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Deep-well Data Base for Nebraska


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Nebraska Geological Survey



INFORMATION

No. 14

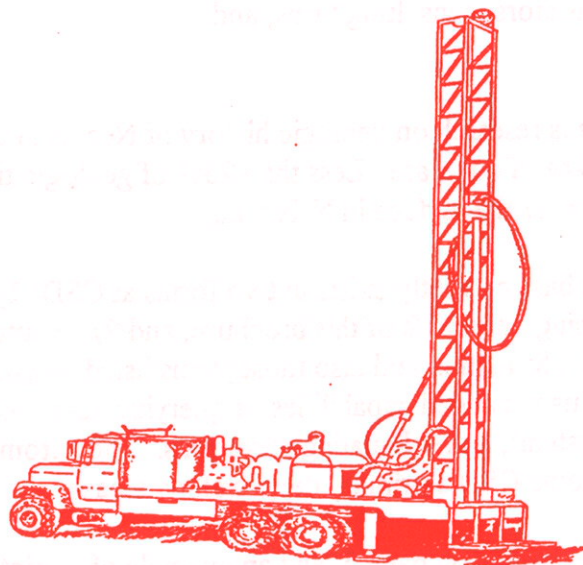
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Deep-well Data Base for Nebraska

*Duane R. Mohlman
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August 1995



Institute of Agriculture and Natural Resources
University of Nebraska-Lincoln



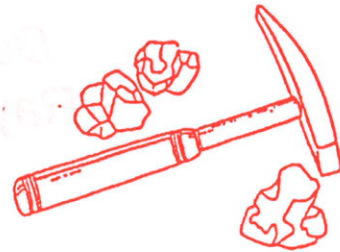
Deep-well Data Base for Nebraska

Duane R. Mohlman, Data Systems Coordinator

Raymond R. Burchett, Research Geologist

Data from deep wells drilled in Nebraska is sent to the Conservation and Survey Division from many sources; some of these include: Oil and Gas Conservation Commission, oil and gas operators; mineral producers; water well drillers and consulting firms. This data is then organized and summarized into a deep-well data base. The data base for Nebraska consists of many data items such as: location (county and legal description), API well number, well name (operator and lease), elevation, casing information, spud date, completion data, total depth, well-completion status, testing data, coring information, completion production data, and stratigraphic or geological formation tops.

The deep-well data base is used frequently by geologists looking for oil and gas or other minerals and less frequently by water well drillers looking for potential deep sources of water. Conservation and Survey Division personnel are constantly using this data base to answer service requests from many sources such as: federal, state, and local agencies; industries, landowners and/or private citizens; legislators; consulting firms; and various educational units.



Primary use of data is research on geologic history of Nebraska as recorded in rock layers present only in the subsurface of our state. Less than 25% of geologic time is recorded in the rock layers occurring at or near the surface in Nebraska.

The deep-well data base currently exists in two forms at CSD: 1) a top card file that includes items listed beginning on page 2 of this brochure, and 2) an automated data base that contains the same top card information and also those items listed beginning on page 3. The automated data base gives us the added capabilities of querying data, mapping the data (geographic information system), and calculating elevations. The automated data base is currently being updated and will become CSD's primary deep-well data base.

An example of a top card is on page 5, and an example of a print-out from the automated data base is on page 6. As of August 1995, the automated data base contains 17,786 deep-well records. Page 7 lists the number of deep-well records per county in Nebraska. A map showing the location of the deep wells in Nebraska is also included.

Descriptions of Items Included in the Deep-well Data Base

County: County location of the well.

Legal Description:

SEC: Section

T: Township (always 'N' for North in Nebraska)

R: Can be either 'E' for East or 'W' for West

____ : Any quarter-section(s)

Farm: Name of landowner at time of drilling. If an 'OWWO' appears, it means "Old Well Worked Over," and the new name and number will appear along with the original Farm information.

Well No.: Number of the well.

Operator: Operator of the well.

Status:

Initial status may be:

DRY - D & A

GAS - Gas

INJ - Injection

J&A - Junked and abandoned

OBS - Observation

OIL - oil

O&G - oil and gas

OW - oil well

SI - Shut in

WC - Wildcat

WI - Water injection

WW - Water well

Later it may convert to:

DRY-OIL well

OIL-INJ - Oil to injection well

OIL-ABN - Oil to abandoned well

OWO - Old well worked over

DRY-OIL-INJ - Several different status

Field: Name of the producing field.

Elevation (above mean sea level):

KB - Kelly-bushing

DF - Derrick floor

GL - Ground level

TD: Total depth of well.

