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UNITED STATES
DEPARTMENT OF THE INTERIOR
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Federal Center, Denver, Colorado 80225

RADIOCHEMICAL ANALYSES OF GROUND-WATER SAMPLES
COLLECTED AFTER THE SALMON EVENT
IN THE VICINITY OF TATUM SALT DOME,
LAMAR COUNTY, MISSISSIPPI

(Dribble-47,
Supplement 1)

Date Written: 1966
Date Released: 1972

Prepared Under
Agreement No. AT(29-2)-474

for the

Nevada Operations Office
U.S. Atomic Energy Commission

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Dribble-47,
Supplement 1

USGS-474-124

UNITED STATES
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GEOLOGICAL SURVEY

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By

W. A. Beetem and D. B. Grove

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Dribble-47
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ABSTRACT

Ground-water samples have been collected in the vicinity of Tatum salt dome, Mississippi, the U.S. Atomic Energy Commission Project Test Site. These samples were collected after the Salmon Event in conjunction with facilities operated by Isotopes, Inc., and Reynolds Electrical and Engineering Co. The 41 samples tabulated herein were analyzed by the U.S. Geological Survey as part of the evaluation program after the Salmon Event.

INTRODUCTION

This is the fourth release of radiochemical data obtained by analyzing water samples collected cooperatively with Isotopes, Inc., or through the use of Atomic Energy Commission (AEC) facilities operated by Reynolds Electrical and Engineering Co. (REECo). The continued cooperation of Isotopes, Inc., is gratefully acknowledged. Mr. R. E. Taylor and W. T. Oakley, U.S. Geological Survey have provided field support in obtaining and defining the water samples.

Locations of the hydrologic test wells and the exploratory holes sampled are shown on figure 1.

Brand names given in this report are provided to identify specific equipment used, and does not constitute an endorsement of the products by the U.S. Geological Survey.

Figure 1.— MAP OF TATUM DOME AREA

PROCEDURES AND RESULTS

Water samples received for analysis at the Denver Laboratory are first assigned a laboratory number. The sample bottles are then marked with these numbers and all pertinent information supplied with the sample is typed on data cards. All identifying information written on the bottle is removed before the sample is submitted to the analysts for analysis. These procedures have been adopted as a quality control measure and are standard for all incoming water samples.

Gross alpha, gross beta, and tritium determinations are made on all samples submitted. In addition, a gross gamma scan is made when so indicated on the analytical sheets. When anomalously high gross beta or gross alpha counts are obtained, sample planchets are recounted and a duplicate sample prepared to substantiate the data. If the tritium determination indicates concentrations exceeding normal background levels, aliquots of the samples are sent to a laboratory in Washington, D. C., for electrolytic concentration and subsequent low-level liquid scintillation counting. Various other radiochemical determinations may be made, depending on the results obtained for gross alpha, gross beta, and the gross gamma scan.

The determination of the tritium concentration is made on part of the distillate obtained from a small volume of the sample, which is distilled to dryness. For counting, a 4.0-ml (milliliter) aliquot of the sample distillate is mixed with 18.0-ml of a dioxane-base

liquid scintillation "cocktail" in a polyethylene counting vial. The vial is placed in a refrigerated sample changer and associated Packard Model 314E liquid scintillation spectrometer and the sample counted three times over a period of 2 days. The entire procedure is repeated after an interval of at least 7 days and the 6 values averaged and reported.

Beta activity of the water samples analyzed is determined on sample aliquots ranging in volume from 5 to 1,000 ml. Aliquot volumes chosen for analyses are dependent upon the total dissolved solids in the samples and are chosen to yield deposits within certain weight tolerances, which will standardize self-absorption of the samples.

Gross alpha values are reported for aliquots of sufficient size to give significant counts above background. For aliquots too small to give significant counts above background, gross alpha values are reported as "sought but not detected by method used."

Analytical data obtained on the samples analyzed for this report have been obtained according to this procedure and are summarized in table 1.

Table 1.--Radiochemical analyses of ground-water samples in the vicinity
of Tatum salt dome, Lamar Co., Mississippi

Well	Date of collection	Laboratory number	Aquifer	Gross beta as $\text{Sr}^{90} - \text{Y}^{90}$ ($\mu\text{c}/\text{ml}$)	Gross alpha as U equivalent ($\mu\text{g}/\text{l}$)	Date determined	Gross gamma scan	Tritium ($\mu\text{c}/\text{ml}$)
HT-2c	08-26-65	660153	Local	2.3×10^{-9}	3.9	10-30-65	--	ND
Do	09-03-65	660162	do	5.2×10^{-9}	3.6	11-09-65	--	ND
Do	09-23-65	660207	do	6.9×10^{-9}	3.3	11-10-65	--	ND
Do	09-30-65	660225	do	6.8×10^{-9}	3.3	11-19-65	--	ND
Do	10-07-65	660274	do	3.0×10^{-8}	1.6	03-14-69	--	ND
Do	10-14-65	660353	do	2.4×10^{-9}	<2.2	11-24-65	--	ND
HT-4	05-26-65	650619	1	6.6×10^{-9}	<4.9	10-16-65	BL	ND
HT-2a	08-26-65	660151	2a	8.2×10^{-9}	<.9	11-03-65	--	ND
Do	09-03-65	660161	do	3.8×10^{-9}	1.2	11-09-65	--	ND
Do	09-23-65	660208	do	3.7×10^{-9}	<1.2	11-10-65	--	ND
Do	09-30-65	660224	do	1.2×10^{-9}	<1.2	11-19-65	--	ND
Do	10-07-65	660275	do	3.2×10^{-9}	1.3	11-20-65	--	ND
Do	10-14-65	660348	do	3.9×10^{-9}	1.2	11-24-65	--	ND
HT-5	05-26-65	650618	2a	3.8×10^{-8}	<9.1	10-16-65	BL	ND
Do	06-30-65	660012	do	4.5×10^{-9}	1.9	08-31-65	BL	ND
HT-6	07-08-65	660032	2b	1.3×10^{-8}	<9.5	10-16-65	--	ND
Do	09-30-65	660227	do	8.4×10^{-9}	<11	11-19-65	--	ND
Do	10-14-65	660349	do	4.1×10^{-9}	<9.2	11-24-65	--	ND
E-1	08-26-65	660156	3a	$<5.0 \times 10^{-9}$	<12	10-30-65	--	ND
Do	09-30-65	660228	do	$<5.0 \times 10^{-9}$	<12	11-20-65	--	ND
Do	10-14-65	660351	do	$<5.0 \times 10^{-9}$	<11	11-24-65	--	ND
E-14b(U)	07-08-65	660031	3a	6.7×10^{-9}	<7.5	10-16-65	--	ND
Do	08-06-65	660142	do	1.3×10^{-8}	<8.8	09-01-65	--	ND

Table 1.--Radiochemical analyses of ground-water samples in the vicinity
of Tatum salt dome, Lamar Co., Mississippi--Continued

Well	Date of collection	Laboratory number	Aquifer	Gross beta as $\text{Sr}^{90} - \text{Y}^{90}$ ($\mu\text{c}/\text{ml}$)	Gross alpha as U equivalent ($\mu\text{g}/\text{l}$)	Date determined	Gross gamma scan	Tritium ($\mu\text{c}/\text{ml}$)
HT-1(3)	08-26-65	660152	3a and 3b	3.6×10^{-9}	<1.1	11-24-65	--	ND
Do	09-30-65	660223	do	2.0×10^{-9}	<1.4	11-19-65	--	ND
Do	10-14-65	660356	do	3.7×10^{-9}	<1.0	11-25-65	--	ND
HT-2(3)	04-28-65	650566	3a	3.1×10^{-8}	<1.3	08-28-65	BL ^{1/}	5.4×10^{-5}
Do	08-26-65	660150	do	3.4×10^{-8}	8.3	10-29-65	-- ^{1/}	6.4×10^{-5}
Do	09-21-65	660203	do	1.2×10^{-8}	11	11-24-65	-- ^{1/}	8.7×10^{-5}
HT-3	09-30-65	660230	Calcite caprock	1.2×10^{-7}	<24	11-20-65	--	ND
Do	10-14-65	660350	do	$<7.6 \times 10^{-9}$	<29	11-24-65	--	ND
o E-9	05-26-65	650617	do	9.6×10^{-9}	<26	10-15-65	BL	ND
E-14b(L)	07-08-65	660030	do	$<7.6 \times 10^{-9}$	<21	10-16-65	--	ND
Do	08-06-65	660143	do	1.7×10^{-8}	26	09-01-65	--	ND
Do	08-26-65	660155	do	$<7.6 \times 10^{-9}$	<21	10-30-65	--	ND
Do	09-16-65	660184	do	$<7.4 \times 10^{-9}$	<18	11-10-65	--	ND
Do	09-30-65	660226	do	9.5×10^{-9}	<16	03-16-66	--	ND
Do	10-14-65	660352	do	1.2×10^{-8}	<21	11-24-65	--	ND
HT-1(4)	09-30-65	660229	4	1.6×10^{-8}	<10	11-20-65	--	ND
Do	10-14-65	660354	do	8.8×10^{-9}	<14	11-24-65	--	ND
HT-1(5)	08-26-65	660154	5	$<1.2 \times 10^{-7}$	<340	10-30-65	--	ND

ND Sought but not detected by method used.

BL Nothing detected above normal background level.

-- Not determined.

(U) Upper.

(L) Lower.

^{1/} Hydrologic test well HT-2 was used as disposal facility. Analytical values have no relation to ground-water contamination from detonation.

SUMMARY

Water samples have been collected periodically for 15 months since the Salmon Event. Other U.S. Geological Survey reports and this report tabulate radiochemical data obtained from analyses of the water samples collected by Isotopes, Inc., sampling network. Isotopes, Inc., discontinued their study efforts in the area in December 1965. As a result of this program termination and because the level of radioactive concentrations indicate no significant change when compared to sample analyses prior to the event, the sampling frequency and network size has been reduced.

Additional samples taken from the wells in the vicinity of the Salmon Event before or during December 1965 are being analyzed.

If pumping of the supply wells and the HT-2 complex wells is continued, sampling will be on an intermittent basis after December 1965.

Lab. No. 660153U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well HT-2c
Location Tatum Salt Dome, Lamar Co., Mississippi
NE 1/4 SW 1/4 SW 1/4 Sec 14, T 2 N., R 16 W. Field/Office No. _____Date Col. 8-26-65 Time _____
Col. By USGS
Field detns: Temp. (°F) 70 pH _____
Sp. Cond. (μmhos) 250 Eh _____
Appearance ClearWell Type Drilled Use Observation
Depth (ft) 366 Cased to 344 ft.
Diam. (in) 6 5/8 OD Date Drilled 4-61
Water level (ft) _____
Discharge 100 gpm estimated 8-26-65
W.B.F. Pascagoula and Hattiesburg Fms.,
undiff., local aquifer, 344 to 366 ft.
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>μg/l</u>			
Radium as Ra ²²⁶			
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	<u>2.3</u>		<u>10-30-65</u>
Gross α as U equivalent <u>μg/l</u>	<u>3.9</u>		<u>10-30-65</u>
Net extr. α, U equivalent <u>μg/l</u>			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids mg/l	<u>220</u>		
Isotopic Analysis			Remarks:
Barium-lanthanum ¹⁴⁰			Stainless steel wire-wrapped screen from 344 to 366 ft.
Cerium-praseodymium ¹⁴⁴			
Cesium ¹³⁷			ND: Sought but not detected by method used 11-8-65.
Chromium ⁵⁷			
Cobalt ⁶⁰			
Ruthenium-rhodium ¹⁰⁶			
Tritium	<u>ND</u>		
Zinc ⁶⁵			
Zirconium-niobium ⁹⁵			

Date sample received 8-31-65
Date data released _____
Program classification _____Analyst E. Villasana; T. Sinconis
Date checked 11-22-65
Checked by V. J. Janzer

*Analyzed only when indicated by gross β count.

Revised form 3-17-65

Lab. No. 660162U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well HT-2cLocation Tatum Salt Dome, Lamar Co., MississippiNE 1/4 SW 1/4 SW 1/4 Sec. 14, T. 2 N., R. 16 W. Field/Office No. _____Date Col. 9-3-65 Time _____
Col. By USGS
Field detns: Temp. (°F) 71 pH _____
Sp. Cond. (µmhos) 215 Eh _____
Appearance ClearWell Type Drilled Use Observation
Depth (ft) 366 Cased to 344 ft.
Diam. (in) 6-5/8 OD Date Drilled 4-61
Water level (ft) _____
Discharge 100 gpm measured
W.B.F. Pascagoula and Hattiesburg Fms.,
undiff., local aquifer, 344 to 366 ft.
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium µg/l			
Radium as Ra ²²⁶			
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	5.2		11-9-65
Gross α as U equivalent µg/l	3.6		11-9-65
Net extr. α, U equivalent µg/l			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids mg/l	190		

Isotopic Analysis	
Barium-lanthanum ¹⁴⁰	
Cerium-praseodymium ¹⁴⁴	
Cesium ¹³⁷	
Chromium ⁵⁷	
Cobalt ⁶⁰	
Ruthenium-rhodium ¹⁰⁶	
Tritium	ND
Zinc ⁶⁵	
Zirconium-niobium ⁹⁵	

Remarks:

Stainless steel wire-wrapped screen
from 344 to 366 ft.

