

Approved: May 1, 2001 *Carl Dean Holmes*
Date

MINUTES OF THE HOUSE COMMITTEE ON UTILITIES.

The meeting was called to order by Chairman Carl D. Holmes at 9:11 a.m. on March 9, 2001 in Room 526-S of the Capitol.

All members were present except: Rep. Carl Krehbiel
Rep. Annie Kuether
Rep. Dixie Toelkes
Rep. Jerry Williams

Committee staff present: Lynne Holt, Legislative Research
Mary Torrence, Revisor of Statutes
Jo Cook, Committee Secretary

Conferees appearing before the committee: Leo Haynos, Kansas Corporation Commission
Dr. Lee Allison, Kansas Geological Survey
Karl Mueldener, Kansas Department of Health & Environment

Others attending: See Attached List

Leo Haynos, Chief of Pipeline Safety for the Kansas Corporation Commission, addressed the committee on the Commission's responsibilities regarding oil & gas production, pipeline safety and storage fields (Attachment 1). Mr. Haynos's testimony included a summary of the laws and regulations pertaining to the Conservation Division (Attachment 2). He also distributed diagrams showing cross-sections of a storage well (Attachment 3). Mr. Haynos introduced Diana Edmiston, Assistant Counsel and Dave Williams, Conservation Division, for the Commission.

Mr. Haynos, Ms. Edmiston, Mr. Williams, Mr. Mueldener, Mr. Mike Cochran (Department of Health & Environment), and Dr. Allison responded to questions from the committee. Those questions and responses, in nearly verbatim format, are incorporated into the minutes by attachment (Attachment 4).

Meeting adjourned at 10:43 a.m.

Next meeting is Monday, March 12, 2001.

HOUSE UTILITIES COMMITTEE GUEST LIST

DATE: March 9, 2001

NAME	REPRESENTING
Don Carlson	KDHE - BOW
Mike Cochran	KDHE - BOW
Leo Haynos	KCC
Karl Muedener	KDHE
Tom Day	KCC
Loe Allow	KS Geol Survey
DAVE WILLIAMS	KCC
Jeff Wagoner	KCC
Mary K. Suss	Leadership Class
Shelley Schick	Leadership Russell County
Jim Wilcox	Leadership Russell County
Peggy Chusler	" "
Bonita Taylor	" "
Sheri Brown	" " "
Jim Willits	" "
Gary Fox	" "
Mike [unclear]	" "
Don Edmister	KCC
Pat Casey	KDHE
J. P. Small	KACH INDUSTRIES, INC

HOUSE UTILITIES COMMITTEE GUEST LIST

DATE: March 9, 2001

NAME	REPRESENTING
George Barbee	Northern Nat. Gas
Steve Johnson	Kansas Gas Service
Whitney Damon	Kansas Gas Service
Walker Hendrix	CURB
Rep Jan Pauls	

Active Oil & Gas Production

KCC (Conservation)

Responsible For:

Drilling practices

- Permitting 82-3-103, 82-3-701
- Review of Wellbore Construction & Design 82-3-107
- Review of Plugging & Abandonment 82-3-117

Protection of Environment

- Lease Inspection For Spills & Remediation
- Underground Injection Control - Class II Wells

Protection of Correlative Rights

- Licensing of Operators 82-3-120



Pipeline Safety

KCC (Utilities)

Responsible For:

Intrastate Natural Gas Transportation
 49 CFR Part 192; K.A.R. 82-11-4

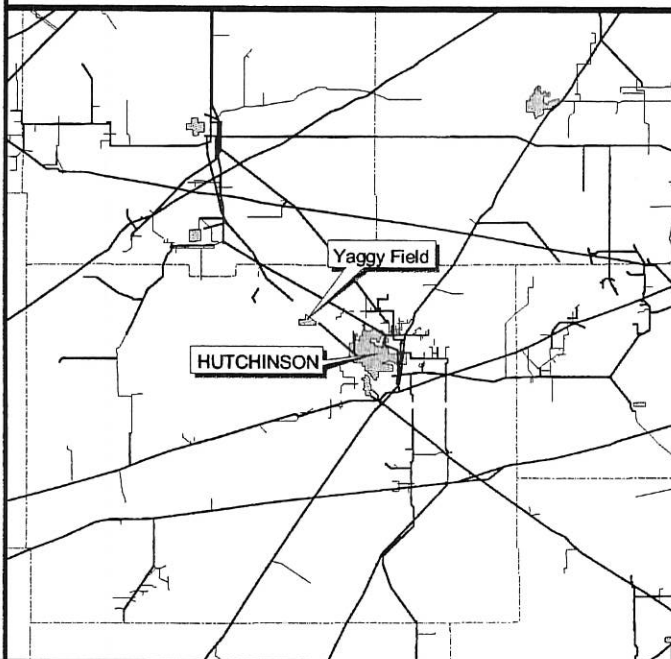
Review of Construction & Design Requirements

- Proper Materials
- Pressure Testing
- Integrity of Pipeline

Safety of Operations

- Maintenance Procedures
- Operations Procedures
- Emergency Response Requirements

Gas Lines in Hutchinson Area



Storage Fields

K.S.A. 74-623(a)
 KCC Does Not Have the Authority to Regulate
 Hydrocarbon Storage Operations After Transportation

K.S.A. 55-1200 Series

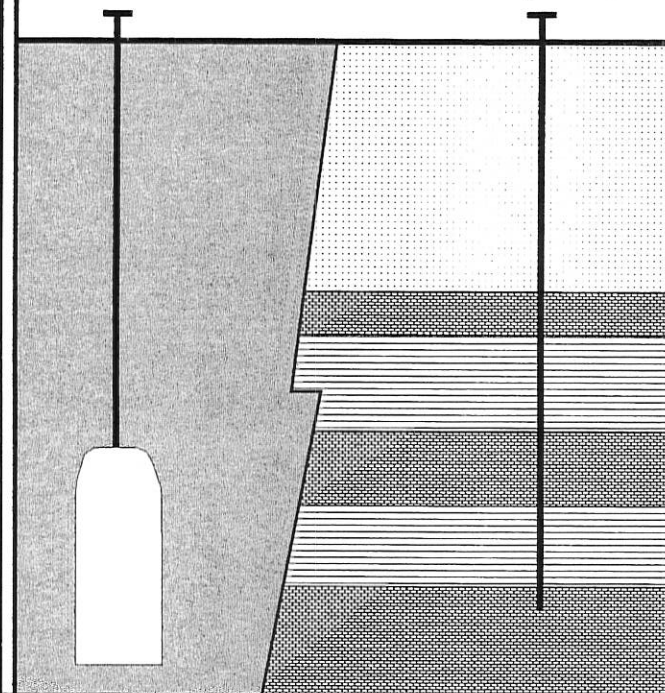
- Certificate Required for Eminent Domain K.S.A. 55-1204
- Notification of Intent to Abandon K.S.A. 55-1208
- Provide Plat Map K.S.A. 55-1209

82-11-311

Coordination of Drilling Through Storage Fields

Cavern Storage

Porosity Storage



SUMMARY OF LAWS AND REGULATIONS PERTAINING TO KCC CONSERVATION DIVISION JURISDICTION
Prepared by KCC Staff for March 9, 2001 Briefing before the House Utilities Committee

<u>Applicable Statute</u>	<u>Corresponding Regulation</u>	<u>Comments</u>
<p><u>K.S.A. 74-623(a)</u>...The state corporation commission's jurisdiction shall include: (1) All practices involved in the exploration for and gathering of oil and gas and the drilling, production, lease storage, treatment, abandonment and postabandonment of oil and gas wells, except refining, treating or storing of oil or gas after transportation of the same; and (2) prevention and cleanup of pollution of the soils and waters of the state from oil and gas activities described in (1).</p>		<p>KCC has jurisdiction over oil and gas activities on active leases, before transportation.</p>
<p><u>K.S.A. 55-150(e)</u>"Operator" means a person who is responsible for the physical operation and control of a well, gas gathering system or underground natural gas storage facility.</p>	<p><u>K.A.R. 82-3-120 (a)</u> No operator or contractor shall undertake the activities of drilling, completing, servicing, plugging or operating any well for the purposes of exploring for or recovering oil or gas without first obtaining or renewing a current license. Each operator in physical control of any well, whether or not the well is shut-in, shall maintain a current license.</p>	<p>Operators of gas storage are required to hold a KCC operator's license.</p>
<p><u>K.S.A. 55-155(a)</u> Operators and contractors shall be licensed by the commission.</p>	<p><u>K.A.R. 82-3-101(a)....(79)</u> Storage Well means a well used to inject or extract natural gas for storage purposes.</p>	
<p><u>K.S.A. 55-150(i)</u> "Well" means a hole drilled or recompleted for the purpose of: (1) Producing oil or gas; (2) injecting fluid, air or gas in the ground in connection with the exploration for or production of oil or gas;</p>		

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- (3) obtaining geological information in connection with the exploration for or production of oil or gas by taking cores or through seismic operations;
- (4) disposing of fluids produced in connection with the exploration for or production of oil or gas;
- (5) providing cathodic protection to prevent corrosion to lines; or
- (6) **injecting or withdrawing natural gas.**

K.S.A. 55-151(a) Prior to the drilling of any well, every operator shall file an application of intent to drill with the commission. Such application shall include such information as required by the commission and shall be on a form prescribed by the commission. No change in the use of a well shall be made without express approval of the commission. No fee shall be required to a company any application of intent to drill a well. No drilling shall be commenced until the authorized agents of the commission have approved the application. The agent, in giving approval, shall determine that the proposed construction of the well will protect all usable waters. Such approval shall include the amount of pipe necessary to protect all usable water, plugging requirements upon abandonment and such other requirements deemed appropriate by the commission. The commission may refuse to process any application submitted pursuant to this section unless the applicant

K.A.R. 82-3-103 (a) 1 - Notice of Intent to Drill. “unless otherwise provided by K.A.R. 82-3-115a, or K.A.R. 82-3-701, the owner, operator, or any other person shall submit written notice of the intention to drill for approval by the conservation division before the commencement of drilling operations for (D) a storage well.”

This regulation provides notice to the conservation division of an operator’s plan to drill a well and for the KCC staff to review (for regulatory compliance) the well information as supplied (i.e., the operator’s and contractor’s names; their addresses and contact name and phone number; the KCC license numbers; the proposed well type; the spot location, section, township and range of the proposed drill site; the total well depth; the target formation(s); the distance to any offset boundary lease line in distance; the nearest location to existing water wells (both

KCC requires an application of intent to drill a storage well.

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has been in compliance with all rules and regulations adopted pursuant to this act.

(b) **The commission shall send to the secretary of the department of health and environment copies of all notifications of intents to drill.** The commission shall send to the clerk of any county in which a well will be drilled a copy of the intent to drill such well.

K.S.A. 55-152(a) The commission shall adopt such rules and regulations necessary for the implementation of this act including provisions for the construction, operation and abandonment of any well and the protection of the usable water of this state from any actual or potential pollution from any well. Any such rules and regulations relating to wells providing cathodic protection to prevent corrosion to lines shall not preempt existing standards and policies adopted by the board of directors of a groundwater management district if such standards and policies provide protection of fresh water to a degree equal to or greater than that provided by such rules and regulations....

public and private); the ground level elevation; and the depth to the lowest fresh and useable water; etc.

The KCC General Rules and Regulations provide the framework for Commission staff to do a complete review the proposed “intent to drill.” During this review process staff will ultimately approve the “intent” in the construction well design if the “intent” meets the standards set forth in the rules and regulations. Upon approval staff will identify the minimum amount of conductor/surface casing that will be required to be placed and cemented into the well bore by the operator, to seal off and protect all fresh and useable water formations that may be penetrated during drilling operations.

K.A.R. 82-3-105 “the use of cement in setting casing or sealing off producing formations or fresh and useable water formations shall be required.”

K.A.R. 82-3-107 (d) [Paraphrasing] Within 120 days of spud date or date of commencement of re-completion of the well, that the operator shall furnish to the commission a completion report and associated other well information detailing the construction design and methods used for technical review by conservation division staff. If the well design does not meet minimum regulatory standards as set forth within

KCC sets standards for the construction, operation and abandonment of wells and cathodic protection boreholes, subject to the jurisdictional limitations established in K.S.A. 55-152(a), and 74-623.

