,405 FEET, INCREASING NORTHWESTWARD

WELL SYMBOLS

- OIL WELL
- OIL WELL, (SUNBURST SAND PRODUCTION)
- OIL WELL WITH SHOW OF GAS
- OIL WELL, ABANDONED
- SHOW OF OIL, ABANDONED
- SHOW OF OIL AND GAS, ABANDONED
- GAS WELL, (BLACKLEAF PRODUCTION)
- SHOW OF GAS, ABANDONED
- DRY HOLE, ABANDONED

MISCELLANEOUS SYMBOLS

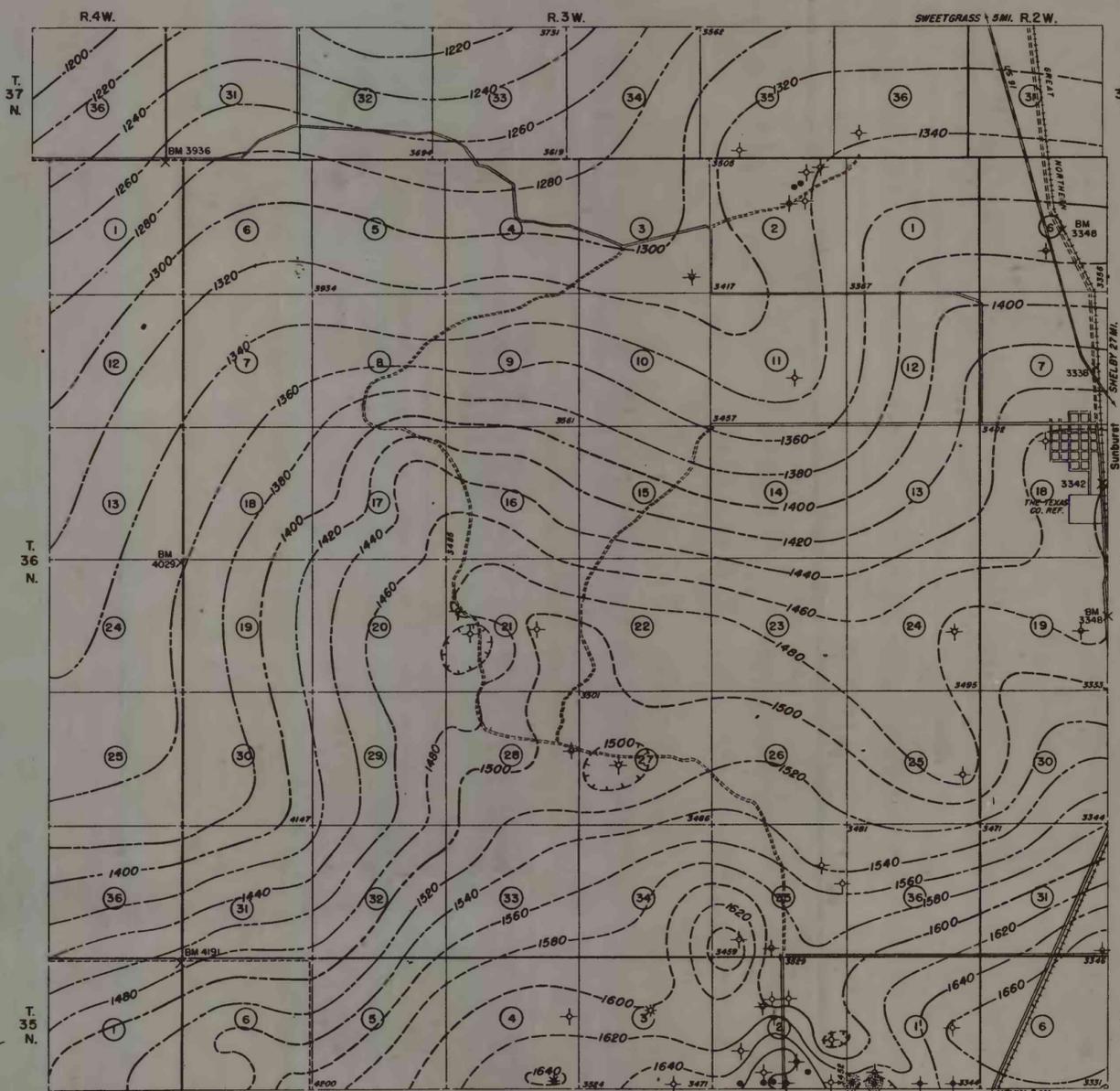
- BITUMINOUS SURFACED ROAD
- GRADED GRAVEL ROAD
- UNSURFACED ROAD OR TRAIL
- FOUND CORNER SECTION NUMBER
- SECTION CORNER WITH ELEVATION
- BENCH MARK

NOTE ON PRODUCTION

OIL IN THE THORPE POOL IS PRODUCED FROM THE SUNBURST SAND, KOOTENAI FM., BY 1 WELL; AND FROM THE BASAL SAND OF THE ELLIS FM. BY 2 WELLS. THE SUNBURST SAND AVERAGES ABOUT 25 FEET IN THICKNESS. THE BASAL ELLIS SAND IS GENERALLY 5 TO 10 FEET THICK, BUT LOCALLY IT MAY BE ABSENT. OIL GRAVITY VARIES FROM 39° TO 44.5° A.P.I. INITIAL PRODUCTION VARIES FROM 40 TO 280 BARRELS PER DAY, AND DECLINE IS GRADUAL. TOTAL PRODUCTION FROM POOL OPENING, MARCH 25, 1941, TO JUNE 1, 1946 WAS 29,036 BARRELS. OVER HALF OF THIS AMOUNT WAS PRODUCED FROM 1 ELLIS WELL. THIS POOL OCCURS ABOUT 75 FEET BELOW THE CLOSING MADISON CONTOUR ON KEVIN-SUNBURST DOME, AND MARKS THE LOWEST ALTITUDE AT WHICH COMMERCIAL OIL PRODUCTION HAS BEEN FOUND IN THE KEVIN-SUNBURST DISTRICT.