Sampled after pumping 24,000 gallons.

ND: Sought but not detected by
method used 9-13-65.Date sample received 9-8-65
Date data released _____
Program classification Project Dribble
Salmon Event
*Analyzed only when indicated by gross β count.Analyst E. Villasana; T. Sinconis
Date checked 11-22-65
Checked by V. J. Janzer

Lab. No. 660207U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well HT-2cLocation Tatum Salt Dome, Lamar Co., MississippiNE 1/4 SW 1/4 SW 1/4 Sec. 14, T. 2 N., R. 16 W. Field/Office No. _____Date Col. 9-23-65 Time _____
Col. By USGS
Field detns: Temp. (°F) 78 pH _____
Sp. Cond. (μmhos) 260 Ek. _____
Appearance ClearWell Type Drilled Use Observation
Depth (ft) 366 Cased to 344 ft.
Diam. (in) 6-5/8 OD Date Drilled 4-61
Water level (ft) _____
Discharge 100 gpm estimated
W.B.F. Pascagoula and Hattiesburg Fms.,
undiff., local aquifer, 344 to 366 ft.
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>μg/l</u>			
Radium as Ra ²²⁶			
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	<u>6.9</u>		<u>11-10-65</u>
Gross α as U equivalent <u>μg/l</u>	<u>3.0</u>		<u>11-10-65</u>
Net extr. α, U equivalent <u>μg/l</u>			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids <u>mg/l</u>	<u>190</u>		

Isotopic Analysis		Remarks:
Barium-lanthanum ¹⁴⁰		Stainless steel wire-wrapped screen from 344 to 366 ft. Sampled after 30,000 gallons were pumped. ND: Sought but not detected by method used 11-23-65.
Cerium-praseodymium ¹⁴⁴		
Cesium ¹³⁷		
Chromium ⁵⁷		
Cobalt ⁶⁰		
Ruthenium-rhodium ¹⁰⁶		
Tritium	<u>ND</u>	
Zinc ⁶⁵		
Zirconium-niobium ⁹⁵		

Date sample received 10-7-65
Date data released _____
Program classification Project Dribble
Salmon EventAnalyst T.Sinconis; H.C.Claassen
Date checked 11-18-65
Checked by V. I. Janzer

*Analyzed only when indicated by gross β count.

Lab. No. 660225U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well HT-2cLocation Tatum Salt Dome, Lamar Co., MississippiNE 1/4 SW 1/4 SW 1/4 Sec. 14, T. 2 N., R. 16 W. Field/Office No. _____Date Col. 9-30-65 Time 1330Col. By USGSField detns: Temp. (°F) 70 pH _____Sp. Cond. (μmhos) 285 Eh _____Appearance ClearWell Type Drilled Use ObservationDepth (ft) 366 Cased to 344 ft.Diam. (in) 6-5/8 OD Date Drilled 4-61

Water level (ft) _____

Discharge 50 gpm on 3-19-65W.B.F. Pascagoula and Hattiesburg Fms., undiff., local aquifer, 344 to 366 ft.Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>μg/l</u>			
Radium as Ra ²²⁶			
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	<u>6.8</u>		<u>11-19-65</u>
Gross α as U equivalent <u>μg/l</u>	<u>3.3</u>		<u>11-19-65</u>
Net extr. α, U equivalent <u>μg/l</u>			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids mg/l	<u>160</u>		
Isotopic Analysis			
Barium-lanthanum ¹⁴⁰			
Cerium-praseodymium ¹⁴⁴			
Cesium ¹³⁷			
Chromium ⁵⁷			
Cobalt ⁶⁰			
Ruthenium-rhodium ¹⁰⁶			
Tritium	<u>ND</u>		
Zinc ⁶⁵			
Zirconium-niobium ⁹⁵			

Remarks:

Stainless steel wire-wrapped screen from 344 to 366 ft.ND: Sought but not detected by method used 10-11-65.Date sample received 10-20-65Date data released 11-24-65Program classification Project DribbleSalmon Event

*Analyzed only when indicated by gross β count.

Analyst E. Villasana; T. SinconisDate checked 11-24-65Checked by V. J. Janzer

Lab. No. 660274U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well HT-2cLocation Tatum Salt Dome, Lamar Co., MississippiNE 1/4 SW 1/4 SW 1/4 Sec. 14, T. 2 N., R. 16 W. Field/Office No. _____Date Col. 10-7-65 Time 1250
Col. By USGS
Field detns: Temp. (°F) 70 pH _____
Sp. Cond. (μmhos) 310 Eh _____
Appearance ClearWell Type Drilled Use Observation
Depth (ft) 366 Cased to 344 ft.
Diam. (in) 6-5/8 OD Date Drilled 4-61
Water level (ft) 130 below l.s.d. 9-13-65
Discharge 50 gpm on 3-19-65
W.B.F. Pascagoula and Hattiesburg Fms.,
undiff., local aquifer, 344 to 366 ft.
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>μg/l</u>			
Radium as Ra ²²⁶			
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	<u>3.0</u>		<u>3-14-66</u>
Gross α as U equivalent <u>μg/l</u>	<u>1.6</u>		<u>3-14-66</u>
Net extr. α, U equivalent <u>μg/l</u>			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids <u>mg/l</u>	<u>160</u>		

Isotopic Analysis		Remarks:
Barium-lanthanum ¹⁴⁰		Stainless steel wire-wrapped screen from 344 to 366 ft. ND: Sought but not detected by method used 10-11-65.
Cerium-praseodymium ¹⁴⁴		
Cesium ¹³⁷		
Chromium ⁵⁷		
Cobalt ⁶⁰		
Ruthenium-rhodium ¹⁰⁶		
Tritium	<u>ND</u>	
Zinc ⁶⁵		
Zirconium-niobium ⁹⁵		

Date sample received 10-20-65
Date data released 11-24-65
Program classification Project Dribble
Salmon EventAnalyst E. Villasana; T. Sinconis
Date checked 3-14-66
Checked by V. J. Janzer

*Analyzed only when indicated by gross β count.

Lab. No. 660353U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well HT-2cLocation Tatum Salt Dome, Lamar Co., MississippiNE 1/4 SW 1/4 SW 1/4 Sec. 14, T. 2 N., R. 16 W. Field/Office No. _____Date Col. 10-14-65 Time 1350
Col. By USGS
Field detns: Temp. (°F) 70 pH _____
Sp. Cond. (µmhos) 345 Eh _____
Appearance ClearWell Type Drilled Use Observation
Depth (ft) 366 Cased to 344 ft.
Diam. (in) 6-5/8 OD Date Drilled 4-61
Water level (ft) 130 below l.s.d. 9-16-65
Discharge 50 gpm estimated 10-14-65
W.B.F. Pascagoula and Hattiesburg Fms.,
undiff., local aquifer, 344 to 366 ft.
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>µg/l</u>			
Radium as Ra ²²⁶			
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	<u>2.4</u>		<u>11-24-65</u>
Gross α as U equivalent <u>µg/l</u>	<u><2.2</u>		<u>11-24-65</u>
Net extr. α, U equivalent <u>µg/l</u>			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids mg/l	<u>170</u>		
Isotopic Analysis			
Barium-lanthanum ¹⁴⁰			Remarks: Stainless steel wire-wrapped screen from 344 to 366 ft. Sampled after pumping 5 hrs. at 50 gpm estimated. ND: Sought but not detected by method used 10-30-65.
Cerium-praseodymium ¹⁴⁴			
Cesium ¹³⁷			
Chromium ⁵⁷			
Cobalt ⁶⁰			
Ruthenium-rhodium ¹⁰⁶			
Tritium	<u>ND</u>		
Zinc ⁶⁵			
Zirconium-niobium ⁹⁵			

Date sample received 10-14-65
Date data released 12-3-65
Program classification Project Dribble
Salmon EventAnalyst E. Villasana; T. Sinconis
Date checked 11-22-65
Checked by V. J. Janzer

*Analyzed only when indicated by gross β count.

Revised form 3-17-65

Lab. No. 650619U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well ND-1
Location Tatum Salt Dome, Lar. Co., Mississippi
NE 1/4 1/4 1/4 Sec. 14, T. 2 N., R. 16 W. Field/Office No. _____Date Col. 5-26-65 Time _____
Col. By Isotopes, Inc.
Field detns: Temp. (°F) 80 pH _____
Sp. Cond. (µmhos) 410 Eh _____
Appearance ClearWell Type Drilled Use Observation
Depth (ft) 474 Cased to _____
Diam. (in) _____ Date Drilled April 1963
Water level (ft) 92.32 below l.s.d. 3-4-65
Discharge 25.3 gpm on 4-28-65
W.B.F. Pascagoula and Hattiesburg Fms.,
undiff. Producing aquifer 1, 361 to 421 ft.
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>ug/l</u>			
Radium as <u>Ra-226</u>			
Gross β (as <u>Sr-90 - Y-90</u>)	<u>6.6</u>		<u>10-16-65</u>
Gross α as U equivalent <u>ug/l</u>	<u><4.9</u>		<u>10-16-65</u>
Net extr. α , U equivalent <u>ug/l</u>			
Gross γ (as <u>Cs-137</u>)			
Potassium-40			
Strontium-90 *			
Dissolved solids <u>mg/l</u>	<u>380</u>		
Gross gamma scan	<u>BL</u>		

Isotopic Analysis		Remarks:
Barium-lanthanum-140		Diam. (in.) and Cased to:
Cerium-praseodymium-144		8 5/8 OD, 0 to 356 ft.;
Cesium-137		5 1/2 OD, 350 to 474 ft.
Chromium-57		
Cobalt-60		
Ruthenium-rhodium-106		Sample taken after 11,500
Tellurium	<u>ND</u>	gallons were pumped.
Zinc-65		ND: Sought but not detected by method
Zirconium-niobium-95		used 7-21-65.
		BL: Nothing detected above normal
		background level.

Date sample received _____
Date data released _____
Program classification Project DribbleAnalyst T. Sinconis
Date checked 11-2-65
Checked by V. J. Janzer*Analyzed only when indicated by gross β count.

Lab. No. 660151U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource HT-2aLocation Tatum Salt Dome, Lamar Co., MississippiNE 1/4 SW 1/4 SW 1/4 Sec 14 T 2 N R 16 W Field/Office No. _____Date Col. 2-26-65 Time _____
Col. By U.S.G.S.
Field detns: Temp. (°F) 76 pH _____
Sp. Cond. (µmhos) 105 Eh _____
Appearance ClearWell Type Drilled Use Observation
Depth (ft) 1,079 Cased to See Remarks
Diam. (in) See Remark Date Drilled 4-30-61
Water level (ft) _____
Discharge _____
W.B.F. Pascagoula and Hattiesburg Fms.,
undiff., aquifer 2a; 935 to 1,016 ft.
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>µg/l</u>			
Radium as Ra ²²⁶			
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	<u>8.2</u>		<u>10-29-65</u>
Gross α as U equivalent <u>µg/l</u>	<u><.9</u>		<u>11-3-65</u>
Net extr. α, U equivalent <u>µg/l</u>			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids <u>mg/l</u>	<u>69</u>		
Isotopic Analysis			
Barium-lanthanum ¹⁴⁰			Remarks: Slotted pipe 935.64--1,016 ft. Diam.(in.) and Cased to: 5 OD, 0-943 ft.; 3½ OD, 892.83--1,080 ft. ND: Sought but not detected by method used 9-2-65.
Cerium-praseodymium ¹⁴⁴			
Cesium ¹³⁷			
Chromium ⁵⁷			
Cobalt ⁶⁰			
Ruthenium-rhodium ¹⁰⁶			
Tritium	<u>ND</u>		
Zinc ⁶⁵			
Zirconium-niobium ⁹⁵			

Date sample received 9-1-65
Date data released _____
Program classification Project DribbleAnalyst P.K.Roscio; T.Sinconis
Date checked 3-17-66
Checked by V. J. Janzer*Analyzed only when indicated by gross β count.
Salmon Event