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(b) The commission annually shall review current drilling methods, geologic formation standards, plugging techniques and casing and cementing standards and materials. Based on such review, the commission, if necessary, shall amend its rules and regulations to reflect any changes to be made in such methods, standards, techniques and materials from the previous year.

the KCC General Rules and Regulations corrective action will be taken to ensure compliance.

K.A.R. 82-3-700-704 Cathodic Protection Borehole Regulations. This series of regulations is for cathodic protection boreholes used to prevent corrosion to lines and outlines the regulatory process for the construction, operation, and abandonment of such boreholes statewide except in Groundwater Management Districts 2 and 5.

K.S.A. 55-156 Prior to the abandonment of any well which has been drilled, is being drilled or may hereafter be drilled, the operator shall protect usable groundwater or surface water from pollution and from loss through downward drainage by plugging the well, in accordance with the rules and regulations adopted by the commission....

K.A.R. 82-3-114 Plugging Methods and Procedure states specific plugging requirements for drilled wells.

K.A.R. 82-3-117 Plugging Report, Penalty
[Paraphrasing] Operators must file a written report of well information and the method used for plugging (for any well that has been plugged) within 60 days after plugging. Commission staff provides on-site inspection and witnessing of plugging operations as required whenever possible.

K.S.A. 55-1201(a) **"underground storage" shall mean storage in a subsurface stratum or formation of the earth;**

K.S.A. 55-1202 [Paraphrasing] The underground storage of natural gas promotes the public interest and welfare of this state.

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K.S.A. 55-1203 [Paraphrasing] A natural gas public utility has eminent domain powers to acquire a subsurface stratum or formation for underground storage.

K.S.A. 55-1204(a) Any natural gas public utility desiring to exercise the right of eminent domain as to any property for use for underground storage of natural gas shall, as a condition precedent to the filing of its petition in the district court, obtain from the commission a certificate setting out findings of the commission:

(1) That the underground stratum or formation sought to be acquired is suitable for the underground storage of natural gas and that its use for such purposes is in the public interest; and

(2) the amount of recoverable oil and native gas, if any, remaining therein.

(b) The commission shall issue no such certificate until after public hearing is had on application and upon reasonable notice to interested parties in accordance with the provisions of the Kansas administrative procedure act. Subject to the provisions of K.S.A. 55-143 and amendments thereto, the applicant shall be assessed an amount equal to all or any part of the costs of such proceedings and the applicant shall pay the amount so assessed.

A KCC certificate is required for a gas storage field only if eminent domain will be used in acquiring storage rights.

KCC and KDHE have an informal understanding between the two agencies that if an application for a storage certificate under K.S.A. 55-1204 is filed concerning proposed salt cavern storage, the KCC will notify KDHE, and will look to KDHE for a determination as to suitability.

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K.S.A. 55-1205 [Eminent Domain Procedure–Judicial]

K.S.A. 55-1207 The director of the state department of administration, with the approval of the state finance council, may lease to a person, firm or corporation lands owned by the state of Kansas for the underground storage of natural gas...

K.S.A. 55-1208 [Paraphrasing] Upon abandonment of a storage field, the owner shall file a notice of abandonment with the Commission. Until such time, there is a presumption that the storage field and rights appurtenant thereto, remain certificated, and that the rights have not reverted to the previous owners.

K.S.A. 55-1209 The owner of an underground natural gas storage facility shall provide to the state corporation commission a plat map identifying the location of such facility and a description of the geological formation or formations to be used for storage.

K.A.R. 82-3-311 Drilling through Gas Storage Formations [Paraphrasing] “any person, firm or corporation that penetrates or bores through any underground stratum or formation that a natural gas public utility has appropriated through the exercise of the right of eminent domain for the underground storage of natural gas pursuant to K.S.A. 55-1204 shall seal off the natural gas stratum or formation by:
1) the method and materials recommended by the public utility and approved by the commission or its duly authorized representative; or

KCC’s rules for drilling through an existing storage field generally apply to the drilling of a proposed producing well to a deeper formation. A primary goal of this regulation is to protect against the escape of gas through the proposed drilling operation.

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2) by methods and materials that the commission determines to be fair, equitable and reasonable.”

This regulation has specific actions and for provisions relating to the filing of written notice of the operator’s intent to drill through the storage formation (by registered mail), to the storage operator and to the commission. It contains a ten-day response requirement from the storage operator of recommendations as to the manner, methods and materials to be used in sealing off or plugging operation with written notice from the storage operator to the person, firm or corporation who seeks to drill the well and the commission of their recommendations.

If the operator of the proposed well does not agree with the storage operator’s recommendations or the commission staffs recommendations, then there is a process for complaint filings and a formal commission hearing after proper notice. Operations shall not be commenced until the manner, methods and materials to be used have been prescribed by the commission.

Upon commission approval of the “intent” any public utility may have a representative present at all times during the drilling, completing or plugging of the well or test hole and shall have access to all

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records relating to the drilling, equipping, maintenance, operations or plugging of the well.

Additionally, each public utility, in conjunction with the commission or its representative and the operator of the well, shall have the right to inspect or test the well to discover any leaks or defects that may affect the underground natural gas storage stratum or formation.

INDUSTRY DEFINITIONS

Hydrocarbon:

An organic chemical compound of hydrogen and carbon, called petroleum. The molecular structure of hydrocarbon compounds varies from the simplest, methane (CH₄), a constituent of natural gas, to the very heavy and very complex. Octane, a constituent of crude oil, is one of the heavier, more complex molecules (C₈H₁₈). Williams & Meyers, Oil and Gas Terms, 1990.

Reservoir:

A porous, permeable sedimentary rock containing commercial quantities of oil or gas. Three types of reservoirs are encountered: (a) Structural trap; (b) Stratigraphic Trap, and (c) Combination trap. The reservoir is formed when escape of the oil or gas is prevented by surrounding layers of impervious rock. Williams & Meyers, Oil and Gas Terms, 1990.

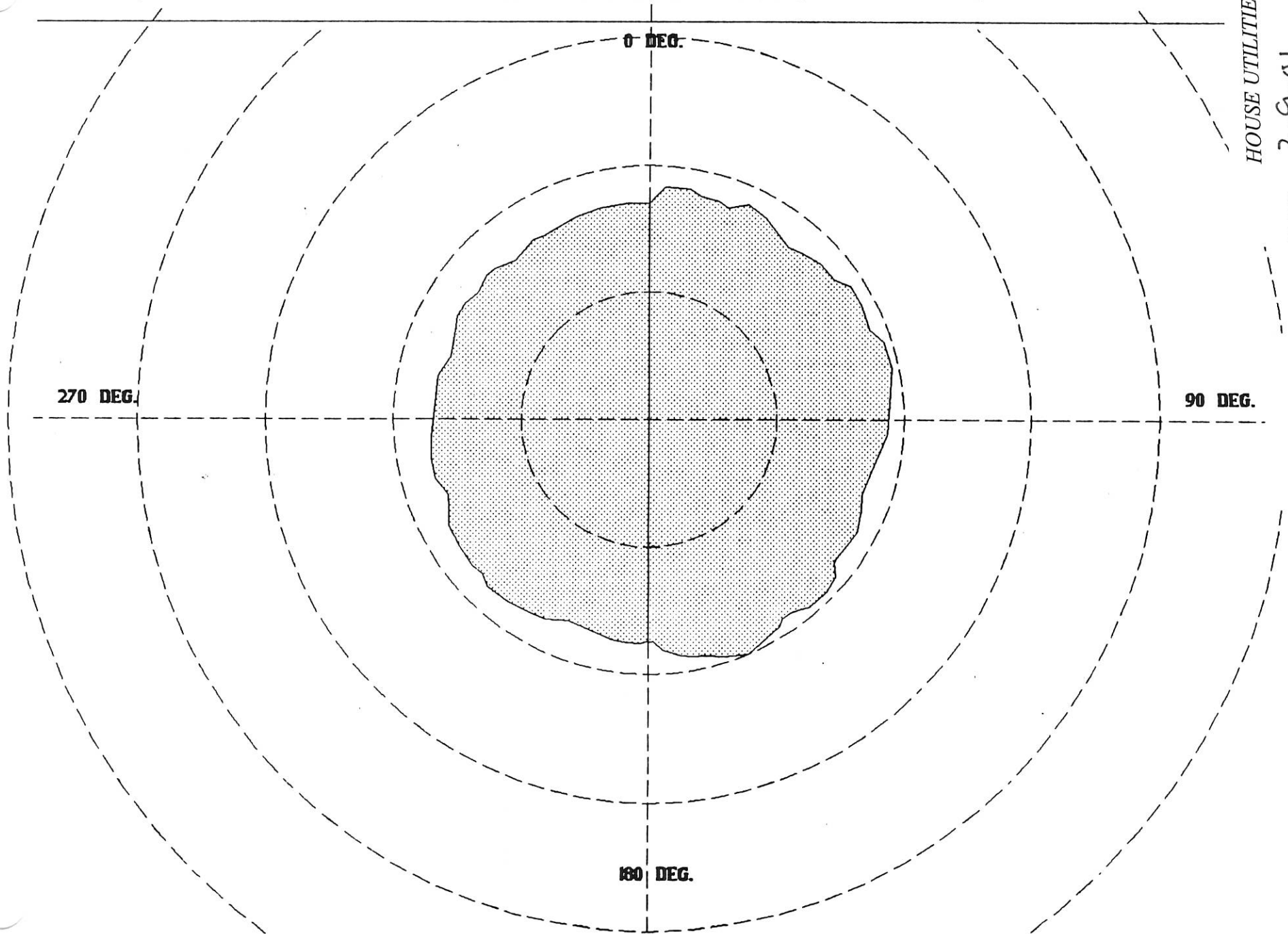
Any subsurface sand, stratum or formation suitable for the injection and storage of natural gas therein, and the withdrawal of natural gas therefrom. Colo. Rev. Stat. 1973 § 34-64-102.

Transportation:

The gathering, transmission or distribution of gas by pipeline, or the storage of gas in or affecting interstate or foreign commerce. 49 C.F.R. Part 192.3

