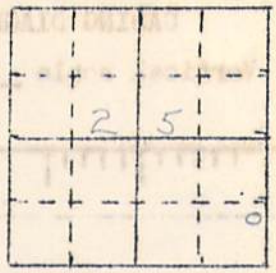
065-05W-25 DDA

IOWA GEOLOGICAL SURVEY
In Cooperation with U. S. Geological Survey

W-0474

RECORD OF WELL



Location:

Town: Keokuk (N E S W); County Lee

NE SE SE sec. 25 T. 65 N., R. 5 E. W. Twp.

Well name and number Hotel Iowa (401 Main St.)

Owner Hotel Iowa Address Keokuk

Tenant _____ Address _____

Contractor D.E. Edwards Address West Branch

Drillers _____

Drilling dates Nov 1936

Well data:

Elevations: Drilling curb 578.8 feet; Land surface _____ feet

Determined by _____

Topographic position _____

Total depth: Reported 350 feet, Measured _____ feet

Drilling method cable tool

Hole and casing data no casing - hole Abandoned
(Give amount, size, kind, and depth of all casing; type and position of seals and packers; cementing; how finished--perforated pipe, screen, gravel pack, open hole, etc.)

Original depth to water _____ ft. above/below _____ Date _____

Original elevation of water level _____ ft.; Source of data _____

no data

Sources of water: Principal _____; Others _____

Production data: Date _____

Static depth to water _____ Measuring point _____

Pumping level _____ at _____ g.p.m.

_____ _____

_____ _____

_____ _____

Specific capacity _____ g.p.m. per ft. drawdown; Temperature _____ °F.

Pump data; Type pump _____ Column Dia. _____ Length _____

Cylinder or bowls: Dia. _____ Length _____ Suction pipe _____

Power _____ Airline _____

Estimated rate of production: _____ g.p.m. for _____ hrs. a day

Use of water _____

WATER ANALYSES (in parts per million)

Date sampled				
Sampled by				
Total solids				
Insoluble matter				
Alkalinity (Meo)				
Alkalinity (Phn)				
pH				
Fe_2O_3+ Mn_2O_3+Al_2O_3				
Alkali as sodium				
Calcium				
Magnesium				
Iron (unfiltered)				
Manganese				
Nitrate				
Fluoride				
Chloride				
Sulfate				
Bicarbonate				
Hardness (ppm)				
Hardness (gpg)				

Remarks _____

Laboratory data: Sample storage location WD1-6

Sample range 10-360 No. spls. 64 No. dupls. & cond. 64 fair

Spls. prepared by _____ Washed range _____ by _____

Driller's log and cond. none

Insoluble residues: Prepared by _____ Studied by _____ Strip log _____

Microscopic study Hershey, Larson, Harris strip log Larson & Harris

Gen. log _____ Correl. by Hershey, Larson, Harris 1936, 1943, 1945

IOWA GEOLOGICAL SURVEY
Generalized Log Based on Detailed
Description of Drill Cuttings

Name of Well: Hotel Iowa, Keokuk, Iowa Survey No. W-0474

Drilled by: Edwards Well Co., West Branch Date November, 1936

Total Depth: 350 ft; Curb Elevation: 578.8 ft; Static Level: ____ ft.

Casing Data: Abandoned.

Pump and Screen Data: None.

Pumping Test: ____ Hours ____ Min; Gal. Per Min. ____; Drawdown ____ ft. in ____ min.

Description of Formations

No.	Rock Unit	Thick.	From (Feet)	To
	Pleistocene and Recent			
1.	No sample--basement pit	10	0	10
2.	Sand and clay; brown, calcareous, medium coarse grained sand held by matrix of clay	15	10	25
	Mississippian System			
	Osage Series			
	Warsaw formation			
3.	Shale; light gray, calcareous, micaceous, silty, compact, containing smoky white to clear chert (average 5%), and trace of pyrite	24	25	49
	Keokuk formation			
4.	Limestone; mottled white and gray, clastic texture, fossiliferous, chert 35%	5	49	54
5.	Shale; very calcareous, light gray, compact, granular	7	54	61
6.	Limestone; mottled white and gray, coarse clastic texture, fossiliferous; chert (average 10%)	26	61	87
7.	Dolomite; light gray, fine-grained, granular	3	87	90
8.	Limestone; mottled white and light gray, coarse clastic texture, fossiliferous, very cherty especially at top and bottom; shale, gray, very calcareous, compact, 96'-97'	60	90	150
9.	Limestone; white, coarse clastic texture, and coarse crystalline	10	150	160
10.	Limestone; white, fine-grained, granular, dolomitic; average 50% chert	15	160	175
11.	Limestone; white, medium coarse grained, granular, slightly dolomitic, fossiliferous; chert 40%	5	175	180
12.	Limestone; light gray, fine-grained, granular, dolomitic; chert average 50%	20	180	200

Notes:

Description of Formations

No.	Rock Unit	Thick.	From	To	
	Burlington formation				
13.	Limestone; white, medium-coarse grained, granular	15	200	215	
14.	Limestone; light gray, coarse grained, variable, fossiliferous	11	215	226	
	Kinderhook Series				
15.	Shale; dull gray-green, calcareous, pyritic	9	226	235	
16.	Siltstone; light gray, compact, slightly dolomitic, argillaceous	10	235	245	
17.	Shale; dull gray-green, slightly calcareous, pyritic	5	245	250	
18.	Siltstone; light gray, compact, slightly dolomitic, argillaceous	7	250	257	
	Wassonville member				
19.	Limestone; light gray, very fine-grained; dolomite, drab gray, medium fine-grained, granular; limestone, predominates at top and bottom	43	257	300	
20.	Limestone; drab gray, very fine-grained, dense	5	300	305	
	North Hill member				
21.	Dolomite; gray, fine-grained, silty, argillaceous	20	305	325	
	Maple Mill member				
22.	Shale; blue-green gray, thin bedded to massive, micaceous, noncalcareous, slightly silty at top	25	325	350	T.D.

Carl A. Moore,
Geology 209,
Dec. 15, 1936.

Hotel Iowa Well, Keokuk, Iowa. W - 0474

1 Depth: 105-110 ft.

Wt. sample:	20.8g
Wt. filter paper + residue:	11.0g
Wt. filter paper:	2.5g
Percentage insoluble: 40.7% Wt. insoluble residue:	8.5g

Microscopic analysis
-Large milky white angular chert fragments, very variable in size;
-Clay particles 1/80 mm. in diameter, drab gray in color when dry, dirty light brown color when wet;
-Coarse clay matrix contains a great number of small angular chert fragments, averaging about 0.5 mm. in diameter;
-Angular quartz fragments occuring as aggregates, quite granular in texture, sub-transparent to transparent;
-Well preserved black bryozoan observed on one angular chert fragment.

2 Depth: 110-115

Wt. sample:	21.2g
Wt. filter paper + residue:	11.3g
Wt. filter paper:	2.2g
Percentage insoluble: 43.2% Wt. insoluble residue:	9.1g

Microscopic analysis
-Same large milky white angular chert fragments, variable in size;
-Clay particles dirty light brown in color when wet - rather coarse particles;
-Small aggregates about 0.1 mm. in diameter of tiny pyrite particles;
-A great number of well preserved bryozoans on the chert fragments.

3 Depth: 115-120

Wt. sample:	21.4g
Wt. filter paper + residue:	15.1g
Wt. filter paper:	2.3g
Percentage insoluble: 60.0% Wt. insoluble residue:	12.8g

Microscopic analysis
-Same large milky white angular chert, generally smaller in size;
-Clay particles dirty light brown when wet - rather coarse particles;
-Some different types of rock - more yellowish brown in color and quite porous - long, blunt grooves and round holes in the fragments - somewhat softer - recrystallized chert;
-One small crinoid stem segment, 0.8 mm. in diameter;
-Well preserved black bryozoans present in considerable abundance.

4 Depth: 120-125

Wt. sample:	10.1g
Wt. filter paper + residue:	7.8g
Wt. filter paper:	2.5g
Percentage insoluble: 51.9% Wt. insoluble residue:	5.3g

Microscopic analysis
-Same milky white chert angular fragments;
-Clay particles light brown in color when wet - coarse in nature;
-There seems to be a lower percentage of clay in the sample;
-Chert fragments all generally small, 1-2 mm. in diameter;
-Small angular quartz grains - transparent to milky white in color - average 0.5 mm. in diameter;
-One small green glauconite aggregate noted;
-Small angular recrystallized chert fragments abundant;
-Not so many bryozoans observed - a few molds of crinoid stems;
-Tiny pyrite aggregates, 0.1 mm. in diameter.

5 Depth: 125-130

Wt. sample:	14.0g
Wt. filter paper + residue:	7.8g
Wt. filter paper:	2.3g
Percentage insoluble: 39.3% Wt. insoluble residue:	5.5g

Microscopic analysis
-Sample 90% all milky white angular chert fragments;
-Very little clay;
-Chert carries tiny molds of fossils, usually crinoid stems;
-Some fossils replaced by clear quartz; very few bryozoan remains;
-The fine matrix appears to be made up largely of tiny transparent angular quartz grains;
-Several flat aggregates of dark brown, non-micaceous material, probably rust (extraneous);
-Few green glauconite aggregates;
-Angular pyrite fragments;
-One large chert fragment plastered with pyrite.

6 Depth: 130-135

Wt. sample:	21.4g
Wt. filter paper + residue:	7.1g
Wt. filter paper:	2.3g
Percentage insoluble: 22.4% Wt. insoluble residue:	4.8g

Microscopic analysis
-Largely milky white angular chert fragments, 70% of total;
-Higher percentage of clay present than in the preceding sample;
-More recrystallized chert fragments;
-Many molds of fossils generally crinoid stems;
-Clay dirty brown color, 1/80 mm. in diameter, seemingly quite coarse;
-Large angular pyrite aggregate;
-Few, small, green glauconite aggregates.