Lab. No. 660161U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource HT-2aLocation Tatum Salt Dome, Lamar Co., MississippiNE 1/4 SW 1/4 SW 1/4 Sec 14 T 2 N R 16 W Field/Office No. _____Date Col. 9-3-65 Time _____
Col. By USGS
Field detns: Temp. ($^{\circ}$ F) 77 pH _____
Sp. Cond. (μ mhos) 60 Eh _____
Appearance ClearWell Type Drilled Use Observation
Depth (ft) 1,079 Cased to See Remarks
Diam. (in) See Remark Date Drilled 4-30-61
Water level (ft) _____
Discharge 23 gpm measured
W.B.F. Pascagoula and Hattiesburg Fms.,
undiff., aquifer 2a; 935 to 1,016 ft.
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium μ g/l			
Radium as Ra ²²⁶			
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	3.8		11-9-65
Gross α as U equivalent μ g/l	1.2		11-9-65
Net extr. α , U equivalent μ g/l			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids mg/l	83		

Isotopic Analysis		Remarks:
Barium-lanthanum ¹⁴⁰		Slotted pipe 935.64--1,016 ft.
Cerium-praseodymium ¹⁴³		
Cesium ¹³⁷		Diam.(in.) and Cased to: 5 OD,
Chromium ⁵⁷		0-943 ft.; 3 $\frac{1}{2}$ OD, 892.83--1,080 ft.
Cobalt ⁶⁰		Sampled after pumping 27,600 gallons.
Ruthenium-rhodium ¹⁰⁶		ND: Sought but not detected by
Tritium	ND	method used 9-13-65.
Zinc ⁶⁵		
Zirconium-niobium ⁹⁵		

Date sample received 9-8-65

Date data released _____

Program classification Project Dribble*Analyzed only when indicated by Salmon Event gross β count.Analyst E. Villasana; T. SinconisDate checked 11-18-65Checked by V. J. Janzer

Lab. No. 660208U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource HT-2aLocation Tatum Salt Dome, Lamar Co., MississippiNE 1/4 SW 1/4 SW 1/4 Sec. 14, T. 2 N., R. 16 W. Field/Office No. _____Date Col. 9-23-65 Time _____
Col. By USGS
Field detns: Temp. (°F) 76 pH _____
Sp. Cond. (µmhos) 110 Eh _____
Appearance ClearWell Type Drilled Use Observation
Depth (ft) 1,079 Cased to See Remarks
Diam. (in) See Remark Date Drilled 4-30-61
Water level (ft) 133.44 below l.s.d. 2-18-65
Discharge 23 gpm on 9-23-65
W.B.F. Pascagoula and Hattiesburg Fms.,
undiff., aquifer 2a; 935 to 1,016 ft.
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium µg/l			
Radium as Ra ²²⁶			
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	3.7		11-10-65
Gross α as U equivalent µg/l	<1.2		11-10-65
Net extr. α, U equivalent µg/l			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids mg/l	82		

Isotopic Analysis		Remarks:
Barium-lanthanum ¹⁴⁰		Slotted pipe 935.64--1,016 ft.
Cerium-praseodymium ¹⁴⁴		
Cesium ¹³⁷		Diam.(in.) and Cased to: 5 OD,
Chromium ⁵⁷		0-943 ft.; 3½ OD, 892.83--1,080 ft.
Cobalt ⁶⁰		
Ruthenium-rhodium ¹⁰⁶		Sampled after pumping 30,360 gallons
Tritium	ND	at 23 gpm.
Zinc ⁶⁵		ND: Sought but not detected by method
Zirconium-niobium ⁹⁵		used 11-23-65.

Date sample received 10-7-65

Date data released _____

Program classification Project DribbleSalmon Event

*Analyzed only when indicated by gross β count.

Analyst T.Sinconis; H.C.ClaassenDate checked 11-18-65Checked by V. J. Janzer

Lab. No. 660224U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well HT-2aLocation Tatum Salt Dome, Lamar Co., MississippiNE 1/4 SW 1/4 SW 1/4 Sec. 14, T. 2 N., R. 16 W. Field/Office No. _____Date Col. 9-30-65 Time 1345
Col. By USGS
Field detns: Temp. (°F) 76 pH _____
Sp. Cond. (µmhos) 135 Eh _____
Appearance ClearWell Type Drilled Use Observation
Depth (ft) 1,079 Cased to See Remarks
Diam. (in) See Remark Date Drilled 4-30-61
Water level (ft) 133.44 below l.s.d. 2-18-65
Discharge 23.6 gpm on 3-18-65
W.B.F. Pascagoula and Hattiesburg Fms.,
undiff., aquifer 2a; 935 to 1,016 ft.
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium µg/l			
Radium as Ra ²²⁶			
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	<u>1.2</u>		<u>11-19-65</u>
Gross α as U equivalent µg/l	<u><1.2</u>		<u>11-19-65</u>
Net extr. α, U equivalent µg/l			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids mg/l	<u>90</u>		

Isotopic Analysis

Barium-lanthanum¹⁴⁰
Cerium-praseodymium¹⁴⁴
Cesium¹³⁷
Chromium⁵⁷
Cobalt⁶⁰
Ruthenium-rhodium¹⁰⁶
Cesium
Zinc⁶⁵
Zirconium-niobium⁹⁵

Remarks:

Slotted pipe 935.64--1,016 ft.

Diam.(in.) and Cased to: 5 OD,
0-943 ft.; 3½ OD, 892.83--1,080 ft.ND: Sought but not detected by method
used 10-11-65.Date sample received 10-20-65
Date data released 11-24-65
Program classification Project DribbleAnalyst E. Villasana; T. Sinconis
Date checked 11-24-65
Checked by V. J. Janzer*Analyzed only when indicated by ^{Salmon Event} gross β count.

Revised form 3-17-65

Lab. No. 660275U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource HT-2aLocation Tatum Salt Dome, Lamar Co., MississippiNE 1/4 SW 1/4 SW 1/4 Sec 14 T 2 N R 16 W Field/Office No. _____Date Col. 10-7-65 Time 1235 p.m.Col. By U.S.G.S.Field detns: Temp. (°F) 76 pH _____Sp. Cond. (μmhos) 125 Eh _____Appearance ClearWell Type Drilled Use ObservationDepth (ft) 1,079 Cased to See RemarksDiam. (in) See Remark Date Drilled 4-30-61

Water level (ft) _____

Discharge 23.6 gpm on 3-18-65W.B.F. Pascagoula and Hattiesburg Fms., undiff., aquifer 2a; 935 to 1,016 ft.Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>μg/l</u>			
Radium as Ra ²²⁶			
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	3.2		11-20-65
Gross α as U equivalent <u>μg/l</u>	1.3		11-20-65
Net extr. α, U equivalent <u>μg/l</u>			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids mg/l	73		
Isotopic Analysis			
Barium-lanthanum ¹⁴⁰			Remarks: Slotted pipe 935.64--1,016 ft. Diam.(in.) and Cased to: 5 OD, 0-943 ft.; 3½ OD, 892.83--1,080 ft. ND: Sought but not detected by method used 10-11-65.
Cerium-praseodymium ¹⁴⁴			
Cesium ¹³⁷			
Chromium ⁵⁷			
Cobalt ⁶⁰			
Ruthenium-rhodium ¹⁰⁶			
Tritium	ND		
Zinc ⁶⁵			
Zirconium-niobium ⁹⁵			

Date sample received 10-11-65Date data released 11-24-65Program classification Project DribbleAnalyst E. Villasana; T. SinconisDate checked 11-24-65Checked by V. J. Janzer*Analyzed only when indicated by Salmon Event gross β count.

Revised form 3-17-65

Lab. No. 660348U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well HT-2aLocation Tatum Salt Dome, Lamar Co., MississippiNE 1/4 SW 1/4 SW 1/4 Sec. 14, T. 2 N, R. 16 W. Field/Office No. _____Date Col. 10-14-65 Time 1230
Col. By USGS
Field detns: Temp. (°F) 76 pH _____
Sp. Cond. (µmhos) 105 Eh _____
Appearance ClearWell Type Drilled Use Observation
Depth (ft) 1,079 Cased to See Remarks
Diam. (in) See Remark Date Drilled 4-30-61
Water level (ft) 134.53 below l.s.d. 10-14-65
Discharge 23 gpm on 10-14-65
W.B.F. Pascagoula and Hattiesburg Fms.,
undiff., aquifer 2a; 935 to 1,016 ft.
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>µg/l</u>			
Radium as Ra^{226}			
Gross β (as $Sr^{90} - Y^{90}$)	<u>3.9</u>		<u>11-24-65</u>
Gross α as U equivalent <u>µg/l</u>	<u>1.2</u>		<u>11-24-65</u>
Net extr. α , U equivalent <u>µg/l</u>			
Gross γ (as Cs^{137})			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids <u>mg/l</u>	<u>75</u>		

Isotopic Analysis

Barium-lanthanum¹⁴⁰
Cerium-praseodymium¹⁴⁴
Cesium¹³⁷
Chromium⁵⁷
Cobalt⁶⁰
Ruthenium-rhodium¹⁰⁶
Tritium
Zinc⁶⁵
Zirconium-niobium⁹⁵

ND

Remarks:

Slotted pipe 935.64--1,016 ft.

Diam.(in.) and Cased to: 5 OD,
0-943 ft.; 3½ OD, 892.83--1,080 ft.Sampled after 4 hours pumping.
at 23 gpm.ND: Sought but not detected by method
used 10-30-65.Date sample received 10-14-65
Date data released 12-3-65
Program classification Project DribbleAnalyst E.Villasana; T.Sinconis
Date checked 11-22-65
Checked by V. I. Janzer*Analyzed only when indicated by gross β count.
Salmon Event

Lab. No. 650618

U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - Radiochemical

Source Well HT-5
Location Tatum Salt Dome, Lower Co., Mississippi
NE 1/4 1/4 1/4 Sec. 14, T. 2 N., R. 16 W. Field/Office No.

Date Col. 5-26-65 Time
Col. By Isotopes, Inc.
Field detns: Temp. ($^{\circ}$ F) 86 pH
Sp. Cond. (μ mhos) 90 Eh
Appearance Clear

Well Type Drilled Use Observation
 Depth (ft) Cased to
 Diam. (in) Date Drilled 4-63
 Water level (ft) 10' .65 below l.s.d. 3-4-65
 Discharge 17 gpm on 4-27-65
 W.B.F. Pascagoula and Hattiesburg Fms.
undiff., aquifer 2a, 590 to 680 ft.
 Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium $\mu\text{g/l}$	0.4		
Radium as Ra^{226}			
Gross β (as $\text{Sr}^{90} - \text{Y}^{90}$)	38		10-16-65
Gross α as U equivalent $\mu\text{g/l}$	<9.1		10-16-65
Net extr. α , U equivalent $\mu\text{g/l}$			
Gross γ (as Cs^{137})			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids mg/l	620		
Gross gamma scan	BL		

Isotopic Analysis		Remarks:
Barium-Lanthanum ⁴⁰		
Cerium-Praseodymium ⁴⁴		Sample taken after 27,750 gallons were pumped.
Cesium ⁵⁷		
Chromium ⁵⁷		
Cobalt ⁵⁸		ND: Sought but not detected by method used 11-2-65.
Copper-Nickel ⁶⁰		
Iron	ND	
Lead ⁸⁴		BL: Nothing detected above normal background level.
Strontium-niobium ⁸⁵		

7. Sample received 6-1-65

Disc data released

Program classification Project Dribble
Salmon Event

Analyst E. Villasana

Date checked 11-22-05

Checked by V. J. Janzer

*Analyzed only when indicated by gross β count.

Lab. No. 660012U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well HT-5Location Tatum Salt Dome, Lamar Co., MississippiNE 1/4 1/4 1/4 Sec 14, T 2 N., R 16 W. Field/Office No. _____Date Col. 6-30-65 Time _____
Col. By U.S.G.S.
Field detns: Temp. ($^{\circ}$ F) 80 pH _____
Sp. Cond. (μ mhos) _____ Eh _____
Appearance ClearWell Type Drilled Use Observation
Depth (ft) 680 Cased to See Remarks
Diam. (in) See Remark Date Drilled 4-63
Water level (ft) _____
Discharge _____
W.B.F. Pascagoula and Hattiesburg Fms.,
undiff., aquifer 2a, 590 to 680 ft.
Owner U.S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium μ g/l	<0.4		
Radium as Ra ²²⁶	.1		
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	4.5		8-31-65
Gross α as U equivalent μ g/l	1.9		8-31-65
Net extr. α , U equivalent μ g/l			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Gross gamma scan	BL		
Dissolved solids mg/l	90		

Isotopic Analysis	Remarks:
Barium-lanthanum ¹⁴⁰	Diam. (in.) and Cased to 8 5/8 OD, 0 to 569 ft.; 5 1/2 in. screen and liner, 557 to 678.
Cerium-praseodymium ¹⁴⁴	
Cesium ¹³⁷	
Chromium ⁵⁷	BL: Nothing detected above normal background level.
Cobalt ⁶⁰	
Ruthenium-rhodium ⁵⁸	ND: Sought but not detected by method used 7-22-65.
Tritium	
Zinc ⁶⁵	
Zirconium-niobium ⁸⁵	

Date sample received 7-6-65
Date data released 11-22-65
Program classification Project DribbleAnalyst T. Sinconis; P.K. Roscio
Date checked 11-18-65
Checked by V. J. Janzer*Analyzed only when indicated by gross β count.