25 feet per division

MAXIMUM RADIUS PLOT

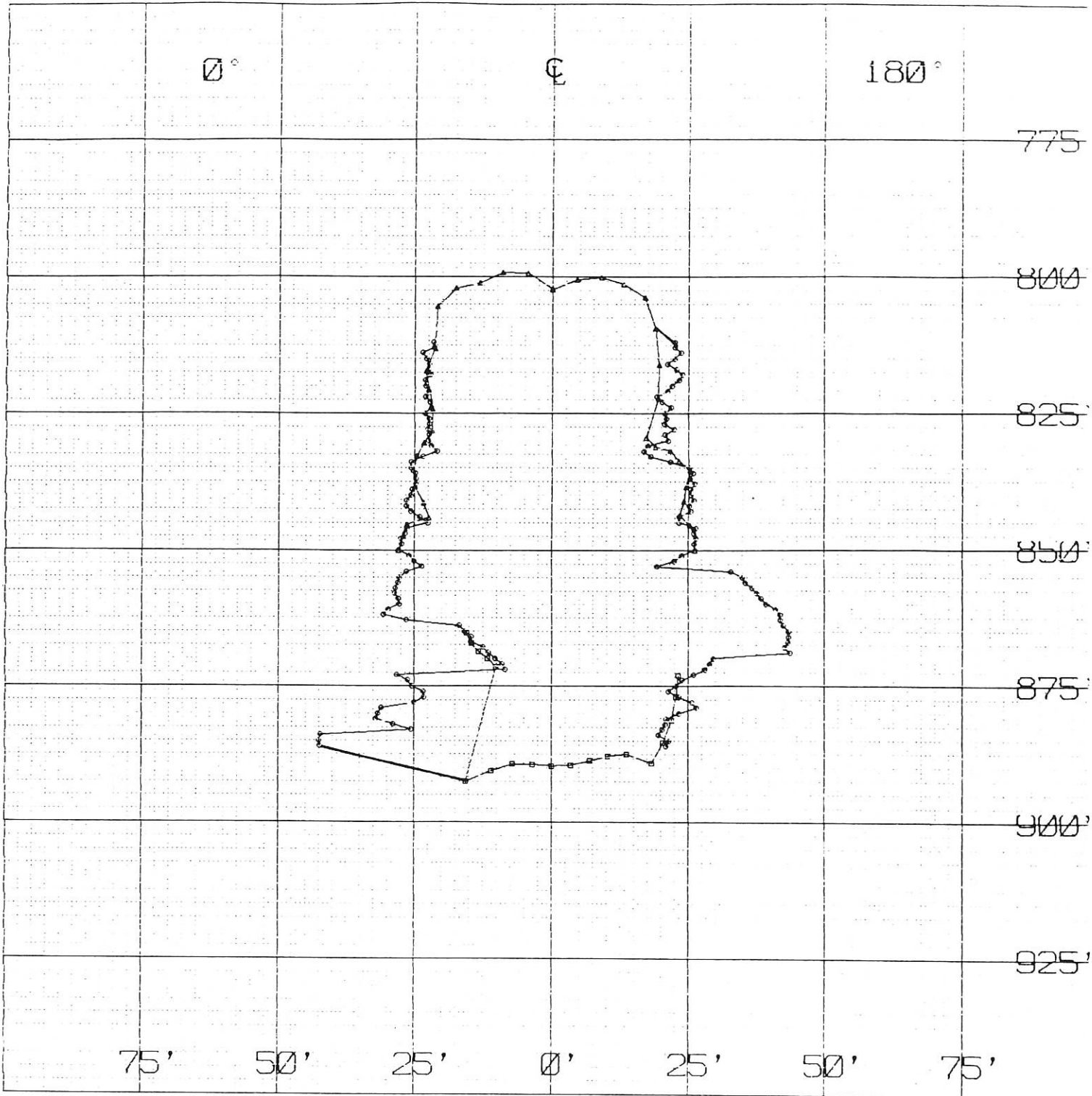


HOUSE UTILITIES

DATE: 3-9-01

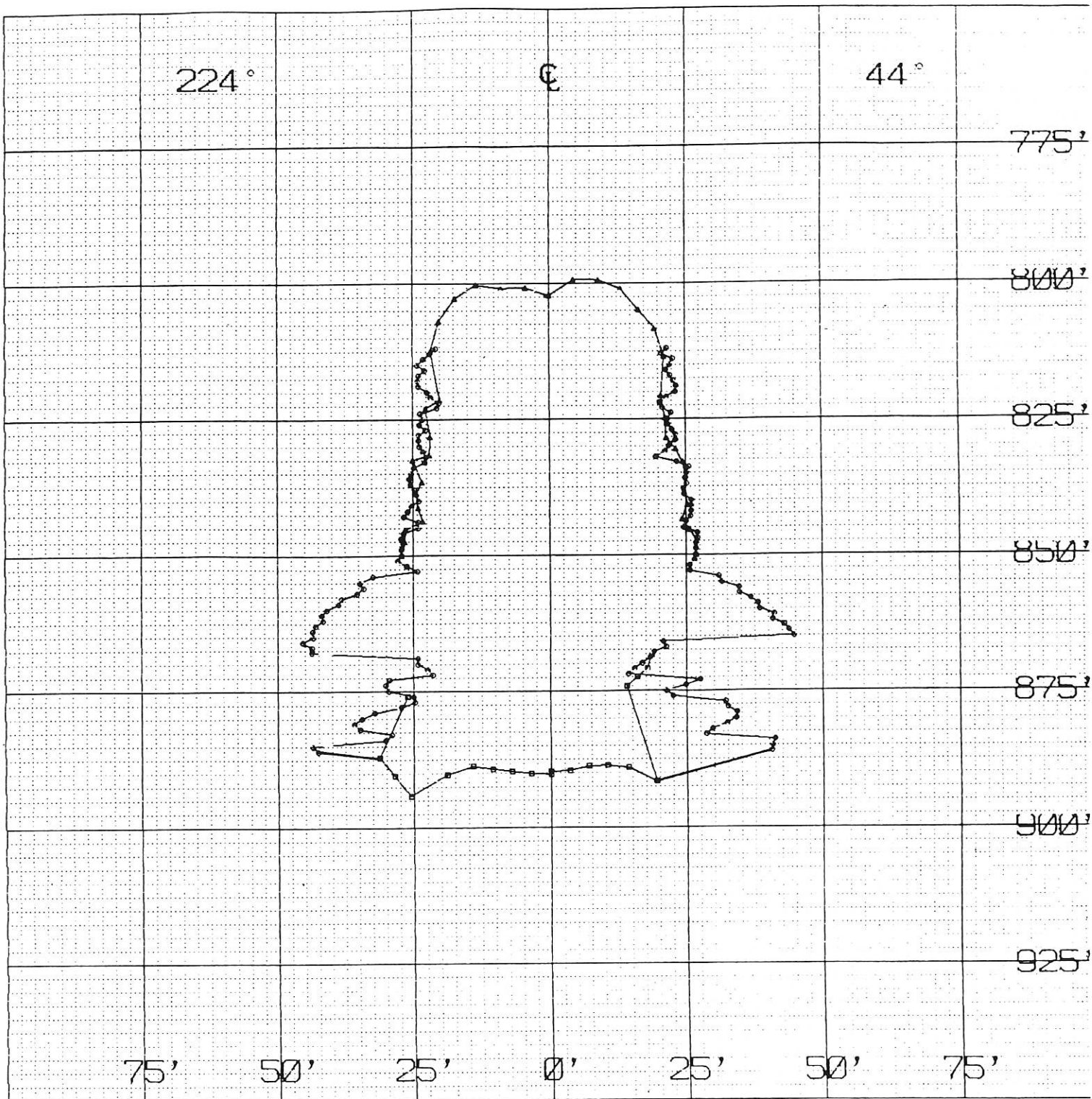
ATTACHMENT 3

VERTICAL CROSS SECTION

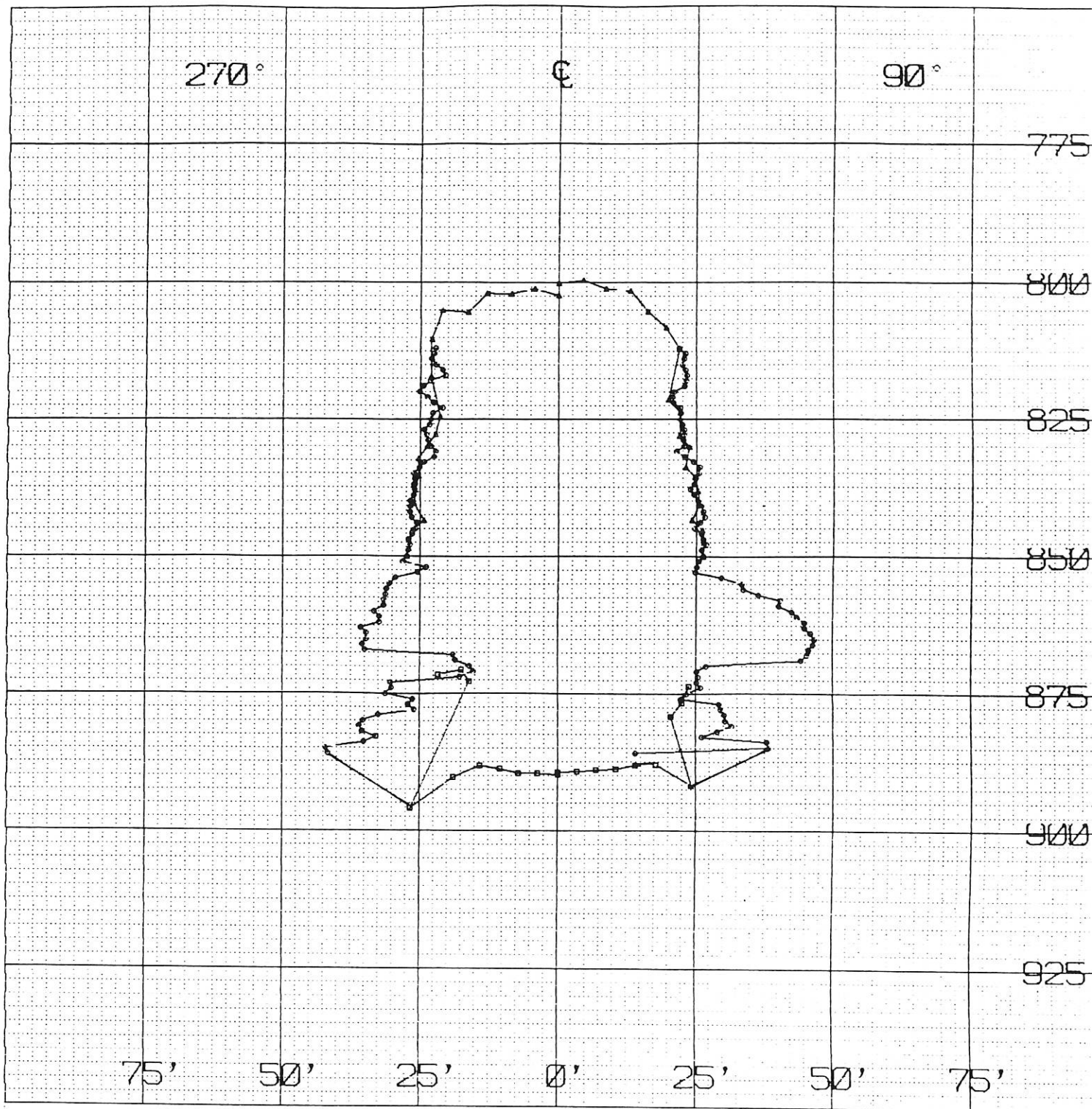


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VERTICAL CROSS SECTION

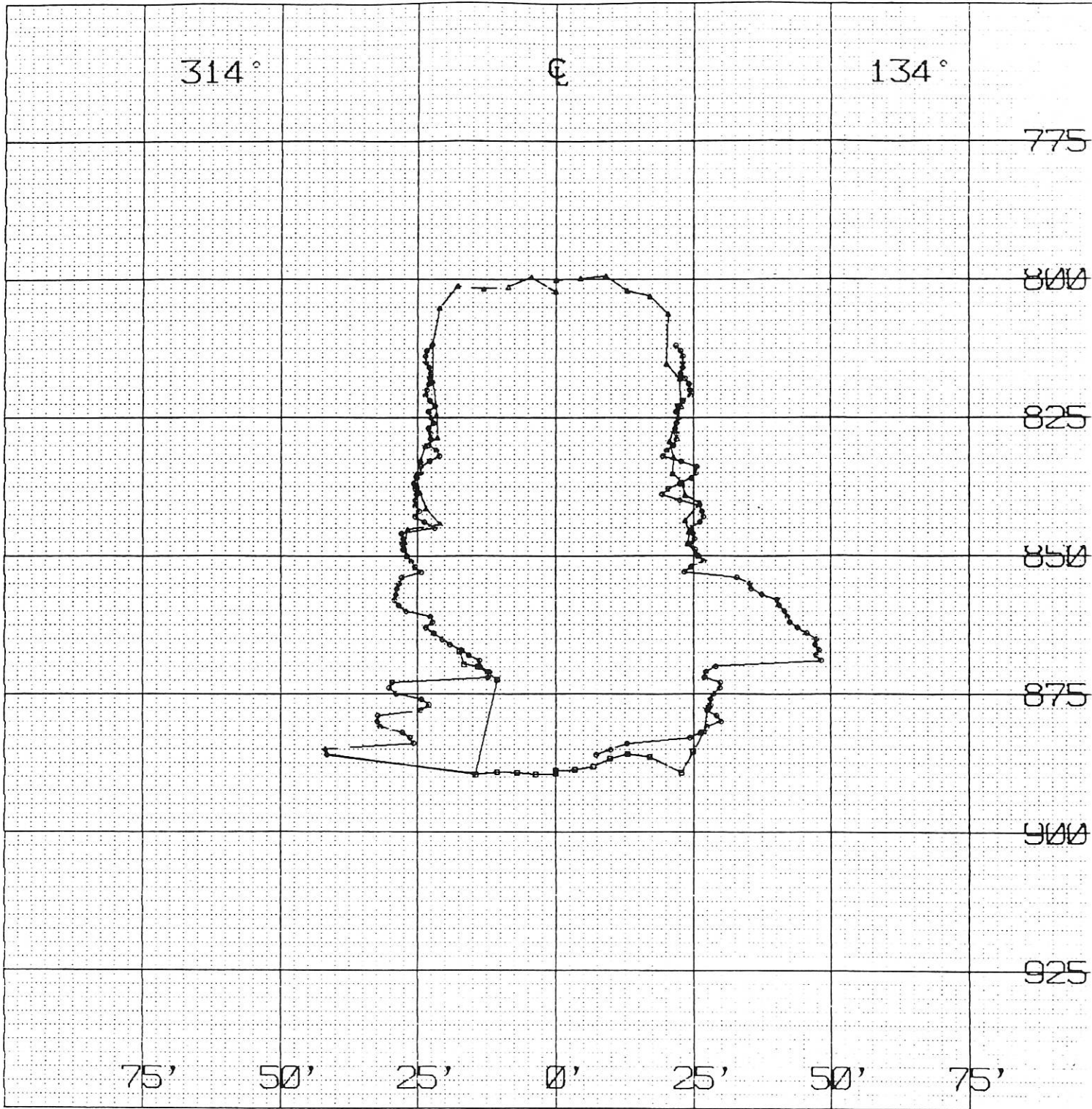