PBTD: Plugged back total depth.

Producing Formation: (if more than one zone is producing, the system for the zone is listed):

NBRR - Niobrara

DKOT - Dakota

DKTD - D Sand

DKTJ - J Sand

FRKR - Foraker

PSLV - Pennsylvanian

VIRG - Virgil

ORED - Oread

DOUG - Douglas

LSNG - Lansing

KSSC - Kansas City

LNKC - Lansing-Kansas City

CHRK - Cherokee

BSAL - Basal Sand

LPZC - Lower Paleozoic

DVNN - Devonian (Hunton)

VIOL - Viola (Galena)

SMPS - Simpson (St. Peter)

REGN - Reagan

PCMB - Precambrian

IP: Initial production.

SPUD: Drilling start date.

COMP: Drilling completion date (not necessarily same as plugging date).

Data on File: items which CSD has on file will be checked on the top card:

WCR - Well completion report

PA - Plugging affidavit

S - Samples

SL - Sample log

SD - Sample description

DL - Driller's log

DT - Drilling time

ES - Electric log

IES - Induction electric log

ML - Microlog

LL - Lateral log

I - Induction log

R - Radioactivity log

Other: Approximately 100 codes are used in this box.

The most commonly used are listed here:

- S - Sonic log
- GR - Gamma ray log
- MLL - Micro lateral log
- SGR - Sonic gamma ray log
- CAL - Caliper log
- ACS - Acoustic log
- CDL - Compensated density log

Recorded By: Initials of CSD geologist calling the tops.

Basis For Formation Tops: one of the following may be checked:

- Electric log
- Sample study
- Operators report
- Scout report

Key Number - The key number is written in green pencil on the top card and is automated in the database. The first two digits are the county number, and the last four are a unique identifier for that well. This number is used for internal CSD identification.

Drill Stem Tests - (bottom portion of reverse side of top card):

- GCM - Gas cut mud
- G&OCM - Gas and oil cut mud
- GW - Granite wash
- HFO - Hole full oil
- HFV - Hole full water
- HO&GCM - Heavily oil and gas cut mud
- OC - Oil cut
- OCM - Oil cut mud
- O&G - Oil and gas
- O&GCM - Oil and gas cut mud
- SLYGCM - Slightly oil cut mud
- SW - Salt water
- VHOVM - Very heavily oil cut mud
- VSOVM - Very slightly oil cut mud
- WTR - Water

In addition to those items listed above, the automated deep-well data base also has the following items:

STATIN - Initial status.

STATCY - Current status.

STATYR - Status year.

MCFD - Thousands of cubic feet per day of gas.

BOD - Barrels of oil per day (1 barrel = 42 gallons).

TOPS - 0 if not marked, depth if marked.

CASING - Casing depth.

WILDCT - Checked if well is a wildcat.