Lab. No. 660032U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well NT-6
Location Tatum Salt Dome, Lamar Co., Mississippi
SW 1/4 NE 1/4 NE 1/4 Sec. 14, T. 2 N., R. 16 W. Field/Office No. _____Date Col. 7-8-65 Time _____
Col. By Isotopes, Inc.
Field detns: Temp. (°F) 92 pH _____
Sp. Cond. (μmhos) 825 Eh _____
Appearance ClearWell Type Drilled Use Observation
Depth (ft) 812 Cased to See Remarks
Diam. (in) See Remark Date Drilled March 1963
Water level (ft) 108.75 below l.s.d. 3-12-65
Discharge 24.7 gpm on 3-17-65
W.B.F. Pascagoula and Hattiesburg Fms.,
undiff. aquifer 2b, 762 to 802 ft.
Owner U. S. Atomic Energy Commission
Driller: See Remarks

Elements	pc/l	pc/g	Date determined
Uranium <u>μg/l</u>	<u>0.5</u>		
Plutonium as Ra^{226}			
Gross β (as $Sr^{90} - Y^{90}$)	<u>13</u>		<u>10-16-65</u>
Gross α as U equivalent <u>μg/l</u>	<u><9.5</u>		<u>10-16-65</u>
Net extr. α , U equivalent <u>μg/l</u>			
Gross γ (as Cs^{137})			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids <u>mg/l</u>	<u>790</u>		

Isotopic Analysis		Remarks:
Barium-lanthanum ¹⁴⁰		Diam. (in.) and Cased to: <u>12$\frac{1}{4}$ OD, 0 to 741 ft.; 8 OD, blank liner, 732 to 762 ft.; 8 OD screen, 762 to 802 ft.; 8 OD blank liner, 802 to 812 ft.</u> Driller: <u>Porter Well Service for Century Geophysical Corp.</u> ND: <u>Sought but not detected by method used 11-2-65.</u>
Cerium-praseodymium ¹⁴⁴		
Cesium ¹³⁷		
Chromium ⁵⁷		
Cobalt ⁶⁰		
Rhenium-rhodium ¹⁸⁶		
Tritium	<u>ND</u>	
Zinc ⁶⁵		
Zirconium-niobium ⁹⁰		

Date sample received 7-13-65
Date data released _____
Program classification Project Dribble
Salmon EventAnalyst E. Villasana; T. Sinconis
Date checked 11-22-65
Checked by V. J. Janzer*Analyzed only when indicated by gross β count.

Lab. No. 660227U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well HT-6
Location Tatum Salt Dome, Lamar Co., Mississippi
SW 1/4 NE 1/4 NE 1/4 Sec. 14, T. 2 N., R. 16 W. Field/Office No. _____Date Col. 9-30-65 Time 1130
Col. By USGS
Field detns: Temp. (°F) 90 pH _____
Sp. Cond. (μmhos) 1125 Eh _____
Appearance ClearWell Type Drilled Use Observation
Depth (ft) 812 Cased to See Remarks
Diam. (in) See Remark Date Drilled March 1963
Water level (ft) 110.76 below l.s.d. 9-30-65
Discharge 24.4 gpm on 2-25-65
W.B.F. Pascagoula and Hattiesburg Fms.,
undiff. aquifer 2b. 762 to 802 ft.
Owner U. S. Atomic Energy Commission
Driller: See Remarks

Elements	pc/l	pc/g	Date determined
Uranium <u>μg/l</u>			
Radium as Ra^{226}			
Gross β (as $Sr^{90} - Y^{90}$)	<u>8.4</u>		<u>11-19-65</u>
Gross α as U equivalent <u>μg/l</u>	<u><11</u>		<u>11-19-65</u>
Net extr. α, U equivalent <u>μg/l</u>			
Gross γ (as Cs^{137})			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids mg/l	<u>770</u>		

Isotopic Analysis		Remarks:
Barium-lanthanum ¹⁴⁰		Diam. (in.) and Cased to: $12\frac{1}{4}$ OD, 0 to 741 ft.; 8 OD, blank liner, 732 to 762 ft.; 8 OD screen, 762 to 802 ft.; 8 OD blank liner, 802 to 812 ft. Driller: Porter Well Service for Century Geophysical Corp. ND: Sought but not detected by method used 10-11-65.
Cerium-praseodymium ¹⁴⁴		
Cesium ¹³⁷		
Chromium ⁵⁷		
Cobalt ⁶⁰		
Ruthenium-rhodium ¹⁰⁶		
Tritium	<u>ND</u>	
Zinc ⁶⁵		
Zirconium-niobium ⁹⁵		

Date sample received 10-20-65
Date data released 11-24-65
Program classification Project Dribble
Salmon EventAnalyst E. Villasana; T. Sinconis
Date checked 11-23-65
Checked by V. J. Janzer

*Analyzed only when indicated by gross β count.

Lab. No. 660349U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well HT-6Location Tatum Salt Dome, Lamar Co., MississippiSW 1/4 NE 1/4 NE 1/4 Sec. 14, T. 2 N., R. 16 W. Field/Office No. _____Date Col. 10-14-65 Time 1245Col. By USGSField detns: Temp. (°F) 90 pH _____Sp. Cond. (μmhos) 1350 Eh _____Appearance ClearWell Type Drilled Use ObservationDepth (ft) 812 Cased to See RemarksDiam. (in) See Remark Date Drilled March 1963Water level (ft) 110.76 below l.s.d. 10-14-65Discharge 24.7 gpm on 3-11-65W.B.F. Pascagoula and Hattiesburg Fms.,undiff., aquifer 2b. 762 to 802 ft.Owner U. S. Atomic Energy CommissionDriller: See Remarks

Elements	pc/l	pc/g	Date determined
Uranium <u>μg/l</u>			
Radium as Ra ²²⁶			
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	<u>4.1</u>		<u>11-24-65</u>
Gross α as U equivalent <u>μg/l</u>	<u><9.2</u>		<u>11-24-65</u>
Net extr. α, U equivalent <u>μg/l</u>			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids <u>mg/l</u>	<u>760</u>		

Isotopic Analysis		Remarks:
Barium-lanthanum ¹⁴⁰		Diam. (in.) and Cased to: 12 $\frac{1}{4}$ OD, 0 to 741 ft.; 8 OD, blank liner, 732 to 762 ft.; 8 OD screen, 762 to 802 ft.; 8 OD blank liner, 802 to 812 ft. Driller: Porter Well Service for Century Geophysical Corp. Sampled after 4 hrs. and 15 min. pumping at 24.7 gpm. ND: Sought but not detected by method used 10-30-65.
Cerium-praseodymium ¹⁴⁴		
Cesium ¹³⁷		
Chromium ⁵⁷		
Cobalt ⁶⁰		
Ruthenium-rhodium ¹⁰⁶		
Tritium	<u>ND</u>	
Zinc ⁶⁵		
Zirconium-niobium ⁹⁵		

Date sample received 10-14-65Date data released 12-3-65Program classification Project DribbleSalmon Event

*Analyzed only when indicated by gross β count.

Analyst E. Villasana; T. SinconisDate checked 11-22-65Checked by V. J. Janzer

Lab. No. 660156U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well E-1Location Tatum Salt Dome, Lamar Co., MississippiSW 1/4 NW 1/4 NE 1/4 Sec 14, T 2 N., R 16 W. Field/Office No. _____Date Col. 8-26-65 Time _____
Col. By USGS
Field detns: Temp. (°F) 83 pH _____
Sp. Cond. (µmhos) 1,500 Eh _____
Appearance ClearWell Type Drilled Use Observation
Depth (ft) See Remarks Cased to See Remarks
Diam. (in) 4 1/2 Date Drilled See Remarks
Water level (ft) _____
Discharge 29 gpm measured 8-26-65
W.B.F. Catahoula Sandstone, upper part,
aquifer 3a
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>µg/l</u>			
Radium as Ra ²²⁶			
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	<u><5.0</u>		<u>10-30-65</u>
Gross α as U equivalent <u>µg/l</u>	<u><12</u>		<u>10-30-65</u>
Net extr. α, U equivalent <u>µg/l</u>			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids <u>mg/l</u>	<u>1,000</u>		

Isotopic Analysis		Remarks:
Barium-lanthanum ¹⁴⁰		Depth (ft.): 2,200 (originally 4,517 ft.).
Cerium-praseodymium ¹⁴⁴		Date drilled: Completed on 7-6-61.
Cesium ¹³⁷		Reworked 3-22-63.
Chromium ⁵⁷		Cased to: 950 ft. Casing is perforated from 950 to 900 ft. below l.s.d.
Cobalt ⁶⁰		Sampling procedure: Reda submersible pump is set at 214.81 ft. below l.s.d. and bridge plug at 922 ft. below l.s.d.
Ruthenium-rhodium ¹⁰⁶		
Tritium	<u>ND</u>	
Zinc ⁶⁵		
Zirconium-niobium ⁹⁵		
		ND: Sought but not detected by method used 11-23-65.

Date sample received _____

Date data released _____

Program classification Project DribbleSalmon Event

*Analyzed only when indicated by gross β count.

Analyst H.C.Claassen; T.SinconisDate checked 11-2-65Checked by V. J. Janzer

Lab. No. 660228U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - Radiochemical

Source <u>Well E-1</u>	
Location <u>Tatum Salt Dome, Lamar Co., Mississippi</u>	
<u>SW 1/4 NW 1/4 NE 1/4 Sec. 14, T. 2 N., R. 16 W.</u>	Field/Office No. <u></u>
Date Col. <u>9-30-65</u> Time <u>1100</u>	Well Type <u>Drilled</u> Use <u>Observation</u>
Col. By <u>USGS</u>	Depth (ft) <u>See Remarks</u> Cased to <u>See Remarks</u>
Field detns: Temp. ($^{\circ}$ F) <u>93</u> pH <u></u>	Diam. (in) <u>4 1/2</u> Date Drilled <u>See Remarks</u>
Sp. Cond. (μ mhos) <u>1,510</u> Eh <u></u>	Water level (ft) <u>109.87 below l.s.d. 9-30-65</u>
Appearance <u>Clear</u>	Discharge <u>4.85 gpm on 5-24-65</u>
	W.B.F. <u>Catahoula Sandstone, upper part,</u>
	aquifer <u>3a</u>
	Owner <u>U. S. Atomic Energy Commission</u>

Elements	pc/l	pc/g	Date determined
Uranium μ g/l			
Radium as Ra^{226}			
Gross β (as $Sr^{90} - Y^{90}$)	<u><5.0</u>		<u>11-20-65</u>
Gross α as U equivalent μ g/l	<u><12</u>		<u>11-20-65</u>
Net extr. α , U equivalent μ g/l			
Gross γ (as Cs^{137})			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids mg/l	<u>1,000</u>		

Isotopic Analysis	Remarks:
Barium-lanthanum ¹⁴⁰	Depth (ft.): <u>2,200 (originally 4,517 ft.)</u>
Cerium-praseodymium ¹⁴⁴	Date drilled: <u>Completed on 7-6-61.</u>
Cesium ¹³⁷	<u>Reworked 3-22-63.</u>
Chromium ⁵⁷	Cased to: <u>950 ft. Casing is perforated</u>
Cobalt ⁶⁰	<u>from 750 to 900 ft. below l.s.d.</u>
Europium-rhodium ¹⁰⁶	Sampling procedure: <u>Reda submersible</u>
Titanium	<u>pump is set at 214.81 ft. below l.s.d.</u>
Zinc ⁶⁵	<u>and bridge plug at 922 ft. below</u>
Zirconium-niobium ⁹⁵	<u>l.s.d.</u>
	ND: <u>Sought but not detected by method</u>
	<u>used 1-11-65.</u>

Date sample received 10-20-65 Analyst E. Villasana; T. Sinconis
 Date data released 11-24-65 Date checked 11-23-65
 Program classification Project Dribble Checked by V. J. Janzer
Salmon Event
 *Analyzed only when indicated by gross β count.