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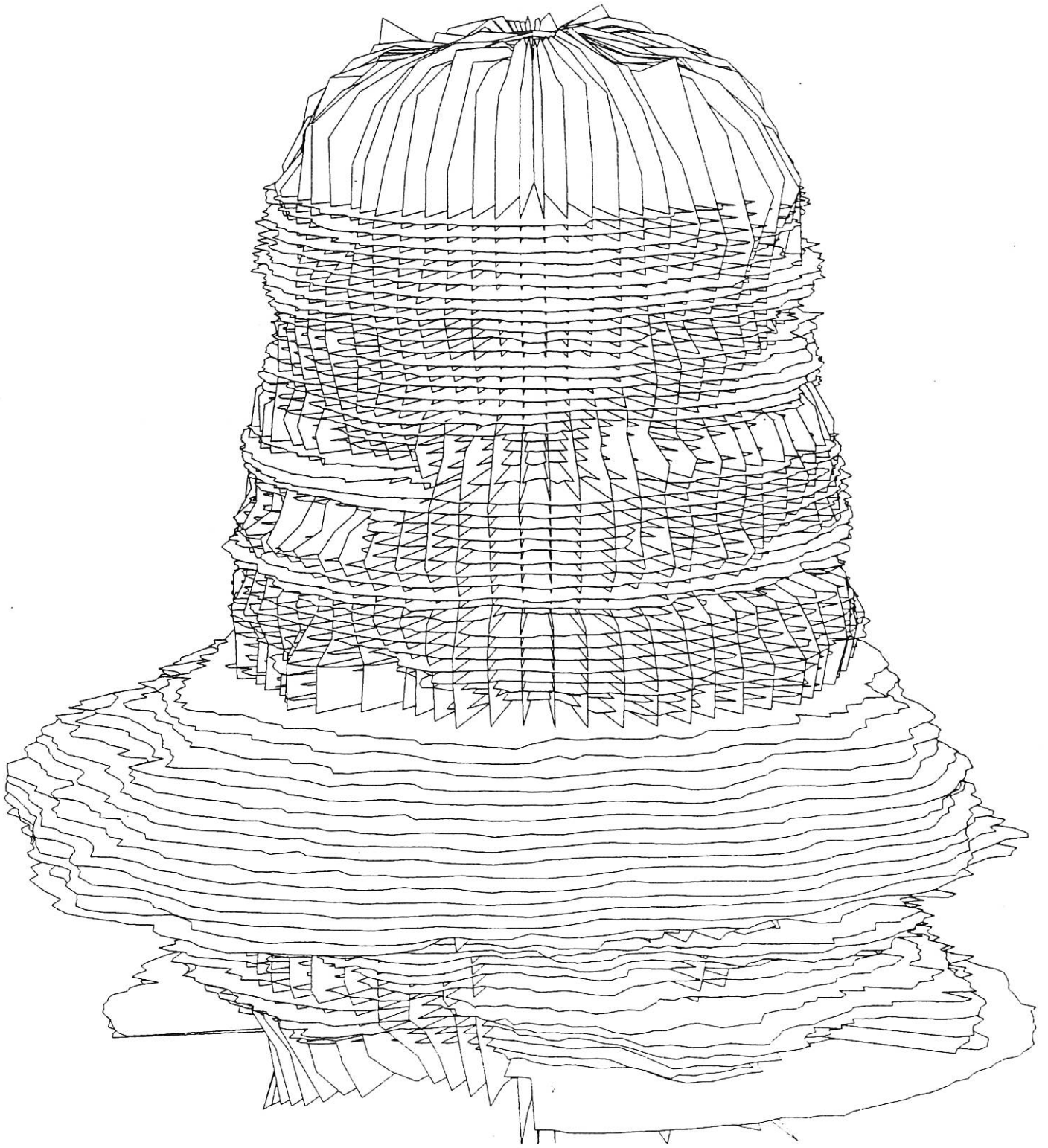


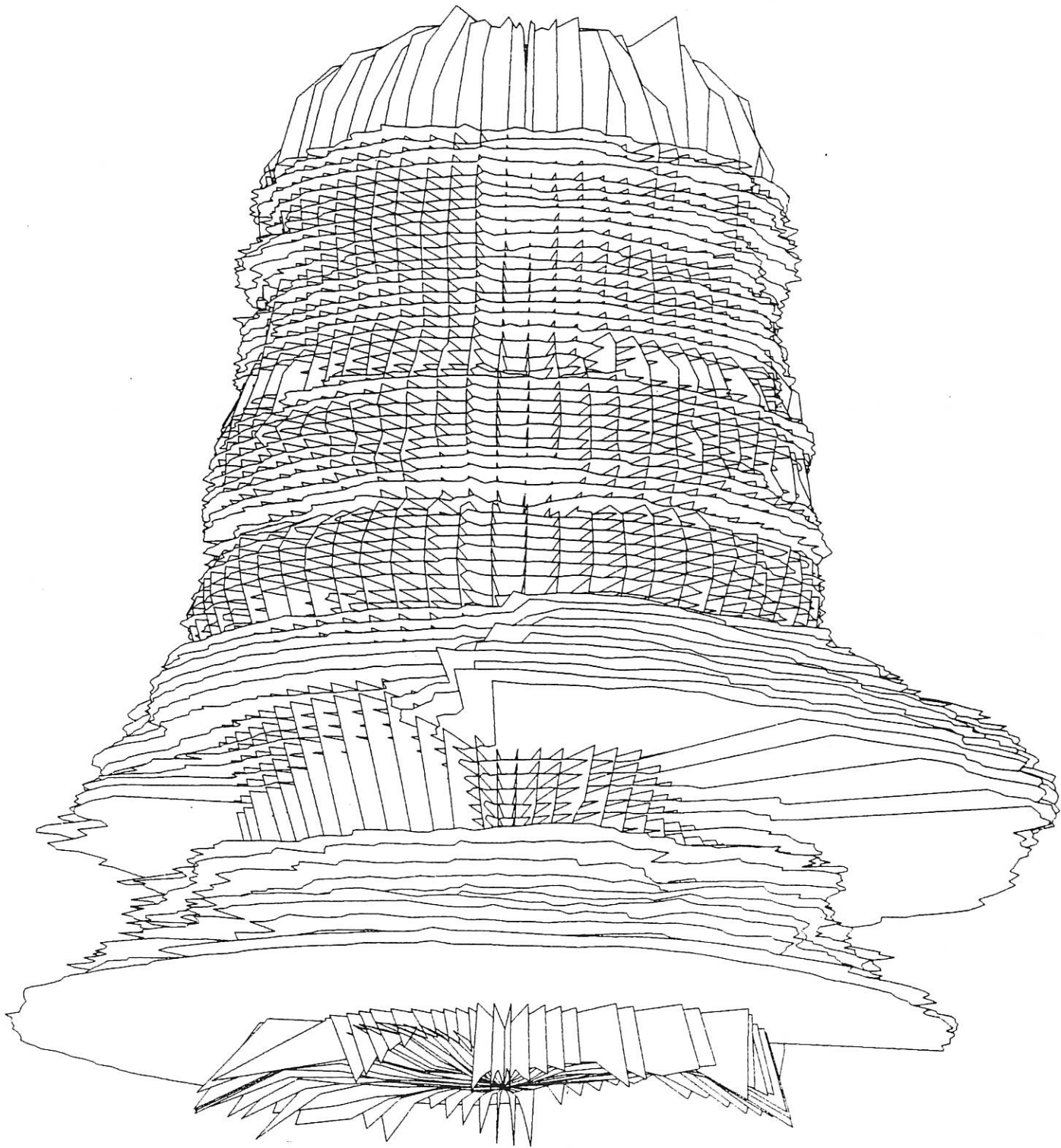
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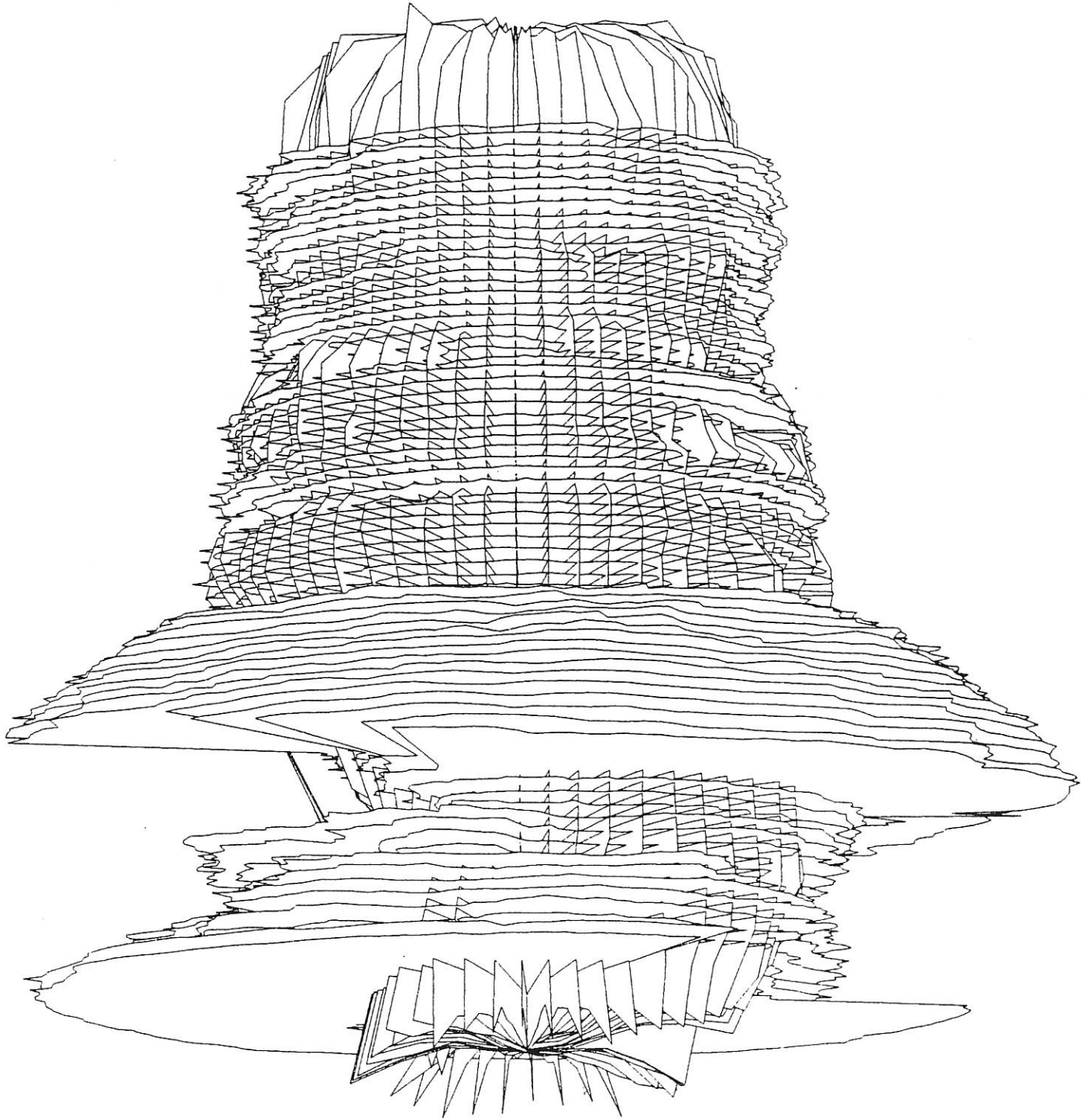
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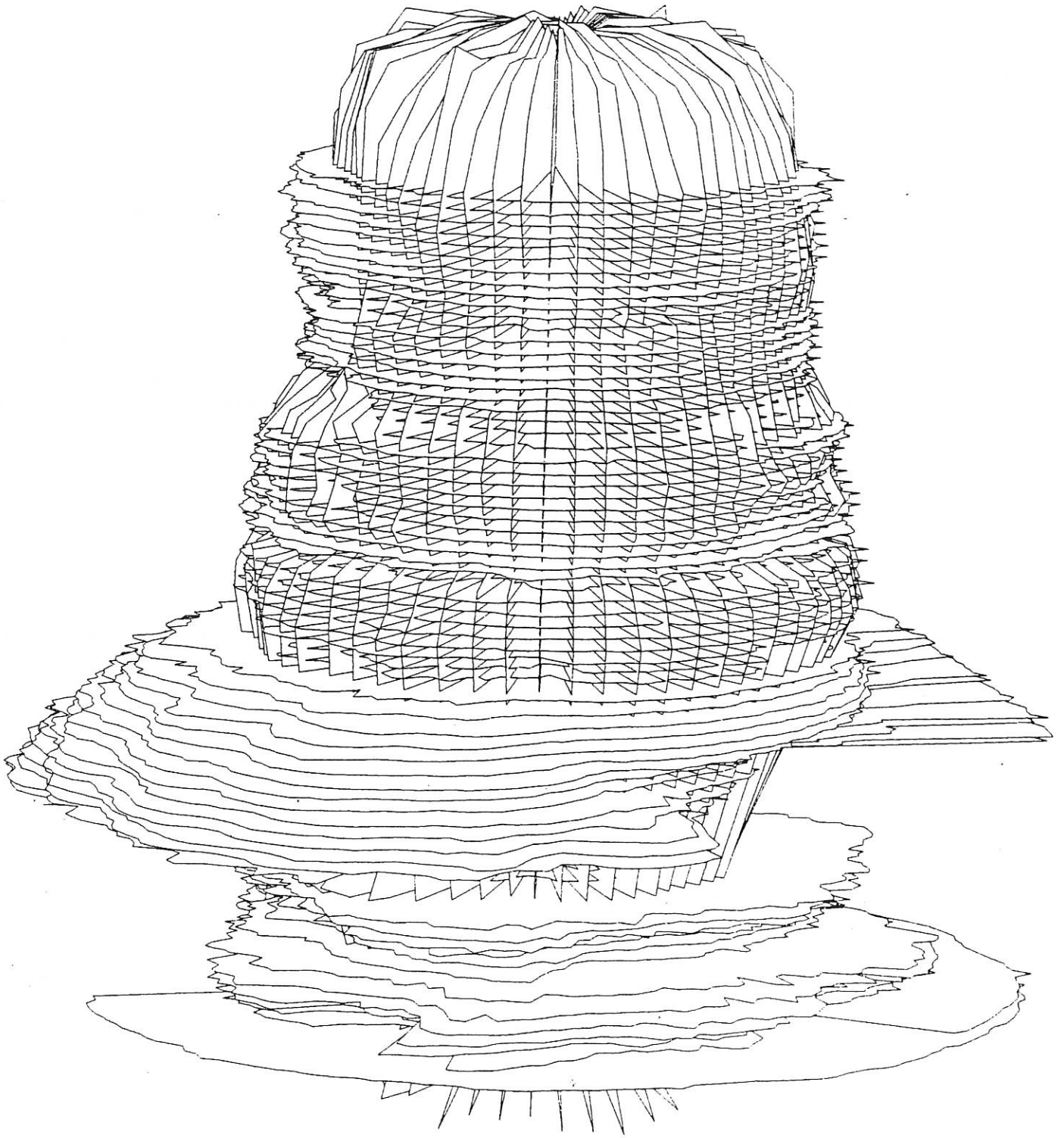