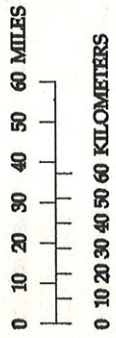
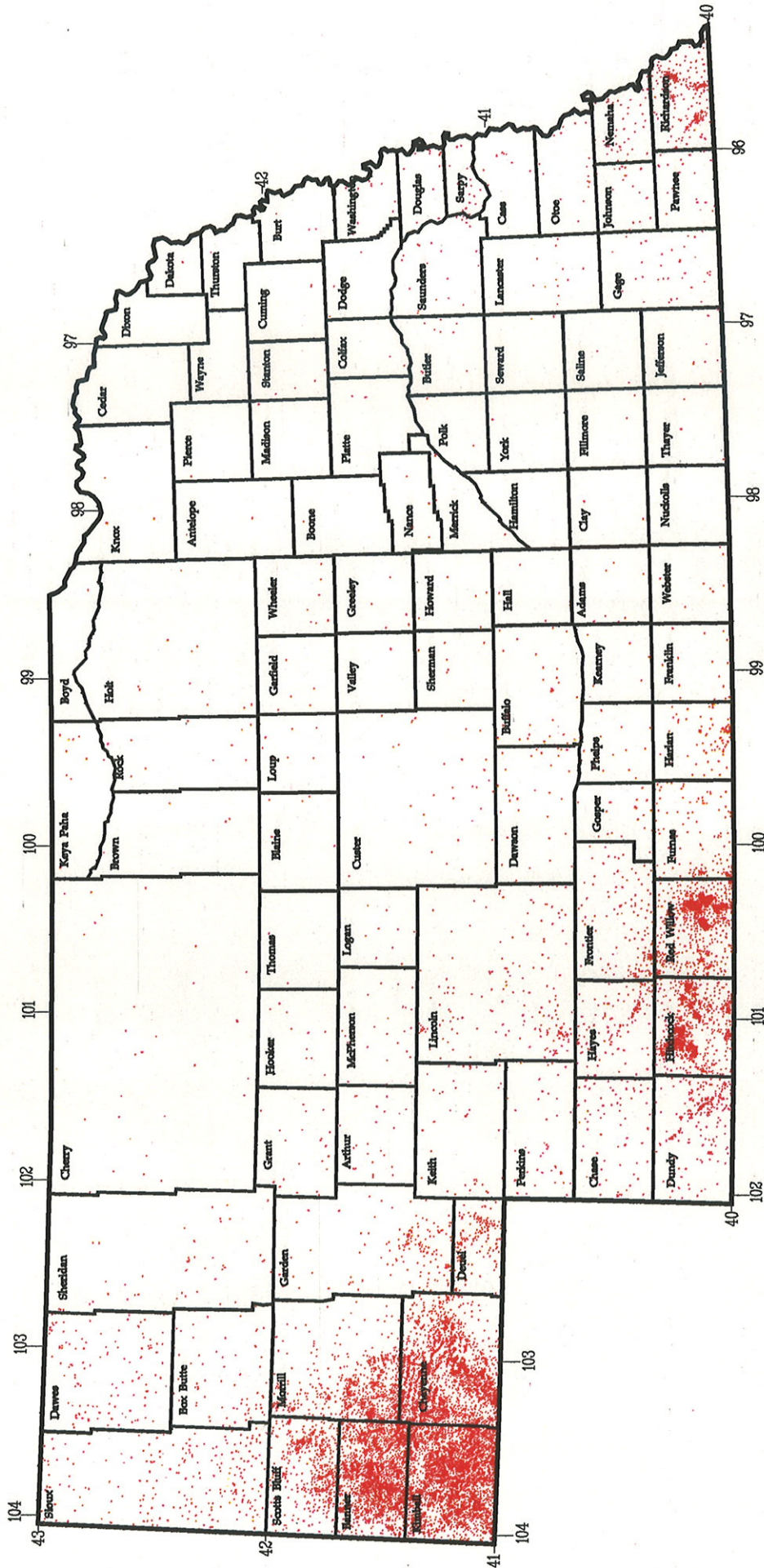
BOTTOM - Bottom log interval.

SURFAC - Surface mud temperature (°F).

BHTDWN - Bottom hole temperature (°F).



Deep Well Data Base



Map prepared by Jim Weir, CSD-UNL, 1995



HRSCIR - Hours since circulation.

WEATHE - Top of weathered surface as marked.

FRESH - Top of fresh surface as marked.

PAGE4S - (N C D P B M O K) to further describe information available in source documents:

N = None

C = Core

D = Drill stem test

P = Perforation

B = Bottom hole temperature

M = Maximum recorded temperature

O = Other

K = Questionable data

COMMNT - Any miscellaneous comments about the well.

APIN - Last 5 digits of APIN number.

LOGDAT - Date log was begun.

WHO - Initials of data entry person.

TOPDAT - Date that tops were called.

For further information about CSD's deep-well data base, or a free publications catalog, contact:

Conservation and Survey Division
Institute of Agriculture and Natural Resources
113 Nebraska Hall
University of Nebraska-Lincoln
Lincoln, Nebraska 68588-0517

Division phone 402-472-3471
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The following CSD personnel are acknowledged for their assistance with this brochure: Marvin P. Carlson, research geologist, and Ray Bentall, hydrogeologist, emeritus.

Front of Top Card

34-39

COUNTY: Gage		SEC: 1	T: 5	R: 5	E			C			NE	SE			
FARM: Spilker		WELL NO: 1	OPERATOR: Magness Petr. Corp.			STATUS: A & A		FIELD: Wildcat							
ELEVATION: 1486 KB, 1484 DF, 1476 GL		TD: 2672	PBD: _____		PRODUCING FORMATION IP: _____		SPUD: 7-3-87	COMP: 7-9-87							
DATA ON FILE: WCR PA IS SL SD DL OT ES I-ES ML LI I R		ELECTRIC LOG: <input checked="" type="checkbox"/>		SAMPLE STUDY: _____		OPERATORS REPORT: _____		SCOUT REPORT: _____							
FORMATION TOPS:															
TOP OF:				DEPTH				ELEV.				THICK.			
CRETACEOUS												JURASSIC			
Pierre												Morrison			
Niobrara												Sundance			
Fl. Moya - Timpa												TRIASSIC			
Codell												PERMIAN			
Corfile												Cimarron			
Greenhorn												Bleine (Minnokahle)			
Ella Fourche												Stone Corral			
Mcwry Bank												Wellington			
Gurley "D"												Chase (Herington)			
Mantmon												Fort Riley			
Cruise "J"												Council Grove			
Stull Creek												Cottonwood			
Cloverly												Admire			
												450			
												648			