GAS FOR LEASE USE IS PRODUCED FROM 2 WELLS IN SEC. 3, T. 35 N., R. 3 W. FROM A SAND IN THE BLACKLEAF SANDY MEMBER OF THE COLORADO SHALE. SMALL AMOUNTS OF GAS HAVE BEEN RECORDED FROM BOTH THE SUNBURST SAND AND THE MADISON LIMESTONE, BUT COMMERCIAL PRODUCTION HAS NOT BEEN FOUND IN T. 36 N., R. 3 W.

ALONG THE SOUTH MARGIN OF THE MAP OIL OCCURS IN THE MADISON LIMESTONE AT THE NORTH ENDS OF THE CAMPBELL POOL, THE ROCKY RIDGE POOL, AND IN THE SUNBURST SAND IN THE CASBARY-SUNBURST POOL OF THE WEST KEVIN-SUNBURST DISTRICT. THE OCCURRENCE AND PRODUCTION OF OIL IN THESE POOLS IS DESCRIBED IN THE PRODUCTION NOTE ON SHEET B, MAP OF T. 35 N., R. 3 W.



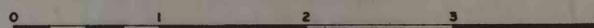
BASE COMPILED FROM G.L.O. TOWNSHIP PLATS AND AUTHORS' FIELD SHEETS.

GEOLOGY BY C.E. ERDMANN AND J.T. GIST 1944; J.W. NORDQUIST 1946

UNITED STATES DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY

MAP SHOWING CONTOURS ON ERODED SURFACE OF MADISON LIMESTONE AND WELLS REACHING THE MADISON T. 36 N., R. 3 W., TOOLE COUNTY, MONTANA

SCALE OF MILES



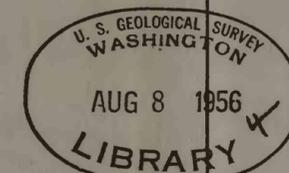
CONTOUR INTERVAL 20 FEET. DATUM MEAN SEA LEVEL

JANUARY 1947

STANDARD WELL LOG FOR T.36N., R.3W.

SYSTEM	SERIES	GROUP	FORMATION	THICKNESS (FT.)	GRAPHIC LOG	DESCRIPTION AND REMARKS
SUNBURST	MONTANA GR.	EAGLE SS.	145-168	136-45		TWO MEDICINE FM.
						VIRGELLE SANDSTONE MEMBER
						TRANSITION ZONE
						See Composite Section of Exposed Rocks on Sheet A
						Lettered beds are markers for structural mapping
						Shale, dark gray, silty, often finely micaceous, contains numerous limestone concretions and thin layers of bentonite
						Sandstone, calcareous, fine-grained, laminated with dark-gray sandy shale
						Sandstone, dark-gray, fine-grained with gray and black chert pebbles
						Shale, gray-green with bentonite
						Sandstone, yields water in Thorpe area
SUNBURST	MONTANA GR.	NIORARA FM.	650	1030		Shale, dark gray, silty, often finely micaceous, contains numerous limestone concretions and thin layers of bentonite
						Sandstone, calcareous, fine-grained, laminated with dark-gray sandy shale
						Sandstone, dark-gray, fine-grained with gray and black chert pebbles
						Shale, gray-green with bentonite
						Sandstone, yields water in Thorpe area
						Shale, dark gray
						Sandstone, light-gray, medium-grained
						Shale, dark-gray, sandy
						Sandstone, gray, medium-grained, non-calcareous, yields water in south part of township
						Sandstone, medium-gray, fine-grained, with white clay matrix; contains gas locally
SUNBURST	MONTANA GR.	KOOTENAI FM.	392	1100		Sandstone, light-gray, calcareous
						Sandstone, light-gray, fine-grained
						Mudstone, gray-green, red and moroon
						Sandstone, calcareous with black chert
						Sandstone, light-gray, fine-grained, non-calcareous with white clay matrix
						Sunburst sand (Oil locality)
						Mudstone, yellow and gray
						Sandstone, gray-red, fine-grained with thin laminae of dark micaceous shale
						Shale, non-fissile, gray to dark gray, calcareous toward base
						Sandstone, gray, calcareous
MISSISSIPPIAN	JURASSIC	MADISON LS.	1100	215		Limestone, white to cream-colored, dense, crystalline, cherty. Eroded surface is porous and dolomitic locally
						DISCONFORMITY

GRAPHIC LOG IS A COMPOSITE OF SAMPLE LOG OF PACIFIC WESTERN OIL CORP. - CATLETT WELL NO. 1, SW SE SEC. 4, T. 35 N., R. 3 W., AND DRILLERS' LOGS OF OTHER WELLS IN MAPPED AREA



Montana (Toole county, T36N R3W). Geol. 1:63,360. 1947. sheet 2 copy 1