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QUESTIONS & ANSWERS MARCH 9, 2001

- HOLMES I want to walk through this again. I'm talking strictly about reservoir-type storage, not the Yaggy situation. If an operator decides to put in a gas storage field in a depleted natural gas reservoir, they would go to you for the intent to drill that hole, is that correct?
- HAYNOS Yes
- HOLMES Then once a hole is drilled it is your responsibility to check the viability of the casing and whether it is cemented properly and so forth, during construction of the well.
- HAYNOS Yes sir
- HOLMES Once that is done, at what point does control shift to KDHE?
- HAYNOS I would believe that the shift would be when they start operating the storage as an active well.
- HOLMES The wells the that I am familiar with in storage fields have the example that we had yesterday called the 'concept' with the casing and the tubing in the middle. Is that your responsibility or is that KDHE's responsibility at this point for the tubing to go in for the production of gas into and out of the reservoir?
- HAYNOS As far as were they would sit, the tubing and packing....before the injection that by 74-623, it's not our jurisdiction, we believe it is the KDHE's responsibility.
- HOLMES So once the casing is put in the hole, then the shift is to KDHE to control the design of it.
- HAYNOS That's our understanding of it.
- HOLMES Likewise, in that process, before a gas storage field goes in place, there permitting and everything that has to be done, they have to survey to see the extent of what's going to be in the reservoir, how big it is, where the formation is, that's your responsibility, isn't it?
- HAYNOS Yes sir
- HOLMES And the plat maps are filed with the KCC?
- HAYNOS Yes sir I believe KDHE also has them.
- HOLMES And if there is a challenge on the plat maps by a surface owner about whether they're going to producing some native gas in or out of the field versus the pipeline gas, that's your responsibility to determine that?

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ATTACHMENT 4

HAYNOS Yes sir

HOLMES So everything up to the holes that are put in for the deep gas, when you install the casing, what kind of tests do you require on that test, any?

HAYNOS Test on the casing?

HOLMES Same question I asked KDHE yesterday in regards to casing, cement bonding logs, this type of thing.

EDMISTON We're getting back up here on.....I'm Diana Edmiston, Counsel for the Commission, and Dave is going to answer your question, but not just yet.

HOLMES Okay

EDMISTON Before that, you asked about requirements to certify that a stratum is habitable.(can't hear what is being said). The storage company is going to need eminent domain to acquire storage rights, that the only time the KCC will(can't hear)

HOLMES If they use eminent domain powers for storage, then it's your responsibility to referee those issues?

EDMISTON To determine that parameter.

WILLIAMS For the record, my name is Dave Williams and I'm Environmental Geologist for the Conservation Division. In our review process ..?.. resources in the state, so ..?.. We require operators to seal up those holes and replace the adhesive and we require ..?.. Casing to protect our water resources. The production pipe, itself, has to be simulated in place according the operatorSome operators assumes ..?.. Other operators just assume from producing..?.. So we regulate them to the point where we get past the usable water keg for protection.

HOLMES You regulate it to the usable well?

WILLIAMS ..?..channel usable wall

HOLMES The difference between a reservoir log, for the committee members, a reservoir well, that well is drilled through the formation, plugged on the bottom and they go back and perforate, I assume, to get into the formation?

WILLIAMS On a normal ..?.. well?

HOLMES No on an injection well, or a gas field reservoir well.

WILLIAMS It can be done one of two ways, you need to go ahead and ...?... the casing as you just mentioned or ..?...drill into the formation

HOLMES After it is cemented in then go ahead and drill out the plug

WILLIAMS They put in on the bottom of the cement and go into the reservoir

HOLMES And then I believe it was stated that when a field is abandoned, and I'm talking about a reservoir not a storage field, when it is abandoned you then take back control of that well to see that it's plugged properly?

WILLIAMS If a well's due to be plugged, ..?...?

HOLMES Now I want to switch to KDHE for just a minute. KDHE, Karl, now the well's been drilled, the casing's been set, the plug's been drilled out and we ready to start to producing gas. You had two drawings yesterday dealing with natural gas production, which one of these is used on a field reservoir situation.

MUELDENER Fuel reservoir situation being

HOLMES ...?... field

MUELDENER It'd be the one...

HOLMES Out in the Cunningham Field or the Lyons Fields

MUELDENER On my

HOLMES This one here,

MUELDENER Yes.

HOLMES The one that you call, this is the one that is producing the gas?

MUELDENER Yes.

HOLMES You're not requiring tubing on the inside for the production of the gas?

MUELDENER That's correct, I'd like to add one more point here if I can, that probably gets more to the issue. Health and Environment is regulating the storage that's in the bedded salt formation.

HOLMES Right, but the KCC just said that you're also regulating the operations in gas storage fields.

MUELDENER I understand that, what I'm telling you is that our..?..

HOLMES Do you control the reservoir, do you control Borchers' operation?

MUELDENER No sir.

HOLMES Do you control Lyons' operation?

MUELDENER No sir.

HOLMES Do you control Cunningham?

MUELDENER No, the only ones we have...

HOLMES But isn't that your responsibility with the statute?

MUELDENER We don't think so, we have not thought so, under this program with

HOLMES KCC come back to the mic, Leo, who controls Borchers'?

EDMISTON What county?

HOLMES KDHE just said they did not control Borchers' production of the storage field, who controls Borchers?

EDMISTON I believe under K.S.A. 74-623a, the KCC would not have the authority to ...

HOLMES Who does have authority in this state to regulate Borchers'? Are you telling me no one has the authority?

EDMISTON I guess I'm only prepared to address what KCC does have authority on, I would not

HOLMES So once the casing is set in the hole and we start operating a gas storage field that is operating under 1500 - 2000 pounds of pressure, we have no agency in this state that's monitoring what's going on?

EDMISTON I couldn't say that for sure. I know that, I'm familiar with our jurisdictional statutes.

HOLMES So I can go back and tell constituents in my adjacent legislative district that Borchers' is operating but there's no state agency monitoring what's going on?

EDMISTON I couldn't say that for sure. I can say that the KCC does not have the authority.

HOLMES But you're saying your not doing it, KDHE says they're not doing it.

EDMISTON I do agree that back to 74-....

HOLMES I think it's obviously that nobody controlling, so who know's if there is an MIT test begin operated or checked on the Borchers' field for leakage? KCC, do you have any record of that?

EDMISTON I don't believe we would have a record on an MIT on a gas storage field.

HOLMES KDHE's not checking this?

MUELDENER Correct, we're not.

HOLMES The Chairman's going to have to think about this for awhile. Let's go back to Yaggy. We saw the picture showing the wellhead yesterday, Christmas tree, the production well. KDHE controls the horizontal pipe, that where the valve is, then the KCC controls it from a pipeline standpoint. Is that correct?

HAYNOS Thanks correct, the valve on the

HOLMES So the valve on the Christmas tree is where the control changes.

HAYNOS That valve would be considered what we call a critical valve in that we have to maintain and inspect it once a year to determine that they can shut gas off at that valve if they had to.

HOLMES I'm going to be switching back and forth. I'll ask you first then KDHE. What kind of Memorandums of Understanding, called MOU's, do you have between your agency and KDHE on the operations of storage fields?

HAYNOS I'll go back to the staff here, not in Pipeline Safety we don't have any.

EDMISTON We have a current Memorandum of Understanding, I don't believe it ..?..., I don't believe it would specifically address the question that you have.

HOLMES What I would request, rather than going into it here, I would like to have copies of MOU's that may be between the two agencies in the regulation of gas storage fields. Yesterday, with Yaggy, I made a request that history be prepared for the history of the operation of Yaggy from the time the first jug was mined. Do you have any of that information today, Karl?

MUELDENER Yes I do have a little bit of the that, some of the history per your questions you asked. I didn't have my memory, I'm working from some notes folks put together following the hearing. The history itself, the Yaggy Facility operated as Consolidated, that's the name of the company, approximately 1974, I think is when they started the operations, reading the note here. It became what was known as Silvertip, which was the one I referred to, yesterday I would call more or less a transition company. They

had it in 1990, with Western Resources taking over in 1993. I can give you a copy of any of these. I'll leave your secretary one copy now.

HOLMES I'd like to have a copy of everything you have.

MUELDENER There's some other incidental information you may find useful. You had some other questions about cement, cement bond logs. Well S-1, which was had the picture you mentioned, it was constructed in 1981.

HOLMES In 1981 on the one that went bad.

MUELDENER Yes. A cement bond log was conducted at the time the well was plugged by Silvertip in '92. Another cement bond long was ran in, when the well was reopened, sometime you hear the term drilled out, in 1993.