CON. SUG. 33000 1000 4-66(7) (10/87)

Back of Top Card

LOCATION:		SEC: 1	T: 5	R: 5	E			C			NE	SE	ELEVATION: 1486 KB		
TOP OF:				DEPTH				ELEV.				THICK.			
PENNSYLVANIAN				736								MISSISSIPPIAN			
WABAUNSEE				736								A			
Torkie												St. Louis - Osage			
Howard												Gilmore City (Chouteau)			
SHAWNEE (Topeka)				1050								Chattanooga			
Dear Creek												DEVONIAN			
Oreed												1662			
DOUGLAS				1250								? 182			
LANSING				1298								SILURIAN			
KANSAS CITY												? 242			
Wyandotte												ORDOVICIAN (Maquoketa)			
Winterset												2086			
Base Kansas City				1536								Galena (Viola)			
MARMATON												2190			
CHEROKEE				1658								Decorah (Simpson)			
												2452			
												St. Peter (Wilcox)			
												2578			
												Upper Arbuckle			
												A			
												CAMBRIAN			
												A			
												Bonneterre (L. Arb.)			
												LeMotte (Reagon)			
												PRECAMBRIAN			
												2640			
OIL SHOWS, DRILL STEM TESTS, CORE DATA, ETC.:												Weath 2612 1126			
NO CORE OR DST'S															

Deep-well Data Base Records by County

Co County No Name	Number Records	Co County No Name	Number Records	Co County No Name	Number Records
01 ADAMS	10	41 HAMILTON	0	81 SHERIDAN	51
02 ANTELOPE	4	42 HARLAN	121	82 SHERMAN	8
03 ARTHUR	30	43 HAYES	156	83 SIOUX	255
04 BANNER	2607	44 HITCHCOCK	1337	84 STANTON	4
05 BLAINE	7	45 HOLT	12	85 THAYER	2
06 BOONE	1	46 HOOKER	12	86 THOMAS	2
07 BOX BUTTE	78	47 HOWARD	5	87 THURSTON	1
08 BOYD	1	48 JEFFERSON	11	88 VALLEY	2
09 BROWN	4	49 JOHNSON	20	89 WASHINGTON	11
10 BUFFALO	33	50 KEARNEY	6	90 WAYNE	0
11 BURT	3	51 KEITH	44	91 WEBSTER	9
12 BUTLER	10	52 KEYA PAHA	10	92 WHEELER	7
13 CASS	10	53 KIMBALL	4297	93 YORK	1
14 CEDAR	2	54 KNOX	6		
15 CHASE	84	55 LANCASTER	13	TOTAL	17,786
16 CHERRY	31	56 LINCOLN	196		
17 CHEYENNE	3087	57 LOGAN	9		
18 CLAY	2	58 LOUP	7		
19 COLFAX	2	59 MADISON	1		
20 CUMING	3	60 MCPHERSON	26		
21 CUSTER	34	61 MERRICK	2		
22 DAKOTA	4	62 MORRILL	996		
23 DAWES	133	63 NANCE	3		
24 DAWSON	33	64 NEMAHA	49		
25 DEUEL	166	65 NUCKOLLS	1		
26 DIXON	2	66 OTOE	19		
27 DODGE	3	67 PAWNEE	24		
28 DOUGLAS	22	68 PERKINS	46		
29 DUNDY	307	69 PHELPS	14		
30 FILLMORE	2	70 PIERCE	1		
31 FRANKLIN	20	71 PLATTE	2		
32 FRONTIER	183	72 POLK	2		
33 FURNAS	169	73 RED WILLOW	1407		
34 GAGE	38	74 RICHARDSON	549		
35 GARDEN	163	75 ROCK	11		
36 GARFIELD	5	76 SALINE	3		
37 GOSPER	21	77 SARPY	23		
38 GRANT	23	78 SAUNDERS	25		
39 GREELEY	7	79 SCOTTS BLUFF	615		
40 HALL	5	80 SEWARD	3		