Lab. No. 660351U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well E-1Location Tatum Salt Dome, Lamar Co., MississippiSW 1/4 NW 1/4 NE 1/4 Sec 14, T 2 N., R 16 W. Field/Office No. _____Date Col. 10-14-65 Time 1315
Col. By USGS
Field detns: Temp. (°F) 84 pH _____
Sp. Cond. (µmhos) 1650 Eh _____
Appearance ClearWell Type Drilled Use Observation
Depth (ft) See Remarks Cased to See Remarks
Diam. (in) 4 1/2 Date Drilled See Remarks
Water level (ft) 109.87 below l.s.d. 10-14-
Discharge 4.85 gpm on 5-24-65
W.B.F. Catahoula Sandstone, upper part,
aquifer 3a
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium µg/l			
Radium as Ra ²²⁶			
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	<u><5.0</u>		<u>11-24-65</u>
Gross α as U equivalent µg/l	<u><11</u>		<u>11-24-65</u>
Net extr. α, U equivalent µg/l			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids mg/l	<u>1,000</u>		

Isotopic Analysis		Remarks:
Barium-lanthanum ¹⁴⁰		Depth (ft.): 2,200 (originally 4,517 ft.).
Cerium-praseodymium ¹⁴⁴		Date drilled: Completed on 7-6-61.
Cesium ¹³⁷		Reworked 3-22-63.
Chromium ⁵⁷		Cased to: 950 ft. Casing is perforated from 850 to 900 ft. below l.s.d.
Cobalt ⁶⁰		Sampling procedure: Reda submersible pump is set at 214.81 ft. below l.s.d. and bridge plug at 922 ft. below l.s.d.
Ruthenium-rhodium ¹⁰⁶		ND: Sought but not detected by method used 11-23-65.
Tritium	<u>ND</u>	
Zinc ⁶⁵		
Zirconium-niobium ⁹⁵		

Date sample received 10-20-65Date data released 12-3-65Program classification Project DribbleAnalyst T. SinconisDate checked 12-3-65Checked by V. J. Janzer*Analyzed only when indicated by ^{Salmon Event} gross β count.

Lab. No. 660031U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well E-14b (upper) Located about 78 feet south and 14 feet east of well E 14.
Location Tatum Salt Dome, Lamar Co., Mississippi
SW 1/4 SE 1/4 SE 1/4 Sec 11 T 2 N. R 16 W. Field/Office No. _____Date Col. 7-8-65 Time _____
Col. By Isotopes, Inc.
Field detns: Temp. ($^{\circ}$ F) 98 pH _____
Sp. Cond. (μ mhos) 800 Eh _____
Appearance ClearWell Type Drilled Use Observation
Depth (ft) See Remarks Cased to See Remarks
Diam. (in) See Remarks Date Drilled See Remarks
Water level (ft) 35 below l.s.d.
Discharge 9 gpm
W.B.F. Catahoula Sandstone, upper part,
aquifer 3a
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium μ g/l	<0.4		
Radium as Ra^{226}			
Gross β (as $Sr^{90} - Y^{90}$)	6.7		10-16-65
Gross α as U equivalent μ g/l	<7.5		10-16-65
Net extr. α , U equivalent μ g/l			
Gross γ (as Cs^{137})			
Potassium ^{40}			
Strontium ^{90} *			
Dissolved solids mg/l	620		
Isotopic Analysis			
Barium-lanthanum ^{140}			
Cerium-praseodymium ^{144}			
Cesium ^{137}			
Chromium ^{57}			
Cobalt ^{60}			
Ruthenium-rhodium ^{55}			
Tritium	ND		
Zinc ^{65}			
Zirconium-niobium ^{95}			
ND: Sought but not detected by method used			
11-23-65.			

Remarks: Big Chief Drilling Co. completed well to a depth of 3,959 feet on July 10, 1963. Casing sizes were: 24 in. OD to 41 ft.; 16 in. to 904 ft.; 11 3/4 in. to 1,627 ft. Hole sizes were: 22 in. to 906 ft.; 15 in. to 1,627 ft.; 10 5/8 in. to 2,750 ft.; and 9 7/8 in. to 3,959 ft.

In a second stage drilling, completed Aug. 29, 1963, the following hole sizes resulted: 22 in. OD to 906 ft.; 15 in. to 1,567 ft.; and 10 5/8 in. to 3,700 ft. Casing remained the same as listed previously. The new hole sidetracked old hole from 3,276 to 3,700 ft.

In a rework job, Mohon Bros., Inc., drilled out cement (10 5/8 in. bit) from 1.18 to 1,075 ft. They perforated with Frac Jet, four 3/4-in. holes per foot, from 950 to 1,014 feet (E-14b lower), and from 800 to 865 feet (E-14b upper).

Date sample received 7-13-65
Date data released _____
Program classification Project Dribble
Salmon EventAnalyst H.C. Claassen; T. Sinconis
Date checked 11-2-65
Checked by V. J. Janzer*Analyzed only when indicated by gross β count.

Lab. No. 660142U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well E-14b (upper) Located about 78 feet south and 14 feet east of well E 14.
Location Tatum Salt Dome, Lamar Co., Mississippi
SW 1/4 SE 1/4 SE 1/4 Sec 11 T 2 N., R 16 W. Field/Office No. _____Date Col. 8-6-65 Time _____
Col. By Isotopes, Inc.
Field detns: Temp. (°F) 99 pH _____
Sp. Cond. (μmhos) 700 Eh _____
Appearance _____Well Type Drilled Use Observation
Depth (ft) See Remark Cased to See Remarks
Diam. (in) See Remark Date Drilled See Remarks
Water level (ft) 35 below l.s.d.
Discharge 9 gpm
W.B.F. Catahoula Sandstone, upper part,
aquifer 3a
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>μg/l</u>			
Radium as Ra ²²⁶			
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	<u>13</u>		<u>9-1-65</u>
Gross α as U equivalent <u>μg/l</u>	<u><8.8</u>		<u>9-1-65</u>
Net extr. α, U equivalent <u>μg/l</u>			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids <u>mg/l</u>	<u>600</u>		
Isotopic Analysis			
Barium-lanthanum ¹⁴⁰			
Cerium-praseodymium ¹⁴⁴			
Cesium ¹³⁷			
Chromium ⁵⁷			
Cobalt ⁶⁰			
Ruthenium-rhodium ¹⁰⁶			
Tritium	<u>ND</u>		
Zinc ⁶⁵			
Zirconium-niobium ⁹⁵			
ND: Sought but not detected by method used 11-23-65.			

Remarks: Big Chief Drilling Co. completed well to a depth of 3,959 feet on July 10, 1963. Casing sizes were: 24 in. OD to 41 ft.; 16 in. to 904 ft.; 11 3/4 in. to 1,627 ft. Hole sizes were: 22 in. to 906 ft.; 15 in. to 1,627 ft.; 10 5/8 in. to 2,750 ft.; and 9 7/8 in. to 3,959 ft.

In a second stage drilling, completed Aug. 29, 1963, the following hole sizes resulted: 22 in. OD to 906 ft.; 15 in. to 1,567 ft.; and 10 5/8 in. to 3,700 ft. Casing remained the same as listed previously. The new hole sidetracked old hole from 3,276 to 3,700 ft.

In a rework job, Mohon Bros., Inc., drilled out cement (10 5/8 in. bit) from 1.18 to 1,075 ft. They perforated with Frac Jet, four 3/4-in. holes per foot, from 950 to 1,014 feet (E-14b lower), and from 800 to 865 feet (E-14b upper).

Date sample received 8-24-65
Date data released _____
Program classification Project DribbleAnalyst H.C. Claassen; T. Sinconis
Date checked 9-7-65
Checked by V. J. Janzer

*Analyzed only when indicated by gross β count.

Lab. No. 660152

U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - Radiochemical

Source Well HT-1(3)
Location Tatum Salt Dome, Lamar Co., Mississippi
NW 1/4 NW 1/4 SE 1/4 Sec. 12, T. 2 N., R. 16 W. Field/Office No. _____

Date Col. 8-26-65 Time _____
Col. By USGS
Field detns: Temp. (°F) 81 pH _____
Sp. Cond. (μmhos) 150 Eh _____
Appearance Sediment

Well Type See Remarks Use Observation
Depth (ft) 2,650 Cased to See Remarks
Diam. (in) See Remark Date Drilled See Remark
Water level (ft) 149 below l.s.d. 12-2-64
Discharge 7 gpm on 4-28-65
W.B.F. Catahoula Sandstone, aquifer 3,
1,230 to 1,310 ft. and 1,375 to 1,400 ft.
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>μg/l</u>			
Radium as Ra^{226}			
Gross β (as $Sr^{90} - Y^{90}$)	<u>3.6</u>		<u>11-24-65</u>
Gross α as U equivalent <u>μg/l</u>	<u><1.1</u>		<u>11-24-65</u>
Net extr. α, U equivalent <u>μg/l</u>			
Gross γ (as Cs^{137})			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids <u>mg/l</u>	<u>76</u>		

Isotopic Analysis
Barium-lanthanum ¹⁴⁰
Cerium-praseodymium ¹⁴⁴
Cesium ¹³⁷
Chromium ⁵¹
Cobalt ⁶⁰
Ruthenium-rhodium ¹⁰⁶
Tritium
Zinc ⁶⁵
Zirconium-niobium ⁹⁰

Remarks:

Well type: Drilled, multiple well--
3 strings of pipe each packered off
to a different aquifer.
Diam. (in.) and Cased to: 16 OD, 0 to
324 ft.; 9-5/8 OD, 300 to 2,246 ft.;
3 1/2 OD, 0 to 296 ft.
Sampled after pumping 4 hrs. 40 min.
at 7 gpm
ND: Sought but not detected by method
used 11-23-65.

Date sample received 9-1-65
Date data released _____
Program classification Project Dribble

Analyst T.Sinconis; H.C.Claassen
Date checked 12-1-65
Checked by V. J. Janzer

*Analyzed only when indicated by gross β count.

Lab. No. 660223U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well HT-1(3)
Location 10 miles west of Purvis, Lamar Co., Mississippi
NW 1/4 NW 1/4 SE 1/4 Sec. 12, T. 2 N., R. 16 W. Field/Office No. _____Date Col. 9-30-65 Time 1400
Col. By USGS
Field detns: Temp. (°F) 76 pH _____
Sp. Cond. (µmhos) 150 Eh _____
Appearance ClearWell Type See Remarks Use Observation
Depth (ft) 2,650 Cased to See Remarks
Diam. (in) See Remark Date Drilled See Remarks
Water level (ft) 149.32 below l.s.d. 12-2-64
Discharge 6.8 cpm on 4-28-65
W.B.F. Catahoula Sandstone, aquifer 3,
1,230 to 1,310 ft. and 1,375 to 1,400 ft.
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>µg/l</u>			
Radium as Ra ²²⁶			
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	<u>2.0</u>		<u>11-19-65</u>
Gross α as U equivalent <u>µg/l</u>	<u><1.4</u>		<u>11-19-65</u>
Net extr. α, U equivalent <u>µg/l</u>			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids <u>mg/l</u>	<u>100</u>		

Isotopic Analysis	
Barium-lanthanum ¹⁴⁰	
Cerium-praseodymium ¹⁴⁴	
Cesium ¹³⁷	
Chromium ⁵⁷	
Cobalt ⁶⁰	
Ruthenium-rhodium ¹⁰⁶	
Tritium	<u>ND</u>
Zinc ⁶⁵	
Zirconium-niobium ⁹⁵	

Remarks:

Well type: Drilled, multiple well--
3 strings of pipe each packered off
to a different aquifer.
Diam. (i.i.) and Cased to: 16 OD, 0 to
324 ft.; 9-5/8 OD, 300 to 2,246 ft.;
3 1/2 OD, 0 to 296 ft.
Date drilled: 4-61 to 6-61.
ND: Sought but not detected by method
used 10-11-65.Date sample received 10-20-65
Date data released 11-24-65
Program classification Project DribbleAnalyst E. Villasana; T. Sinconis
Date checked 11-24-65
Checked by V. J. Janzer*Analyzed only when indicated by gross β count.
Salmon Event