SLOAN Repeat that for me please, Karl.

MUELDENER The cement bond history, at least from the file anyway? Well S-1 was constructed in '81.

HOLMES There was a cement bond log then?

MUELDENER I don't believe so.

HOLMES Okay, there was no cement bond log?

MUELDENER We don't have a record of that. We do have a record of two cement bond logs, one being in 1992, when it was plugged out by Silvertip and we have another record of cement bond log in '93 when it was reopened.

HOLMES Okay

MUELDENER There was, maybe related to that, something you'd be interested in. There was an MIT conducted in '93 on this well. I believe we require it on all the wells as they reopen.

HOLMES And what methodology was used on MIT test? Did you have a packer in the bottom and pressurize the top or did ...

MUELDENER Uh, yes

HOLMES ...or did you run a separate tubing down with the packer then check the differential between the tubing and the area between the tubing and the casing?

MUELDENER In this case it wouldn't be, no it was just checking the casing.

HOLMES They put a packer on the bottom and a packer on top, and...

MUELDENER I believe so, it would have been the piping then that was checked. One other, there was a sonar test conducted, that would be on the cavern itself in 1993.

HOLMES When the sonar test was run, was there any differential between that and, probably a previous test that was run in '74 when it was originally put into effect, was that compared?

MUELDENER There was probably only the one sonar test in existence.

HOLMES Okay

MUELDENER You had a, somewhat of a sideline, you asked if there was model. Guys have told me that have seen some of these at companies. Thought you found one before we did. We did have a kind of a drawing, it would take the 3-D to understand that. If you'd like that we do have that. Does that answer your questions?

HOLMES Yes. I have a question for Lee.

ALLISON Good morning Mr. Chairman, for the record, I'm Lee Allison.

HOLMES Yesterday I asked questions and you talked quite a bit about the seismographings and tried to locate, have you done any 3-D on that?

ALLISON No sir we have not, we don't have the capabilities of 3-D in general and also when we're imaging something that shallow, to run a 3-D survey we would have to have geochrome so close to the space in the cavern it's very difficult to try to collect data from a shallow cavern.

HOLMES 3-D is designed more for deeper formations.

ALLISON It works best for deeper than that kind.

HOLMES But would it work for shallow?

ALLISON It would be very difficult to transmit 3-D at that shallow level and right now we don't have the mechanical capabilities do this.

HOLMES Does anybody have the capabilities to do this? Right now you trying to cross-section then trying to piece those cross-sections together. The 3-D I have seen that's been used in the discovery of oil and gas has been very precise but it has been in deeper formation. But I've also seen 3-D that's been used in the Hugoton Field between 2,500 and 3,000 foot. What you're telling me is the 600 to 800 foot level, it doesn't have the accuracy.

ALLISON It's not so much the accuracy, it'd be very difficult to gather the data and it's actually not as deep as 600 to 800 feet. The gas bearing zone under the eastern part of Hutchinson is about 250 feet and in Hutchinson it's 420 feet. It's so shallow we did not try to pursue it, we didn't think we could get good data.

HOLMES I didn't know about that, I'm aware technology being used very successfully in deeper formation.

ALLISON We did look at the possibility at trying to gather that kind of data and decided we wouldn't be able to do it and afford to do so that we'd get usable data out of it.

HOLMES Thank you, Leo, again. What control does FERC have over any gas storage or, and/or pipelines?

HAYNOS As I understand it FERC's authority would be more of a sensitive capacity. They're interested in how well they can deliver gas to where it's needed. They do also, kind of like yesterday and I haven't verified this, but I understand they do set a maximum pressure for storage. I don't know how they set that pressure for storage field that aren't in their jurisdiction, at least I would assume they ask the operator to tell them what pressure they're going to operate at. But in their certification permit, there is a maximum pressure stated.

HOLMES Are they certified through FERC?

HAYNOS Interstate lines are through FERC.

HOLMES Intrastate?

HAYNOS The three intrastate do not have FERC certifications, I don't believe. We asked that question at first that we were concerned who really had the authority for the above-ground piping, again, should it be interstate and it turns out Yaggy was intrastate, it always has been since it was opened.

HOLMES For the field listings here, identify for me the intrastate fields.

HAYNOS There's one at Bream, I think it's called.

HOLMES Green?, just a minute Greenwich?

HAYNOS Bream, B-r-e-a-m

HOLMES oh Bream, okay, run by Western Resources in Pratt?

HAYNOS Yes, by Western Resources.

HOLMES That's intrastate?

HAYNOS That's correct, Yaggy is intra and then there's one at Richfield I understand is intrastate.

HOLMES The one at Richfield?

HAYNOS Dave just told me that's been abandoned, so that one's not drillable.

HOLMES It's abandoned, it's not on this is it or is it?

HAYNOS No.

HOLMES So what's the third one, the other one?

HAYNOS Those were the three, I didn't realize.....

HOLMES What was the second one?

HAYNOS Yaggy & Bream

HOLMES Yaggy is intrastate?

HAYNOS Intrastate, that's correct.

HOLMES So its, Yaggy, the situation at Yaggy, if Yaggy is closed for two or three years, what you're telling me is it's only going to affect gas prices in the state of Kansas?

HAYNOS I'm not sure that's correct. I know it's not FERC certified, but I know they store gas for other companies. They bring gas from various, it's almost like a parking lot, they bring it in from Williams or Northern and they'll store that gas then ship it out another way.

HOLMES If it's interstate gas then it should be FERC

HAYNOS That was the discussion we had January 18. We were trying to work through that, but FERC as we understand it is not certified that to be ..?.. Station, so they consider it to be intrastate.

HOLMES We touched on your authority and I would agree that you do not have any control over gas storage. I've got a question for KDHE now. I want to pursue, again, the underground storage reservoirs. And I believe your contention is that you do have, even though natural gas is not included, that you do have control of the workings of Yaggy?

MUELDENER I think the answer to that is yes.

HOLMES Reading the statute, your responsibility is to protect the soil and water of the state from

pollution resulting from the storage reservoir of hydrocarbon and liquid petroleum gas. What makes Yaggy different from the field reservoirs that you feel like, I mean the wordage is the same and your argument you have control of the storage field at Yaggy, that this statute gives you authority. I want to hear your argument why it does not give you authority to control the underground field reservoirs.

MUELDENER My answer, from the program split responsibilities occurred back in '86, the line was more or less drawn closer to production related activities. The biggest attention then was really given more to oil field brine wells which was the bigger, more in terms of numbers, that would go with the KCC and KDHE then would take the more industrial related disposal activities than the USC program. The hydrocarbon storage program, at that time, was primarily the salt activities, the salt storage activities, which relate closely to the Class 3 wells, brine solution mining wells, and because of that relationship we stayed with those, the solution mines we permitted the stat and then we caught up with the permitting as the hydrocarbon storage (sic). From our understanding by how things were supposed to work, those were the ones that KDHE was supposed to take responsibility for and we never pursued the field storage or Storage.

HOLMES Is there any Memorandum of Understanding between the two agencies in this regard?

MUELDENER I would have to check the MOU's, I would have to dig those out.

HOLMES I'd like for you to check that.

MUELDENER They're old.

HOLMES I understand that, but I'd like to have anything that you might have on that.

MUELDENER In some ways, what I've given you Mr. Chairman, is a response in terms of condition and what has the program developed as opposed to what is in the statute. Does that make sense?

HOLMES Leo, KDHE has just stated they have never controlled field storage, are you aware if the KCC has ever regulated field storage?

HAYNOS I'm not aware of that at all, touch base with.....

EDMISTON I don't know, I'm not aware that the KCC ever regulated field storage. I would want to clarify, starting, jurisdictional line committee, I know that this week our Director had a conversation with KDHE's Director and they confirmed among themselves that we are, we don't have jurisdiction over storage generally.

HOLMES That's very clear in the statutes you don't any jurisdiction.

EDMISTON Yes, and so what I'm suggesting is that there may be a misunderstanding among the staff and her staff ..?.. KCC, but we do have at least an informal understanding, which I don't believe is spelled out specifically in a Memorandum of Understanding. We do have an informal understanding that the KCC is not responsible and doesn't have jurisdiction to regulate storage, any type of gas storage. Does that answer your question?

HOLMES Yes, committee members when we talk about MOU's or Memorandums of Understanding, do all of the committee members understand what we're talking about? Ray does not. Would you explain to the committee what an MOU is?

EDMISTON It's a written, generally a written document signed by ..?.. directors of two or more agencies. It sort of allocates responsibility among themselves, how they will interpret the responsibility, sort of overlapping, or jurisdictional responsibility that may come very close, that may overlap.

HOLMES Everybody understands now? I have some questions that came up during the Senate hearings. These would be back to Karl I believe. There was a presentation made by a consultant, I believe out of Houston, that made some observations on Kansas regulations and I'd like for you to respond to these comments. I'm just going to read them off: "It is important to recognize that these rules are promulgated at the time when there were no natural gas storage caverns in Kansas and thus rules can be reasonably be expected to be deficient for gas storage caverns." Would you care to respond to that comment?

MUELDENER I don't seem to disagree with a thing.

HOLMES You agree with that comment?

MUELDENER Yes

HOLMES It goes on to say: "The significant weakness in Kansas Department of Health & Environment rules has been well documented in the press in recent weeks. For example, the rule does not require a mechanical integrity test nor does it require any sort of casing inspection log. The rule does not address or perhaps contemplate the reentry or drilling out of plugged or abandoned wells."

MUELDENER That's generally, absolutely agree with that, particularly the casing integrity test.

HOLMES "Kansas rule does not address how close caverns can be to one another. This is perhaps not a major issue with liquid wells, but it is important for gas storage caverns."

MUELDENER Yes, it only addresses the well heads themselves, it doesn't address the actual.....

HOLMES And why is that critical?

MUELDENER Well, several reasons, you don't want the caverns communicating with each other, some science concerns, also a controlled product with in, we're trying to keep the jugs or the vessels separate.

HOLMES "The rules does not require emergency shutdown valves at the well head which is common requirements in other states. Kansas rule does require minimal information reported to KDHE by operators." The no emergency shut-down valve, is that a correct statement?

MUELDENER I don't know if I agree or disagree with that comment.

HOLMES With that I'm going to open it up for committee member questions. Joe?

McLELAND Thank you, Mr Chairman. Karl, I guess I have a couple questions for you. Carl referred to the cement bonding test and you had ..?..and stuff up there, I guess. And I don't know the correct terminology, but I try to struggle, but when they ran it, does the first test showing any holes or voids where the concrete is not bonding properly.

MUELDENER Mr. Chairman, is it alright if I consult with somebody that knows that question better than I?

HOLMES Yes

MUELDENER Does the test any problems? With the Chairman's permission, can I introduce Mike Cochran, who's a geologist with USC program.

COCHRAN The bond log that was conducted in '93, where they reentered and reopened the well showed a very good bond, an excellent seal.

McLELAND I guess that was going to be my next question, is if ran a test before it was closed and another after it was reopened, was there any differences in the two tests?

COCHRAN The one that when it was closed would be some years back and I can't recall, I mean that was conducted so we could check and see if there were any problems before we plugged it and evidently they weren't because we allowed to you know go ahead and be plugged. That's all, based on that.

McLELAND I see, you don't really know if there's any difference between the two tests?

COCHRAN I would say that they were both indicated no serious problems, but the first bond log, I would actually have to go back and look at that, 'cause I don't remember. But I do recall the one in '93 was good.

McLELAND I guess you also mentioned some tests over the years that had been ran on it, was any tests that indicated any potential problems?

COCHRAN We did conduct the hydraulic pressure mechanical integrity tests after they opened up and that's the one where it was referred to with the packer set in the bottom or the base of the casing and that pressure test checked on fine. It didn't indicate any effusion (sic). I trying to think, I believe that's the other, the sonar which just looks in the cavern shape. I don't recall any other tests.

McLELAND So there's no indication to the effect of any particular problems.

COCHRAN No

HOLMES I'd like to have a follow up question on that. The news media reported the possibility that when they drilled out that plug in '93 that there's a possibility some metal filings or something came when they drilled that plug out. Is that just newspaper or is there actual anything that you know about that?

COCHRAN That is correct. The drill out report does indicate there some metal in the hole and it took them awhile to melt through that. There evidently some type of, something to do with the cementing operation got dropped down the well. Sealing coupling or..