7 Depth: 135-140

Wt. sample:	28.8g
Wt. filter paper + residue:	23.1g
Wt. filter paper:	2.5g
Percentage insoluble: 71.4% Wt. insoluble residue:	20.6g

Microscopic analysis
-Large milky white angular chert fragments;
-Very little clay, less than 10% of the total sample;
-Pyrite aggregates and some of the pyrite is being altered to limonite, and consequently is staining the chert yellowish brown;
-Most of the very fine matrix is composed entirely of fine, sub-angular to curvilinear, transparent quartz grains, 0.1 mm. in diameter;
-Friable quartz aggregates common - these may easily be crushed to give rise to the very fine matrix in the sample - fossil molds common in these aggregates;
-Secondary quartz common.

8 Depth: 140-145

Wt. sample:	22.0g
Wt. filter paper + residue:	16.6g
Wt. filter paper:	2.2g
Percentage insoluble: 65.6% Wt. insoluble residue:	14.4g

Microscopic analysis
-Large milky white angular chert fragments;
-Percentage of clay very low, less than ten percent;
-Fine matrix composed entirely of fine sub-angular to curvilinear transparent quartz grains, 0.1 mm. in diameter;
-Friable quartz aggregates common - these may easily be crushed to give rise to the very fine matrix in the sample - fossil molds common in this material;
-Secondary quartz present in considerable abundance and variety;
-Pyrite fragments quite scarce;
-Small green glauconite aggregates;
-Recrystallized chert abundant, some fragments rather dark yellowish in color.

9 Depth: 145-150

Wt. sample:	28.7g
Wt. filter paper + residue:	19.7g
Wt. filter paper:	2.2g
Percentage insoluble: 60.9% Wt. insoluble residue:	17.5g

Microscopic analysis
-Large milky white angular chert fragments, making up more than 90% of the total sample;
-Percentage of clay particles very small;
-Fine matrix composed entirely of sub-angular to curvilinear quartz grains, 0.1 mm. in diameter;
-Not as many fossil casts;
-One good, small cast of a crinoid stem;
-One chert fragment with some round cylindrical holes in it, evidently dissolved-out bryozoan stems;
-Recrystallized chert fragments, rather concretionary in nature;
-Small green glauconite aggregates;
-Pyrite fragments scarce.

10 Depth: 150-155

Wt. sample:	21.8g
Wt. filter paper + residue:	3.7g
Wt. filter paper:	2.5g
Wt. insoluble residue:	1.2g

Percentage insoluble: 5.5%

Microscopic analysis

-Large milky white angular chert fragments - some botyroidal forms;
-Clay present but in very small amounts;
* -Large percentage of curvilinear to sub-round green glauconite aggregates - quite distinctive - associated with pyrite aggregates;
* -The glauconite occurs in cylindrical, botyroidal, abraded-shapes, kidney-shaped, some hollow in the middle, deep, bi-lobed forms, earthy appearance, deep green and verdant green in color;
* -Glauconite makes up 25-30 % of fine material, and about 1 % of total sample;
-Pyrite not quite as abundant as the glauconite;
-Size of the aggregates of glauconite about 1/20 mm. in diameter;
-More friable quartz, bearing fossil molds - easily broken up to form fine sub-round to curvilinear quartz fragments which make up the bulk of the fine matrix.

11 Depth: 155-160

Wt. sample:	27.1g
Wt. filter paper + residue:	7.6g
Wt. filter paper:	2.2g
Wt. insoluble residue:	5.4g

Percentage insoluble: 19.9%

Microscopic analysis

-Large milky white angular chert fragments - many botyroidal forms;
-Clay present in very small amounts;
-Friable quartz that may easily be broken to form the curvilinear to sub-round tiny quartz fragments, 0.1 mm. in diameter;
-Many fossil casts;
-Pyrite generally occurs as yellowish-brown material altered or being altered to limonite - many times staining the containing chert fragments;
-Glauconite aggregates not as common - occur in sub-round to curvilinear forms;
-Large amount of secondary quartz and recrystallized chert.

12 Depth: 160-165

Wt. sample:	21.9g
Wt. filter paper + residue:	21.9g
Wt. filter paper:	2.2g
Wt. insoluble residue:	19.7g

Percentage insoluble: 90.0%

Microscopic analysis

-Large angular milky white chert fragments, making up more than 90% of the total sample;
-No clay particles observed;
-Fine matrix composed entirely of the fine-grained curvilinear to sub-round quartz grains derived from friable quartz aggregates;
-Glauconite aggregates sub-round, abundant;
-Considerable recrystallized chert.

Wells at Keokuk, Lee Co.

Hotel Iowa	Pure Ice Co	Hubinger	Electro-Metals
Curb elev. 579	Curb elev. 563.	Curb elev. 504±	Curb elev. 513