Lab. No. 660356U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well HT-1(3)
Location 10 miles west of Purvis, Lamar Co., Mississippi
NW 1/4 NW 1/4 SE 1/4 Sec. 12, T. 2 N., R. 16 W. Field/Office No. _____Date Col. 10-14-65 Time 1430
Col. By USGS
Field detns: Temp. (°F) 77 pH _____
Sp. Cond. (μmhos) 445 Eh _____
Appearance ClearWell Type See Remarks Use Observation
Depth (ft) 2,650 Cased to See Remarks
Diam. (in) See Remark Date Drilled See Remarks
Water level (ft) 149.66 below l.s.d. 10-14-65
Discharge 6.5 gpm on 10-14-65
W.B.F. Catahoula Sandstone, aquifer 3,
1,230 to 1,310 ft. and 1,375 to 1,400 ft.
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>μg/l</u>			
Radium as Ra^{226}			
Gross β (as $\text{Sr}^{90} - \text{Y}^{90}$)	<u>3.7</u>		<u>11-25-65</u>
Gross α as U equivalent <u>μg/l</u>	<u><1.0</u>		<u>11-25-65</u>
Net extr. α , U equivalent <u>μg/l</u>			
Gross γ (as Cs^{137})			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids <u>mg/l</u>	<u>64</u>		

Isotopic Analysis		Remarks:
Barium-lanthanum ¹⁴⁰		Well type: Drilled, multiple well-- 3 strings of pipe each packered off to a different aquifer. Diam. (in.) and Cased to: 16 OD, 0 to 324 ft.; 9-5/8 OD, 300 to 2,246 ft.; 3 1/2 OD, 0 to 296 ft. Sampled after 6 hrs. of pumping at 6.5 gpm. Date drilled: 4-61 to 6-61. ND: Sought but not detected by method used 10-30-65.
Cerium-praseodymium ¹⁴⁴		
Cesium ¹³⁷		
Chromium ⁵⁷		
Cobalt ⁶⁰		
Ruthenium-rhodium ¹⁰⁶		
Tritium	<u>ND</u>	
Zinc ⁶⁵		
Zirconium-niobium ⁹⁵		

Date sample received 10-14-65
Date data released 12-3-65
Program classification Project DribbleAnalyst E. Villasana; T. Sinconis
Date checked 11-22-65
Checked by V. J. Janzer*Analyzed only when indicated by gross β count.
Salmon Event

Lab. No. 650566U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well HT-2(3)
Location Tatum Salt Dome, Lamar Co., Mississippi
NE 1/4 SW 1/4 SW 1/4 Sec 14, T 2 N., R 16 W. Field/Office No. _____Date Col. 4-28-65 Time _____
Col. By Isotopes, Inc.
Field detns: Temp. ($^{\circ}$ F) 75 pH _____
Sp. Cond. (μ mhos) 130 Eh _____
Appearance Clear with some sedimentWell Type Drilled Use Observation
Depth (ft) 2,602.49 Cased to See Remarks
Diam. (in) See Remark Date Drilled 6-18-61
Water level (ft) 134.04 1.s.d. on 12-10-64
Discharge 2.5 gpm on 2-16-65
W.B.F. Catahoula Sandstone, upper part,
aquifer 3a
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium μ g/l	<0.4		
Radium as Ra ²²⁶	<.1		
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	31		8-28-65
Gross α as U equivalent μ g/l	<1.3		8-28-65
Net extr. α , U equivalent μ g/l			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			

Isotopic Analysis		Remarks:
Barium-lanthanum ¹⁴⁰		Diam. (in.) and Cased to: 16 OD, 0 to 327 ft.; 9-5/8 OD, 300 to 2,433 ft.; 3 1/2 OD, 0 to 300 ft.
Cerium-praseodymium ¹⁴⁴		
Cesium ¹³⁷		
Chromium ⁵⁷		Sample taken after 147,000 gallons were pumped.
Cobalt ⁶⁰		
Ruthenium-rhodium ¹⁰⁶		BL: Nothing detected above normal background level. ND: Sought but not detected by method used 8-28-65.
Tritium	5.4 x 10 ⁻⁵	
Zinc ⁶⁵		
Zirconium-niobium ⁹⁵		
Gross gamma scan	BL	

Date sample received 5-4-65
Date data released 9-2-65
Program classification Project Dribble
Salmon EventAnalyst T. Sinconis; P.K. Roscio
Date checked 9-1-65
Checked by V. J. Janzer*Analyzed only when indicated by gross β count.

Lab. No. 660150U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well HT-2(3)Location Tatum Salt Dome, Lamar Co., MississippiNE 1/4 SW 1/4 SW 1/4 Sec 14, T 2 N., R 16 W. Field/Office No. _____Date Col. 9-26-65 Time _____
Col. By U.S.G.S.
Field detns: Temp. (°F) 113 pH _____
Sp. Cond. (µmhos) 175 Eh _____
Appearance ClearWell Type Drilled Use Observation
Depth (ft) 2,602.49 Cased to See Remarks
Diam. (in) See Remark Date Drilled 6-18-61
Water level (ft) _____
Discharge _____
W.B.F. Catahoula Sandstone, upper part,
aquifer 3a
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium $\mu\text{g/l}$			
Radium as Ra^{226}			
Gross β (as $\text{Sr}^{90} - \text{Y}^{90}$)	34		10-29-65
Gross α as U equivalent $\mu\text{g/l}$	8.3		11-4-65
Net extr. α , U equivalent $\mu\text{g/l}$			
Gross γ (as Cs^{137})			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids mg/l	93		

Isotopic Analysis		Remarks:
Barium-lanthanum ¹⁴⁰		
Cerium-praseodymium ¹⁴⁴		
Cesium ¹³⁷		
Chromium ⁵⁷		
Coalt ⁶⁰		
Ruthenium-rhodium ¹⁰⁶		
Tritium (µc/ml)	$0.4 \times 10^{-5} \text{ l/}$	
Zinc ⁶⁵		
Zirconium-niobium ⁹⁵		

Remarks:

Diam. (in.) and Cased to:
16 OD, 0 to 327 ft.;
9-5/8 OD, 300 to 2,433 ft.;
3-1/2 OD, 0 to 300 ft.
1/ 2-1-65Date sample received 8-30-65
Date data released _____
Program classification Project Dribble
Salmon EventAnalyst T. Sinconis; P.K. Roscio
Date checked 11-22-65
Checked by V. J. Janzer*Analyzed only when indicated by gross β count.

Lab. No. 660203U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well HT-2(3)Location Tatum Salt Dome, Lamar Co., MississippiNE 1/4 SW 1/4 SW 1/4 Sec 14, T 2 N., R 16 W. Field/Office No. _____Date Col. 9-21-65 Time _____
Col. By W. T. Oakley
Field detns: Temp. (°F) 71 pH _____
Sp. Cond. (μmhos) 220 Eh _____
Appearance ClearWell Type Drilled Use Observation
Depth (ft) 2,602.49 Cased to See Remarks
Diam. (in) See Remark Date Drilled 6-18-61
Water level (ft) _____
Discharge _____
W.B.F. Catahoula Sandstone, upper part,
aquifer 3a
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>μg/l</u>			
Radium as Ra ²²⁶			
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	<u>12</u>		<u>11-24-65</u>
Gross α as U equivalent <u>μg/l</u>	<u>11</u>		<u>11-24-65</u>
Net extr. α, U equivalent <u>μg/l</u>			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids <u>mg/l</u>	<u>100</u>		

Isotopic Analysis		Remarks:
Barium-lanthanum ¹⁴⁰		
Cerium-praseodymium ¹⁴⁴		
Cesium ¹³⁷		
Chromium ⁵⁷		
Cobalt ⁶⁰		
Ruthenium-rhodium ¹⁰⁶		
Tritium (uc/ml)	<u>8.7 x 10⁻⁵ l/</u>	
Zinc ⁶⁵		
Zirconium-niobium ⁹⁵		

Remarks:

Diam. (in.) and Cased to:
16 OD, 0 to 327 ft.;
9-5/8 OD, 300 to 2,433 ft.;
3-1/2 OD, 0 to 300 ft.
1/ 10-1-65Date sample received 9-27-65
Date data released 12-3-65
Program classification Project Dribble
Salmon EventAnalyst E. Villasana; T. Sinconis
Date checked 12-3-65
Checked by V. J. Janzer

*Analyzed only when indicated by gross β count.

Revised form 3-17-65

Lab. No. 660230U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well HT-3
Location Tatum Salt Dome, Lamar Co., Miss.
1/4 1/4 1/4 Sec. 14, T. 2 N., R. 16 W. Field/Office No. _____Date Col. 9-30-65 Time _____
Col. By USGS
Field detns: Temp. ($^{\circ}$ F) 79 pH _____
Sp. Cond. (μ mhos) 3,350 Eh _____
Appearance ColoredWell Type Drilled Use Observation
Depth (ft) 1,064 Cased to See Remarks
Diam. (in) See Remark Date Drilled March 1963
Water level (ft) 104.95 below l.s.d. 9-30-65
Discharge 24.4 gpm on 5-25-65
W.B.F. Calcite limestone, calcite
caprock aquifer, 934 to 1,006 ft.
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium μ g/l			
Radium as Ra^{226}			
Gross β (as $Sr^{90} - Y^{90}$)	120		3-16-66
Gross α as U equivalent μ g/l	<24		3-16-66
Net extr. α , U equivalent μ g/l			
Gross γ (as Cs^{137})			
Potassium ^{40}			
Strontium ^{90} *			
Dissolved solids mg/l	2,200		

Isotopic Analysis		Remarks:
Barium-lanthanum ^{140}		Diam. (in.) and Cased to: 11-3/4 OD, 0 to 934 ft.; 8-5/8 OD, 934 to 1,026 ft.
Cerium-praseodymium ^{144}		
Cesium ^{137}		ND: Sought but not detected by method used 10-11-65.
Chromium ^{57}		
Cobalt ^{60}		ND
Ruthenium-rhodium ^{106}		
Tritium	ND	
Zinc ^{65}		
Zirconium-niobium ^{95}		

Date sample received 10-20-65
Date data released 11-24-65
Program classification Project DribbleAnalyst E. Villasana; T. Sinconis; P. K. Roscio
Date checked 11-23-65
Checked by V. J. Janzer*Analyzed only when indicated by gross β count.

Lab. No. 660350U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well HT-3
Location Tatum Salt Dome, Lamar Co., Miss.
1/4 1/4 1/4 Sec. 14, T. 2 N., R. 16 W. Field/Office No. _____Date Col. 10-14-65 Time 1255
Col. By USGS
Field detns: Temp. (°F) 92 pH _____
Sp. Cond. (μmhos) 2,650 Eh _____
Appearance ClearWell Type Drilled _____ Use Observation _____
Depth (ft) 1,064 Cased to See Remarks _____
Diam. (in.) See Remark Date Drilled March 1965
Water level (ft) 104.95 below l.s.d. 10-14-65
Discharge 24 gpm on 10-14-65
W.B.F. Calcite limestone, calcite
caprock aquifer, 934 to 1,006 ft.
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>μg/l</u>			
Radium as Ra^{226}			
Gross β (as $Sr^{90} - Y^{90}$)	<u><7.6</u>		<u>11-24-65</u>
Gross α as U equivalent <u>μg/l</u>	<u><29</u>		<u>11-24-65</u>
Net extr. α , U equivalent <u>μg/l</u>			
Gross γ (as Cs^{137})			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids <u>mg/l</u>	<u>2,200</u>		

Isotopic Analysis		Remarks:
Barium-lanthanum ¹⁴⁰		Diam. (in.) and Cased to: <u>11-3/4 OD</u> , <u>0 to 934 ft.</u> ; <u>8-5/8 OD</u> , <u>934 to</u> <u>1,026 ft.</u>
Cerium-praseodymium ¹⁴⁴		
Cesium ¹³⁷		Sampled after pumping <u>4 hrs.</u> and <u>25 min.</u> at <u>24 gpm.</u>
Chromium ⁵⁷		
Cobalt ⁶⁰		ND: Sought but not detected by method used <u>10-30-65.</u>
Ruthenium-rhodium ¹⁰⁶		
Tritium	<u>ND</u>	
Zinc ⁶⁵		
Zirconium-niobium ⁹⁵		

Date sample received 10-14-65
Date data released 12-3-65
Program classification Project DribbleAnalyst E. Villasana; T. Sinconis
Date checked 11-22-65
Checked by V. J. Janzer*Analyzed only when indicated by gross β count.