HOLMES What level was that.

COCHRAN It just happens to be at the location of where the hole is located, it's in the same area.

HOLMES And after those metal filings were discovered, did they lower a camera down in to check?

COCHRAN No

HOLMES So they do not know what kind of damage there was as a result of it.

COCHRAN True, except that I would say the pressure mechanical integrity test was done after all that was drilled out and it checked out okay.

HOLMES Was there a casing integrity test?

COCHRAN I think you're probably more along the lines of the casing inspection law, is what I think you're talking about. No that was not done.

HOLMES Would that test had shown if there had been any damage to the steel casing?

COCHRAN It could have, yes.

HOLMES Thank you. Nile?

DILLMORE Thank you Mr. Chairman. I'm not sure who I'm addressing this to. But I believe, Dr.

Allison, yesterday you had indicated that the Yaggy field had a capacity of about 3 to 3.5 billion cubic feet, is that right?

ALLISON Yes sir, the operators have informed us it is somewhere between 3.2 and 3.5 billion cubic feet.

DILLMORE Do you know anything about the, is it pronounced, B-R-E-A-M, the other Western Resources' field by Pratt, do you know anything about the size of that one?

ALLISON No, I'm afraid I do not.

DILLMORE Is there anyone here that would be able to address that?

HAYNOS The only other capacity number that I've been aware of came from the testimony of Mr. Be???, President of Kansas Gas Service and the number that he gave from 3.5 billion cubic feet for Yaggy and then he referred there being 300 billion cubic feet of storage within the state of Kansas so we don't have any for the specific intrastate fields other than Yaggy.

DILLMORE You have the 600 psi, which I believe is what Yaggy was measured at in January, is that right, is that the pressure in that field? Someone yesterday had testified that there was about 600 pounds of pressure in the Yaggy field in January when this...

ALLISON I may have said that, I think I understood that that was the pressure they were trying to pressurize the S-1 jug and was, and the associated jugs to and they were have trouble achieving that pressure.

DILLMORE I am correct in that, the pressure in the jug would be the best indicator of what the volume of gas is in there, how much actual gas is in that jug.

ALLISON Well, the combine of pressure and the volume of the jug, right.

DILLMORE You had also said that that gas, that they can move that gas in and out of there fairly quickly?

ALLISON It's considered a rapid-response type of storage unit.

DILLMORE Could you put that in some kind of perspective for us as to how, if they wanted to take all of the gas out there, given that 3 billion, 3.5 billion cubic feet, what kind of time frame that would take?

ALLISON I think yesterday I couldn't recall what their flow rates were, but it might be in the neighborhood of 100 million cubic feet a day. That kind of flow rate is a little higher than what you'd normally get out of a gas field with comparable area size. But that's just a ballpark and I may be off by a factor of any kind.

DILLMORE Okay, I'm just trying to put in some perspective. Also could you help me with the 3.5 billion cubic feet, how much gas is that in terms of usage, say a town of Wichita or Sedgwick County, how much gas would that?

ALLISON I've heard some numbers. Normally when we buy and sell gas we talk in thousand cubic feet loads, so that's mcf stands for thousand cubic feet, so 3.5 billion cubic feet is 3.5 million mcf of gas and so an mcf of gas this past winter was selling from \$5 to \$10 an mcf and so your home would use, see if was \$10 an mcf and you had a \$400 gas bill it mean you were using 40 mcf. So we have 3.5 million so it we may be talking about 100,000 homes for a month. That's kind of 'back of the envelope' calculation there.

DILLMORE 100,000 for a month, that would be about 3.5 billion cubic feet?

ALLISON I think if I've not missed a decimal point there.

DILLMORE Easy to do, I'm sure. I don't cipher that well on my feet, so

ALLISON (mumble response)

DILLMORE Without knowing what's out there in the other field, are those numbers, is there someone that monitors the pressure of those jugs regularly, the KDHE, anybody, that was reported to you, in this case, I guess that would be Western Resources?

HAYNOS Kansas Gas Service monitors with what is called the..?..(Skanos?) system. It's an automated, dated acquisition system that monitors pressure for all their operations. In storage fields they do it by 'pod' which would be a group of wells that are pulled together, they want to determine the pressure of the pod, not for each individual well through this ..?.. System. So that's real time data. It's probably taking points maybe, I say real time, maybe twice a day.

COCHRAN What Leo said's correct. Reporting wise the KDHE they only have to turn in an annual report to give the maximum pressure the use for that year, that year of the report. That's what they report to us. Our regulations do allow us, if we want to, to request that information or ask for it at a time when we need it, but as far as the regulation that this requires an annual pressure, pipe pressure that was used on that pod.

DILLMORE You talked about that Yaggy was an intrastate storage facility, but at any given time gas could be part of another, so we really don't know at any given time how much of that gas that might be in Yaggy or Bream that actually belongs to Western Resources?

HAYNOS Oh, they know that,

DILLMORE They know that, but nobody in this room would know.

HAYNOS We would know and for the record, we found in testimony for the Senate that Bream has 1.6

billion cubic feet of storage. And the other point is that both of those fields are not owned by Western Resources, but by Kansas Gas Service, which is a subsidiary.

DILLMORE So the issue of ownership is anybody's guess at any given time?

HAYNOS No, not anybody's guess, the operators know who's gas is in there and where it's at.

DILLMORE Thank you, thank you Mr. Chairman.

HOLMES Tom?

SLOAN Thank you Mr. Chairman. For the sake of committee members who aren't familiar with the oil and gas industry, would one of you would walk through how plug the well, I mean, what you use, the depth you go down and then, conversely, when you're going to drill it out, how do you drill it out?

HAYNOS I'll let Dave talk about that from a conservation side.

WILLIAMS All those that are jurisdictional for the KCC have a requirement that they permit with us, an application for approval prior to digging the well. They are instructed to contact our district office and receive ..?. instructions as the methods and procedure to be followed. If they don't notify our district office within 5 days ..?. and we try and witness as many of those as we can to verify ..?. waste. Our rules prescribe procedures for placing plugs depends on the depth of the well, ..?.a multilayer stacked cement 50 foot column plugs with a lip intermittent ..?. between the wells. The wells can be complete in one of two ways. One's where the casing is actually cut off ..?.bottom of the cement or I should say the top of the cement where the production casing is actually withdrawing from the well and we plug through that casing as ..?. Another way is where the pipe may not be salvageable or maybe have too much cement and it's not economically recoverable, in which case we actually plug through tubing, placing tubing instead the well bore and placing cement through that tubing in columns and are stacked in layers, basically, back to the surface. And inclusion of the well, the well bore cut 3 feet below the well head and the well is permanently capped and sealed No entry of fluids can enter that well head any longer and it's ..?. The operator is further required to finalize a report with our agency which details exactly what went into the ..?.use ..?.place, copy of all..?.tickets are attached showing the type and balance, volumes, pressures..?.the entire operation.

SLOAN And then if you're going to drill it out?

WILLIAMS Then you basically start over again. You have to open the well back up and permit with us to reenter that well. It's preemptive approval on the well's construction as far as service casing is set in ..?.to today's standard current standards that we have a well that might have been drilled back in the early 1930 would not have the adequate surface casings to protect ..?. water today. And therefore, we require permitting for our system insuring that there

was any ..?.. We will reenter that well to be drill out cement blocks, one by one, until we achieve the required depth. Once he does that he a reporting ..?.. to how the well is constructed and operations. All the..?.. has to be reported to us..?.. The well is put into a ..?..state. ..?.....?....

SLOAN Then to follow up on a question asked by the Chairman, when Yaggy was redrilled, there were metal filings reported and without getting into who's responsible, in the reporting process, obviously the report came back there were metal filings. What was or should have been done in terms of verifying where that came? That it wasn't a piece of equipment that had fallen in when they plugged it originally, as opposed to the side of the casing?

WILLIAMS As the salt caverns were drilled and then ..?.. in terms of Health & Environment ..?..?.....

SLOAN Then my question's for Karl or Mike.

MUELDENER Rep. Sloan, I might try to answer your question. What we required was an MIT, we did that on all the wells.

SLOAN Let's back up. Would you, since that was a storage area, would you have overseen the plugging of the Yaggy Field originally?

MUELDENER Yes, we did.

SLOAN And what are your procedures in terms of what do you require them to do.

MUELDENER If I may call on Mr. Cochran again?

SLOAN You may.

COCHRAN The procedure is to first, you know, pull any tubing strings that might be in the wells, you have the casing. Actually, before that the cavern has to be brine filled. Have to fill the cavern with brine, then you remove any of the tubing strings, etc. inside the case and see a whole casing. The, mechanical bridge plug, efface the casing and then fill the well, well go ahead and ..?.. a poly..?.., gamma log, gamma density log, cement bond log would be conducted and you know, if everything checks out okay we fill the casing with cement back to the surface through tubing. You see many tubing, fill the casing back with cement.

SLOAN How many feet?

COCHRAN Filling, it depends on the well. I don't remember exactly.

SLOAN I think the question more is in terms of are you going only say 10 feet below the water table, are you going all the way down to the opening to the cavern itself, what are you filling.

COCHRAN What am I filling with cement, I trying to fill essentially as much of the production casing as I can, essentially, the whole thing. We set the bridge plug at least down to the salt a fair distance so that would be the intent. And believe that's what was done on S-1. We filled with cement back to the surface. We require that some of the casing be left above ground surface and the elevation surveys continue be taken on that well head. Our regulations on plugging are pretty minimal and a lot of things I've talked about there, we just said we need to do this and it's not really in the regulations. But

SLOAN All right, when they're going to redrill, do you supervisor or do anything on that?

COCHRAN Well, they would submit, I guess I would call it kind of a permit application to do that to know it's done and basically explain what they're going to do and how it will be done. And we, you know, do not have people on site when the well is drilled out. We don't have staff to do that.

SLOAN Then are the reports filed with you?

COCHRAN Yea, the report would be filed.

SLOAN And that's when they did the cement bond log in '93, that would be filed with you?

COCHRAN Yea, right, correct.

SLOAN Then again, my question, since there were reports of the metal filings, is there any, again not looking for who's at fault, should that or does that raise questions that then have to be answered by someone?

COCHRAN Well, not necessarily, I mean in this case, the report did say they had trouble drilling through this piece of metal, whatever's in the casing. But they got through it, after a time period. Of course, we had a cement bond log done with the pressure ..?.. test. We felt comfortable that it was okay.

SLOAN Thank you Mr. Chairman

UNKNOWN SPEAKER Mr. Chairman, a quick follow up to Mr. Sloan's question, it fits into the other hearings and testimony we've already had and as we look back at the incident that Rep. Sloan was talking about, it strikes me that the important test is put into the category of casing integrity test, especially at reentry, but even without reentry it appears to me, speaking not as a geologist but as a way that you could check the steel casing. If you had a week spot or if it had been damaged then that would show and remedial actions would be taken. That's a hindsight comment.

HOLMES Laura?

McCLURE Thank you, Mr Chairman. I guess a follow up question for KDHE and maybe, if folks are finding those metal filings is that normal, how many times have we redrilled a salt cavern have there been any plugs previously?

COCHRAN I believe they thought it was a cement coupling, a piece of metal that was down there. Yaggy is the only salt cavern well that I know of that had been redrilled or been drilled out. I know in the general oil business or whatever, it wouldn't be maybe that uncommon to find a piece of metal in a well.

McCLURE I think, maybe a more specific question, at Yaggy, had there been several of these filled, plugged and then redrilled?

COCHRAN Well they all were plugged and then reentered. I can give you the number the keeps floating around, I think that's about 70 some wells.

McCLURE Seventy of them?

COCHRAN Yea, the field had been plugged out.

McCLURE Were there metal fillings found in any others when they were redrilled?

COCHRAN I don't recall that, I can't say for sure.

McCLURE Thank you. I've got some questions for Leo, you may have answered some of these. I think I heard you say that FERC has some regulatory or some sort of authority over the maximum pressure for storage?

HAYNOS That's our understanding as far as the FERC certified fields. We haven't been able to verify that. We just came across that yesterday. We understand that they asked the operator to file a maximum pressure and their intended volume that they were going to be storing.

McCLURE So refresh my memory, is Yaggy a FERC certified field?

HAYNOS No it's not. It's intrastate.

McCLURE But then I thought I also heard you say that there is gas coming in and out from out-of-state?