Lab. No. 650617

U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - Radiochemical

Source Well 2-0
Location 1/4 Sec. 23 T. 2 N. R. 1 W. Mer. 10
1/4 1/4 1/4

Date Col. 5-26-65 Time _____
Col. By Isotopes _____
Field data: Temp. (°C) 91 pH _____
Sp. Cond. (µmhos) 2,400 Lh _____
Appearance Cloudy

Well type Drilled Use for water
Depth (ft) _____ Cased to _____
Diam. (in) _____ Date Drilled Nov. 1961
Water level (ft) 6.70 below l.s.d. 3-4-65
Discharge 23.9 gpm on 3-17-65
W.B.F. Calcite limestone, calcite
caprock aquifer
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>µg/l</u>	<u>1.1</u>		
Radium as <u>Ra-226</u>			
Gross β (as Sr ⁹⁰ -Y ⁹⁰)	<u>9.6</u>		<u>10-15-65</u>
Gross α as U equivalent <u>µg/l</u>	<u><26</u>		<u>10-15-65</u>
Net error α, U equivalent <u>µg/l</u>			
Gross γ (as Cs-137)			
Potassium-40			
Strontium-90			
Dissolved solids <u>mg/l</u>	<u>1,800</u>		
Gross gamma scan	<u>BL</u>		

Isotopic Analysis	Remarks:
Barium-Lanthanum-140	Depth (ft.): 3,525. Presently (Feb. 65 well is plugged at 1,450 ft.
Cerium-praseodymium-144	Diam. (in.) and Cased to: 9-5/8 OD, 0 to 983 ft.; 7 OD, 1,045 to 1,502 ft.
Cesium-137	Sampling procedure: A 2 hp Reda pump is set on 5½ in. casing with no. 8 wire and 1 in. plastic hose at 189.43 ft. below l.s.d.
Chromium-51	ND: Sought but not detected by method used 11-2-65
Cobalt-60	BL: Nothing detected above normal background level.
Ruthenium-rhodium-106	
Tridium	
Zinc-65	
Zirconium-niobium-95	

Date sample received 6-1-65
Date data released _____
Lab. classification Project, Drizzle
Salmon River

Analyst E. Villasana; T. Sinconis
Date checked 11-22-65
Checked by V. J. Janzer

Analyzed only when indicated by gross β count.

U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - Radiochemical

Source Well E-14b (lower) Located about 78 feet south and 14 feet east of Well E14.
 Location Tatum Salt Dome, Lamar Co., Mississippi
 SW 1/4 SE 1/4 SE 1/4 Sec 11 T 2 N. R16 W. Field/Office No.

Date Col. July 8, 1965 Time
 Col. By Tsotones, Inc.
 Field detns: Temp. (°F) 99 pH
 Sp. Cond. (μmhos) 1,600 Eh
 Appearance Clear

Well Type Drilled Use Observation
 Depth (ft) See Remark Cased to See Remarks
 Diam. (in) See Remark Date Drilled See Remark
 Water level (ft)
 Discharge 56.7 gpm June 1965
 W.B.F. Calcite Limestone, calcite
 caprock aquifer
 Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium μg/l	0.4		
Radium as Ra ²²⁶			
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	<7.6		10-16-65
Gross α as U equivalent μg/l	<21		10-16-65
Net extr. α, U equivalent μg/l			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids mg/l	1,800		
Isotopic Analysis			
Barium-lanthanum ¹⁴⁰			
Cerium-praseodymium ¹⁴⁴			
Cesium ¹³⁷			
Chromium ⁵⁷			
Cobalt ⁶⁰			
Ruthenium-rhodium ¹⁰⁶			
Tritium	ND		
Zinc ⁶⁵			
Zirconium-niobium ⁹⁵			

Remarks: Big Chief Drilling Co. completed well to a depth of 3,959 feet on July 10 1963. Casing sizes were: 24 in. OD to 41 ft.; 16 in. to 904 ft.; 11 3/4 in. to 1,627 ft. Hole sizes were: 22 in. to 906 ft.; 15 in. to 1,627 ft.; 10 5/8 in. to 2,750 ft.; and 9 7/8 in. to 3,959 ft.

In a second stage drilling, completed Aug. 29, 1963, the following hole sizes resulted: 22 in. OD to 906 ft.; 15 in. to 1,567 ft.; and 10 5/8 in. to 3,700 ft. Casing remained the same as listed previously. The new hole sidetracked old hole from 3,276 to 3,700 ft.

In a rework job, Mohon Bros., Inc., drilled out cement (10 5/8 in. bit) from 1.18 to 1,075 ft. They perforated with Frac Jet, four 3/4-in. holes per foot, from 950 to 1,014 feet (E-14b lower), and from 800 to 865 feet (E-14b upper).

ND: Sought but not detected by method used 11-23-65.

Date sample received 7-13-65
 Date data released
 Program classification Project Dribble

Analyst H.C. Claassen; T. Sinconis
 Date checked 12-14-65
 Checked by V. J. Janzer

*Analyzed only when indicated by gross β count.

Lab. No. 660143U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well E-14b (lower) Located about 78 feet south and 14 feet east of Well E 14.Location Tatum Salt Dome, Lamar Co., MississippiSW 1/4 SE 1/4 SE 1/4 Sec 11 T 2 N., R 16 W. Field/Office No. _____Date Col. 8-6-65 Time _____
Col. By Isotopes, Inc.
Field detns: Temp. (°F) 99 pH _____
Sp. Cond. (μmhos) 1,500 Eh _____
Appearance ClearWell Type Drilled Use Observation
Depth (ft) See Remark Cased to See Remarks
Diam. (in) See Remark Date Drilled See Remarks
Water level (ft) _____
Discharge _____
W.B.F. Calcite Limestone, calcite
caprock aquifer
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>μg/l</u>			
Radium as Ra ²²⁶			
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	17		9-1-65
Gross α as U equivalent <u>μg/l</u>	26		9-1-65
Net extr. α, U equivalent <u>μg/l</u>			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids mg/l	1,800		
Isotopic Analysis			
Barium-lanthanum ¹⁴⁰			
Cerium-praseodymium ¹⁴⁴			
Cesium ¹³⁷			
Chromium ⁵⁷			
Cobalt ⁶⁰			
Ruthenium-rhodium ¹⁰⁶			
Tritium	ND		
Zinc ⁶⁵			
Zirconium-niobium ⁹⁵			
ND: Sought but not detected by method used 11-23-65.			

Remarks: Big Chief Drilling Co. completed well to a depth of 3,959 feet on July 10, 1963. Casing sizes were: 24 in. OD to 41 ft.; 16 in. to 904 ft.; 11 3/4 in. to 1,627 ft. Hole sizes were: 22 in. to 906 ft.; 15 in. to 1,627 ft.; 10 5/8 in. to 2,750 ft.; and 9 7/8 in. to 3,959 ft.

In a second stage drilling, completed Aug. 29, 1963, the following hole sizes resulted: 22 in. OD to 906 ft.; 15 in. to 1,567 ft.; and 10 5/8 in. to 3,700 ft. Casing remained the same as listed previously. The new hole sidetracked old hole from 3,276 to 3,700 ft.

In a rework job, Mohon Bros., Inc., drilled out cement (10 5/8 in. bit) from 1.18 to 1,075 ft. They perforated with Frac Jet, four 3/4-in. holes per foot, from 950 to 1,014 feet (E-14b lower), and from 800 to 865 feet (E-14b upper).

Date sample received 8-24-65
Date data released _____
Program classification Project Dribble
Salmon EventAnalyst H.C. Claassen; T. Sinconis
Date checked 9-7-65
Checked by V. J. Janzer

*Analyzed only when indicated by gross β count.

U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - Radiochemical

Source Well E-14b (lower) Located about 78 feet south and 14 feet east of Well E14.
 Location Tatum Salt Dome, Lamar Co., Mississippi
 SW 1/4 SE 1/4 SE 1/4 Sec 11 T 2 N. R 16 W. Field/Office No.

Date Col. 8-26-65 Time
 Col. By USGS
 Field detns: Temp. (°F) 98 pH
 Sp. Cond. (μmhos) 2,225 Eh
 Appearance Clear

Well Type Drilled Use Observation
 Depth (ft) See Remark Cased to See Remarks
 Diam. (in) See Remark Date Drilled See Remarks
 Water level (ft)
 Discharge 55 gpm measured 8-26-65
 W.B.F. Calcite Limestone, calcite
caprock aquifer
 Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>μg/l</u>			
Radium as Ra ²²⁶			
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	<u><7.6</u>		<u>10-30-65</u>
Gross α as U equivalent <u>μg/l</u>	<u><21</u>		<u>10-30-65</u>
Net extr. α, U equivalent <u>μg/l</u>			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids mg/l	<u>1,800</u>		
Isotopic Analysis			
Barium-lanthanum ¹⁴⁰			
Cerium-praseodymium ¹⁴⁴			
Cesium ¹³⁷			
Chromium ⁵⁷			
Cobalt ⁶⁰			
Ruthenium-rhodium ¹⁰⁶			
Tritium	<u>ND</u>		
Zinc ⁶⁵			
Zirconium-niobium ⁹⁵			

Remarks: Big Chief Drilling Co. completed well to a depth of 3,959 feet on July 10, 1963. Casing sizes were: 24 in. OD to 41 ft.; 16 in. to 904 ft.; 11 3/4 in. to 1,627 ft. Hole sizes were: 22 in. to 906 ft.; 15 in. to 1,627 ft.; 10 5/8 in. to 2,750 ft.; and 9 7/8 in. to 3,959 ft.

In a second stage drilling, completed Aug. 29, 1963, the following hole sizes resulted: 22 in. OD to 906 ft.; 15 in. to 1,567 ft.; and 10 5/8 in. to 3,700 ft. Casing remained the same as listed previously. The new hole sidetracked old hole from 3,276 to 3,700 ft.

In a rework job, Mohon Bros., Inc., drilled out cement (10 5/8 in. bit) from 1,118 to 1,075 ft. They perforated with Frac Jet, four 3/4-in. holes per foot, from 950 to 1,014 feet (E-14b lower), and from 800 to 865 feet (E-14b upper).

ND: Sought but not detected by method used 11-28-65

Date sample received
 Date data released
 Program classification Project Dribble

Analyst H. C. Claassen; T. Sinconis
 Date checked 11-2-65
 Checked by V. J. Janzer

*Analyzed only when indicated by gross β count.

Lab. No. 660184

U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - Radiochemical

Source Well E-14b (lower) Located about 78 feet south and 14 feet east of Well E14.
Location Tatum Salt Dome, Lamar Co., Mississippi
SW 1/4 SE 1/4 SE 1/4 Sec. 11. T. 2 N., R16 W. Field/Office No.

Date Col. 9-16-65 Time 1445
Col. By USGS
Field detns: Temp. ($^{\circ}$ F) 93 pH
Sp. Cond. (μ mhos) 2,000 Eh
Appearance Colored

Well Type Drilled Use Observation
Depth (ft) See Remark Cased to See Remarks
Diam. (in) See Remark Date Drilled See Remarks
Water level (ft) 81 below l.s.d.
Discharge 55 gpm measured
W.B.F. Calcite Limestone, calcite
caprock aquifer
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium μ g/l	<0.4		
Radium as Ra ²²⁶	.8		
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	<7.4		11-10-65
Gross α as U equivalent μ g/l	<18		11-10-65
Net extr. α , U equivalent μ g/l			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids mg/l	1,800		
Isotopic Analysis			
Barium-lanthanum ¹⁴⁰			
Cerium-praseodymium ¹⁴⁴			
Cesium ¹³⁷			
Chromium ⁵⁷			
Cobalt ⁶⁰			
Ruthenium-rhodium ¹⁰⁶			
Tritium	ND		
Zinc ⁶⁵			
Zirconium-niobium ⁹⁵			

Remarks: Big Chief Drilling Co. completed well to a depth of 3,959 feet on July 10 1963. Casing sizes were: 24 in. OD to 41 ft.; 16 in. to 904 ft.; 11 3/4 in. to 1,627 ft. Hole sizes were: 22 in. to 906 ft.; 15 in. to 1,627 ft.; 10 5/8 in. to 2,750 ft.; and 9 7/8 in. to 3,959 ft.

In a second stage drilling, completed Aug. 29, 1963, the following hole sizes resulted: 22 in. OD to 906 ft.; 15 in. to 1,567 ft.; and 10 5/8 in. to 3,700 ft. Casing remained the same as listed previously. The new hole sidetracked old hole from 3,276 to 3,700 ft.

In a rework job, Mohon Bros., Inc., drilled out cement (10 5/8 in. bit) from 1.18 to 1,075 ft. They perforated with Frac Jet, four 3/4-in. holes per foot, from 950 to 1,014 feet (E-14b lower), and from 800 to 865 feet (E-14b upper).

ND: Sought but not detected by method used 9-27-65.

Date sample received 9-24-65
Date data released
Program classification Project Dribble

Analyst P.K.Roscio; T.Sinconis
Date checked 12-7-65
Checked by V. J. Janzer

*Analyzed only when indicated by gross β count.

Lab. No. 660226U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well E-14b (lower) Located about 78 feet south and 14 feet east of Well E14.
Location Tatum Salt Dome, Lamar Co., Mississippi
SW 1/4 SE 1/4 SE 1/4 Sec. 11, T. 2 N., R16 W. Field/Office No. _____Date Col. 9-30-65 Time 1115
Col. By USGS
Field detns: Temp. (°F) 98 pH _____
Sp. Cond. (μmhos) 2,400 Eh _____
Appearance ClearWell Type Drilled _____ Use Observation _____
Depth (ft) See Remark Cased to See Remarks
Diam. (in) See Remark Date Drilled See Remarks
Water level (ft) 79 below l.s.d. 9-30-65.
Discharge 55 gpm on 8-26-65
W.B.F. Calcite Limestone, calcite
caprock aquifer
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>μg/l</u>			
Radium as Ra ²²⁶			
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	<u>9.5</u>		<u>3-16-66</u>
Gross α as U equivalent <u>μg/l</u>	<u><16</u>		<u>3-16-66</u>
Net extr. α, U equivalent <u>μg/l</u>			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids <u>mg/l</u>	<u>1,900</u>		
Isotopic Analysis			
Barium-lanthanum ¹⁴⁰			
Cerium-praseodymium ¹⁴⁴			
Cesium ¹³⁷			
Chromium ⁵⁷			
Cobalt ⁶⁰			
Ruthenium-rhodium ¹⁰⁶			
Tritium	<u>ND</u>		
Zinc ⁶⁵			
Zirconium-niobium ⁹⁵			
ND: Sought but not detected by method used			
<u>10-11-65.</u>			

Remarks: Big Chief Drilling Co. complete well to a depth of 3,959 feet on July 10, 1963. Casing sizes were: 24 in. OD to 41 ft.; 16 in. to 904 ft.; 11 3/4 in. to 1,627 ft. Hole sizes were: 22 in. to 906 ft.; 15 in. to 1,627 ft.; 10 5/8 in. to 2,750 ft.; and 9 7/8 in. to 3,959 ft.

In a second stage drilling, completed Aug. 29, 1963, the following hole sizes resulted: 22 in. OD to 906 ft.; 15 in. to 1,567 ft.; and 10 5/8 in. to 3,700 ft. Casing remained the same as listed previously. The new hole sidetracked old hole from 3,276 to 3,700 ft.

In a rework job, Mohon Bros., Inc., drilled out cement (10 5/8 in. bit) from 1.18 to 1,075 ft. They perforated with Frac Jet, four 3/4-in. holes per foot, from 950 to 1,014 feet (E-14b lower), and from 800 to 865 feet (E-14b upper).

Date sample received 10-20-65
Date data released 11-24-65
Program classification Project DribbleAnalyst E. Villasana; T. Sinconis
Date checked 11-24-65
Checked by V. J. Janzer

*Analyzed only when indicated by gross β count.

Lab. No. 660352U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well E-14b (lower) located about 78 feet south and 14 feet east of Well E14.
Location Tatum Salt Dome, Lamar Co., Mississippi
SW 1/4 SE 1/4 SE 1/4 Sec 11, T 2 N., R 16 W. Field/Office No. _____Date Col. 10-14-65 Time 1330
Col. By USGS
Field detns: Temp. (°F) 98 pH _____
Sp. Cond. (μmhos) 2,500 Eh _____
Appearance ColoredWell Type Drilled Use Observation
Depth (ft) See Remark Cased to See Remarks
Diam. (in) See Remark Date Drilled See Remarks
Water level (ft) 81 below l.s.d. 9-16-65
Discharge _____
W.B.F. Calcite Limestone, calcite
caprock aquifer
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>μg/l</u>			
Radium as Ra ²²⁶			
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	<u>12</u>		<u>11-24-65</u>
Gross α as U equivalent <u>μg/l</u>	<u><21</u>		<u>11-24-65</u>
Net extr. α, U equivalent <u>μg/l</u>			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids <u>mg/l</u>	<u>1,800</u>		
Isotopic Analysis			
Barium-lanthanum ¹⁴⁰			
Cerium-praseodymium ¹⁴⁴			
Cesium ¹³⁷			
Chromium ⁵⁷			
Cobalt ⁶⁰			
Ruthenium-rhodium ¹⁰⁶			
Tritium	<u>ND</u>		
Zinc ⁶⁵			
Zirconium-niobium ⁹⁵			
ND: Sought but not detected by <u>method used</u>			
<u>10-30-65.</u>			

Remarks: Big Chief Drilling Co. completed well to a depth of 3,959 feet on July 10, 1963. Casing sizes were: 24 in. OD to 41 ft.; 16 in. to 904 ft.; 11 3/4 in. to 1,627 ft. Hole sizes were: 22 in. to 906 ft.; 15 in. to 1,627 ft.; 10 5/8 in. to 2,750 ft.; and 9 7/8 in. to 3,959 ft.

In a second stage drilling, completed Aug. 29, 1963, the following hole sizes resulted: 22 in. OD to 906 ft.; 15 in. to 1,567 ft.; and 10 5/8 in. to 3,700 ft. Casing remained the same as listed previously. The new hole sidetracked old hole from 3,276 to 3,700 ft.

In a rework job, Mohon Bros., Inc., drilled out cement (10 5/8 in. bit) from 1.18 to 1,075 ft. They perforated with Frac Jet, four 3/4-in. holes per foot, from 950 to 1,014 feet (E-14b lower), and from 800 to 865 feet (E-14b upper).

Date sample received 10-14-65
Date data released 12-3-65
Program classification Project DribbleAnalyst E. Villasana; T. Sinconis
Date checked 11-22-65
Checked by V. J. Janzer*Analyzed only when indicated by Salmon Event gross β count.

Lab. No. 660229U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well HT-1(4)Location Tatum Salt Dome, Lamar Co., MississippiNW 1/4 NW 1/4 SE 1/4 Sec. 12, T. 2 N., R. 16 W. Field/Office No. _____Date Col. 9-30-65 Time 1415
Col. By USGS
Field detns: Temp. (°F) 78 pH _____
Sp. Cond. (μmhos) 2,175 Eh _____
Appearance ClearWell Type Drilled Use Observation
Depth (ft) 2,650 Cased to See Remarks
Diam. (in) See Remark Date Drilled See Remarks
Water level (ft) 127.57 below l.s.d. 9-30-65
Discharge 7.1 gpm on 3-20-65
W.B.F. Limestones of Vicksburg Group,
aquifer 4
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>μg/l</u>			
Radium as Ra^{226}			
Gross β (as $Sr^{90} - Y^{90}$)	<u>16</u>		<u>11-20-65</u>
Gross α as U equivalent <u>μg/l</u>	<u><10</u>		<u>11-20-65</u>
Net extr. α, U equivalent <u>μg/l</u>			
Gross γ (as Cs^{137})			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids <u>mg/l</u>	<u>1,300</u>		

Isotopic Analysis		Remarks:
Barium-lanthanum ¹⁴⁰		Diam. (in.) and Cased to: 16 OD, 0 to 324 ft.; 9-5/8 OD, 300 to 2,246 ft.; 3 1/2 OD, 0 to 284 ft.; 1 1/2 OD, 284 to 1,152 ft.
Cerium-praseodymium ¹⁴⁴		
Cesium ¹³⁷		
Chromium ⁵⁷		
Cobalt ⁶⁰		
Ruthenium-rhodium ¹⁰⁶		Date drilled: 4-21 to 6-9-61. Well has three strings of pipe, each packered off to a different aquifer. ND: Sought but not detected by method used 10-11-65.
Tritium	<u>ND</u>	
Zinc ⁶⁵		
Zirconium-niobium ⁹⁵		

Date sample received 10-20-65
Date data released 11-24-65
Program classification Project Dribble
Salmon EventAnalyst E. Villasana; T. Sinconis
Date checked 11-23-65
Checked by V. J. Janzer

*Analyzed only when indicated by gross β count.

Lab. No. 66Q354U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well HT-1(4)Location Tatum Salt Dome, Lamar Co., MississippiNW 1/4 NW 1/4 SE 1/4 Sec. 12, T. 2 N., R. 16 W. Field/Office No. _____Date Col. 10-14-65 Time 1415
Col. By USGS
Field detns: Temp. (°F) 79 pH _____
Sp. Cond. (μmhos) 2300 Eh _____
Appearance ClearWell Type Drilled Use Observation
Depth (ft) 2,650 Cased to See Remarks
Diam. (in) See Remark Date Drilled See Remarks
Water level (ft) 127.57 below l.s.d. 10-14-65
Discharge 7 gpm on 10-14-65
W.B.F. Limestones of Vicksburg Group,
aquifer 4
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>μg/l</u>			
Radium as Ra^{226}			
Gross β (as $Sr^{90} - Y^{90}$)	<u>8.8</u>		<u>11-24-65</u>
Gross α as U equivalent <u>μg/l</u>	<u><14</u>		<u>11-24-65</u>
Net extr. α, U equivalent <u>μg/l</u>			
Gross γ (as Cs^{137})			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids <u>mg/l</u>	<u>1.200</u>		

Isotopic Analysis		Remarks:
Barium-lanthanum ¹⁴⁰		Diam. (in.) and Cased to: 16 OD, 0 to 324 ft.; 9-5/8 OD, 300 to 2,246 ft.; 3 1/2 OD, 0 to 284 ft.; 1 1/2 OD, 284 to 1,152 ft. Sampled after 5 hrs. and 45 min. pumping at 7 gpm. Date drilled: 4-21 to 6-9-61. Well has three strings of pipe, each packered off to a different aquifer. ND: Sought but not detected by method used 10-30-65.
Cerium-praseodymium ¹⁴⁴		
Cesium ¹³⁷		
Chromium ⁵⁷		
Cobalt ⁶⁰		
Ruthenium-rhodium ¹⁰⁶		
Tritium	<u>ND</u>	
Zinc ⁶⁵		
Zirconium-niobium ⁹⁵		

Date sample received 10-14-65Date data released 12-3-65Program classification Project DribbleSalmon Event

*Analyzed only when indicated by gross β count.

Analyst E. Villasana; T. SinconisDate checked 11-22-65Checked by V. J. Janzer

Lab. No. 660154U. S. DEPT. OF THE INTERIOR--GEOLOGICAL SURVEY
Statement of Water Analysis - RadiochemicalSource Well HT-1(5)
Location Tatum Salt Dome, Lamar Co., Mississippi
NW 1/4 NW 1/4 1/4 Sec 12, T 2 N., R 16 W. Field/Office No. _____Date Col. 8-26-65 Time _____
Col. By USGS
Field detns: Temp. (°F) 79 pH _____
Sp. Cond. (μmhos) >8,000 Eh _____
Appearance ColoredWell Type See Remarks Use Observation
Depth (ft) 2,640 Cased to See Remarks
Diam. (in) See Remark Date Drilled 6-8-61
Water level (ft) 86.30 below l.s.d. 12-2-64
Discharge 3 gpm on 8-26-65
W.B.F. Cook Mountain Limestone,
aquifer 5
Owner U. S. Atomic Energy Commission

Elements	pc/l	pc/g	Date determined
Uranium <u>μg/l</u>			
Radium as Ra ²²⁶			
Gross β (as Sr ⁹⁰ - Y ⁹⁰)	<u><120</u>		<u>10-30-65</u>
Gross α as U equivalent <u>μg/l</u>	<u><340</u>		<u>10-30-65</u>
Net extr. α, U equivalent <u>μg/l</u>			
Gross γ (as Cs ¹³⁷)			
Potassium ⁴⁰			
Strontium ⁹⁰ *			
Dissolved solids <u>mg/l</u>	<u>24,000</u>		

Isotopic Analysis		Remarks:
Barium-lanthanum ¹⁴⁰		Well type: Drilled, multiple well-- 3 strings of pipe each packered off to a different aquifer.
Cerium-praseodymium ¹⁴⁴		
Cesium ¹³⁷		
Chromium ⁵⁷		Diam. (in.) and Cased to: 16 OD, 0 to 324 ft.; 9 5/8 OD, 300 to 2,246 ft.; 3 1/2 OD, 0 to 2,400 ft.
Cobalt ⁶⁰		
Ruthenium-rhodium ¹⁰⁶		Producing intervals from 2,230 to 2,401 ft.
Tritium	<u>ND</u>	
Zinc ⁶⁵		Sampled after pumping 25 hrs. and 30 min. at 3 gpm.
Zirconium-niobium ⁹⁵		
		ND: Sought but not detected by method us. 11-8-65.

Date sample received 8-31-65
Date data released _____
Program classification _____Analyst E. Villasana; T. Sinconis
Date checked 11-22-65
Checked by V. J. Janzer

*Analyzed only when indicated by gross β count.

USGS-474-124
Dribble-47
Supplement 1

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