HAYNOS There is, and that's the confusion we had originally when we were out there. We thought it was an interstate facility because they do in fact move interstate gas through it, however, the Office of Pipeline Safety, which is our federal counterpart, checked with FERC and said FERC really did not have a certificate on Yaggy and they said it was intrastate.

McCLURE Is any one looking any further into that, I mean, are we going to get something in writing?

HAYNOS First comment, this is a gray area. But we can sure follow up on this as far as the FERC requirements for Yaggy.

McCLURE I guess it's just too logical that if it's crossing state lines it inter-state, but.

HAYNOS The think is, they are storing gas for a fee and their moving their interstate piping from Bushton, essentially that where it comes from, and some other lines. But primarily it comes from Bushton and ..?.. lines to Bushton. They just move it off and store it for a fee then give it back. They may not give the same ..?... of gas back, you know, it's almost like electricity sometimes, when you're moving it. But they know the volume they took and they correspond it, they may not deliver it directly back to Bushton, they may deliver somewhere else, but there's transportation fees in that, whatever they work out.

McCLURE Thank you. Then on your diagram and your testimony, I think you said that you do have some jurisdiction over storage fields, something about eminent domain on the porosity storage. Has that ever been used?

HAYNOS I'm not aware, I'll ask Diane.

EDMISTON Yes it has been used. I can't tell you how many times or anything like that, but in fact we did just have a case this year where on one of these fields the gas storer was looking to expand the field and they felt, they anticipated that they would need to expand it through use of eminent domain, so did they did come in for permission for certificates to expand the field.

HOLMES Was that the field that involved Rex Crowell.

EDMISTON I believe so.

HOLMES We have a bill on that too.

McCLURE Thank you Mr. Chairman

HOLMES Joe?

McLELAND Lee, in your testimony yesterday you were talking about how gas flows uphill and it looks like there's two channels or whatever you want to call it heading toward Hutch where the gas goes. Has there been a 360° test check to see if there's any other place where it went our or are you just assuming that everything to the west is downhill?

ALLISON Representative, from our maps, the uphill direction is to the east from the Yaggy from a regional sense. We have used 3,700 oil and gas wells to create that map over that region, so we have pretty good regional control. Then we used the fifty some bore holes, vent holes drilled by Kansas Gas, plus any water well data and local wells that we could find to put together a more detailed local map and we find that the slope, locally, has a little bit different orientation than it appears to be from Yaggy directly to the southeast into Hutchinson. So, yes, we have looked at a regional picture, the regional direction is indistinct, is shallow, is dipping to the west or rising to the east. Locally we see a slight curve orientation between Yaggy and Hutchinson, which provided a direct slope between those two.

McLELAND So your comfortable there's nothing going any other direction.

ALLISON What you see, that's the shape of the rock at that depth. Now in terms of gas, gas under pressure coming out of Yaggy from that leak, we would expect to move from, kind of like and expanding balloon through the geologic unit ten feet, maybe centered a little bit to the east because it wants to move uphill. But as for those pressures, the gas should be moving out all directions, even downward because of the amount of pressure involved. But then as the pressure is relieved, and pressure, the leak from Yaggy is stopped and the pressure dropped and we start venting it at Hutchinson, then we would expect to see that gas slowly moving back to east. And indeed, Kansas Gas Service did report sometime after they dropped the pressure at the S-1 cavern, they saw gas coming back in. And that may be once they dropped the pressure there was gas laterally moving downhill from the point of it moving back into that low pressure or moving to the east, tending to move back uphill. So that's consistent with the interpretation of gas moved out all directions although be it paraferentially move to the east under pressure.

McLELAND Next question, I would assume Gas Service or Western or whoever it is, they know since that field opened in '93 how much gas they put in storage there and how much they taken out. And they should be able to take the difference and know how much gas they've lost. Has any, has that been done, does anybody have any idea how much gas they've lost out of that field since it was put into production.

ALLISON We met with Kansas Gas and KDHE and the City of Hutchinson last Thursday in Hutchinson and that question came up. At this point they acknowledge 73 million cubic feet lost plus some more and as of last Thursday they said they were still calculating what the additional amount what but they haven't finalized that. Over this past weekend the mayor of Hutchinson said that their consultant indicated it's 300 million cubic feet was lost, the officials from Gas Service say that that number is way too high and they are sending us there own pressure data and additional back ground data with the idea that perhaps at the Geological Survey could interpret that and come up with a number. So at this point it is 73 million cubic feet plus but we don't know that other number is.

McLELAND So probably someplace between 73 and 300.

ALLISON That's correct, although Kansas Gas Service would argue it's closer to 73.

McLELAND Okay, so a question for Karl or someone in his staff. Back to the filing and to plugging the wells, when they plug them is there any reports that require the people plugging as to what they did at what depths and also, like if they get things like, if they thought there was an old bit or something like that dropped into the hole and that was where the filings came from. One was there any reports that indicated that something like was done or not and also, did anybody ever go back and check with the people that plugged it to see if they have any records and recollection of what they dropped into the hole?

COCHRAN Yes, they do file a plugging report that describes the plugging activity there was. As I recall on that one there was not any mention of metal or anything being dropped or thrown into the well. That's my best recollection on the drilling record.

McLELAND Okay, and then when ever they drilled it out and started hitting metal do they go back to the company or outfit that plugged the holes to see if they put anything into it.

COCHRAN No

McLELAND Thank you.

HOLMES Don?

MYERS Thank you, Mr. Chair. This may be a totally off the wall question, possibly nobody can even answer it. Sometime we tend to look or center upon the obvious and not look for the remote and I'm sure that if the seismologists and geologists have already considered this, but I need to ask the question. Is it possible that we've had low level earthquake activity in the area prior to that time which could have destroyed the integrity of the storage system and allowed gas to escape into the strata where it could have traveled very rapidly to the City of Hutchinson, which would also account for the substantial loss of pressure for the utility. Have we looked at seismic activity, low level or high level, which might have occurred in the area previously?

ALLISON Representative, we have been asked that question and we are looking at that right now. So far we've seen no evidence of any kind of seismic activity period, let alone the seismic activity that would have been large enough to cause the type of loss pressure we're talking about. Kansas has not had seismograph, earth quake seismograph report equipment in state since 1989 but a new system's just been place through Kansas State University Department of Geology and they have, I believe, nine instruments operating outside of Manhattan. So we contacted Dr. Steven Gao there, who's operating those instruments to look at those to see if there was anything reported either during the event, just immediately proceeding the loss of gas at Yaggy or the weeks or months proceeding that. These instruments are remote and they only go out and collect the data from them every six weeks or so. We've asked Dr. Gao to look at those so far. He's not indicated that he's found anything but we haven't verified

that they've checked all of the records. Just giving some general background, the seismicity levels in that part of Kansas are so low that we would not expect earthquake activity to occur to produce those kinds of fractures or disturbances. Having lived in California for 20 years and gone through every major earthquake in the state over a ten year period, I have a little background on this. The size of an earthquake or seismic displacement that we would need to cause something like that, I think would have been felt most likely. We don't have any records, any reports dealing with anything like that. I think we would have looked for earthquakes large enough that we would have noticed them and there would have been effects beyond just this. So our feeling right now that that's a very remote possibility. We are investigating it, but at this point we see no evidence, no indication that was involved, any type of seismic activity was involved in the Hutchinson situation.

MYERS We were told that industry around the world is looking at this incident and I would suspect that from the time we started storing in this type of storage, even porosity storage that this is always to be considered a potential for disaster, earthquake activity could, you know, absolutely destroy a field like this. Even allowing gas which has even been pumped yet to rise to the surface. I don't think we're trying to point out who's at fault, but certainly have to look at all the potential because there's potential here world-wide for what we find was the cause here to possibility prevent storage in other areas. Thank you.

HOLMES I have a few follow up questions and one or two of them so we have ..?.. Leo, it's my understanding you have no rules and regs governing gas storage fields because you don't have any control over gas storage fields, is that correct?

HAYNOS Yes, in Richfield operations.

HOLMES Do you have rules and regs governing any drilling of a well and the casing of the well that's going to used as a gas storage field?

HAYNOS I believe we do. I think it says "any well" in the regulations.

WILLIAMS Yes, in the handout sheet that we provided, a well is defined as 'any well' is under our control as far taking impressions for water resources if it's safe. The operation from the storage well is not jurisdictional to the KCC.

HOLMES Thank you. For the KDHE, Karl probably, after the jug was emptied at Yaggy has there been any sonar readings of the jug to see if there's any changes within the jug from prior sonar readings?

MUELDENER No sir

HOLMES Do you intend to do any sonar readings of that jug? Are you anticipating doing any sonar readings of that jug and compare it to what it was before?

MUELDENER We haven't, that hasn't been a discussion item up to now.

HOLMES Would that show the integrity of the jug, if you had that to disqualify that as one of possible causes?

MUELDENER Your question is good in terms that something we might do as we crawl along through the investigation.

HOLMES Yesterday, I believe Lee would have this, I'm not sure, but somebody mentioned that Yaggy and it's importance to Kansas and the fact that Yaggy being taken out of production for a year or until we find out what's there and the company decides what they're going to do. And the effect it would have on natural gas and then today, I guess, it's been pointed out that Yaggy gets it's gas from Bushton plant, are the pipelines in place that the Bushton plant will continue to operate at it's normal capacity if Yaggy is taken out of production.

MUELDENER Mr. Chairman, you're getting into an area where I have no knowledge, I really can't say. I'm not familiar with the outreaching....

HAYNOS I'm going to mention Bushton. There's an interconnect with Bushton, it doesn't really take gas that goes through the Bushton plant. Kansas Gas Service has a large compression facility right next to Bushton.

HOLMES So it's not going to affect the processing plant at Bushton?

HAYNOS No it's not

HOLMES This is back to Karl. When the legislature establishes rules and regs for operation of a field, and which you did have rules and regs in place for this one even though it was designed for fluid instead of natural gas, this is a minimum for a company to operate under, there's nothing that would prohibit a company from going to more strenuous standards than this, is that correct?

MUELDENER That's correct, a very short expansion on that, I believe that Williams operation near Conway has constructed according to what I'll call the "Texas standards."

HOLMES Is that what you call the concept here?

MUELDENER No, I don't think so. I think they have the double casings on but not this tubing like the ..?.in Kansas.

COCHRAN A little clarification on the Williams facility in Conway in reference to following the Texas regulation, that's on the monitoring of automatic shut-off valves, not on the well insides.

HOLMES I was under the impression what you show as "concept" is what's normally used in a

reservoir type production fields.

MUELDENER I can't tell you, I don't know that.

HOLMES I guess my question is, there's nothing to prevent the operator from going to more stringent standards than what your minimum standards were?

MUELDENER Certainly.

HOLMES Rep. Pauls, do you have any questions?

PAULS Well Mr. Chairman, I'm just not sure if everybody's familiar with what occurred at Conway. I think the regulations came in kind of closing the barn door, but someone here might be able to fill in the committee, because I'm not sure how those of us that are fairly close to Conway are aware what happened, as far as people were at a distance might not be aware. I don't know probably the Corporation Commission perhaps should address that.

HOLMES That'd be KDHE on Conway. Can you give us a short history of what happened at Conway and why the rules and regs came in. Bill Bryson?

BRYSON I'm Bill Bryson. I used to be Director of Conservation of the KCC and before that I was director of what used to be ..?.. Oil Field, ..?.. Geology and I was in that capacity when the Conway thing occurred. And that was an escape of propane from underground storage cavities. At Conway, which ..?.. facilities surrounded the town. The propane made it's way up in the water wells in the city and at that time we cored a hole all the way through the salt, down through the surface of the salt and we never could find out the fractures that might have caused this. Nor could we find, monitoring certain wells and running tests on various things as to what the mechanism was that actually caused the shale to shift or something like this. Basically the regulations you've been talking resulted from that ..?.. were basically geared toward LPG storage. But some people can remember this case as well a I do, but that was the basis of the LPG and Conway was one of.. ..

HOLMES Jan?

PAULS Do you know when that occurred?

BRYSON Conway occurred, I think, in January 1980 and the prohibition in 1981.

PAULS And the whole town was, of course, purchased.

HOLMES The company bought the whole town and the town was abandoned. Any further questions from the questions from the committee. If not, we'll close the hearings on the Yaggy situation and review of statutory and regulatory laws and rules and regulations.