

TITLE 43

NATURAL RESOURCES

Part XVII. Office of Conservation—Injection and Mining

Subpart 3. Statewide Order No. 29-M (Rev. 3)

Chapter 3. Hydrocarbon Storage Wells in Salt Dome Cavities

§301. Definitions

Act—Part I, Chapter 1 of Title 30 of the Louisiana Revised Statutes.

Active Cavern Well—a storage well or cavern that is actively being used or capable of being used to store liquid, liquefied, or gaseous hydrocarbons, including standby wells. The term does not include an *inactive cavern well*.

Application—the filing on the appropriate Office of Conservation form(s), including any additions, revisions, modifications, or required attachments to the form(s), for a permit to operate a hydrocarbon storage well or parts thereof.

Aquifer—a geologic formation, groups of formations, or part of a formation that is capable of yielding a significant amount of water to a well or spring.

Blanket Material—sometimes referred to as a "pad." The blanket material is a fluid placed within a cavern that is lighter than the water in the cavern and will not dissolve the salt or any mineral impurities that may be contained within the salt. The function of the blanket is to prevent unwanted leaching of the cavern roof, prevent leaching of salt from around the cemented casing, and to protect the cemented casing from internal corrosion. Blanket material typically consists of crude oil, diesel, mineral oil, or some fluid possessing similar noncorrosive, nonsoluble, low-density properties. The blanket material is placed between the cavern's outermost hanging string and innermost cemented casing.

Brine—water within a salt cavern that is saturated partially or completely with salt.

Cap Rock—the porous and permeable strata immediately overlying all or part of the salt stock of some salt structures typically composed of anhydrite, gypsum, limestone, and occasionally sulfur.

Casing—metallic pipe placed and cemented in the wellbore for the purpose of supporting the sides of the wellbore and to act as a barrier preventing subsurface migration of fluids out of or into the wellbore.

Catastrophic Collapse—the sudden failure of the overlying strata caused by the removal or otherwise weakening of underlying sediments.

Cavern Roof—the uppermost part of a cavern being just below the neck of the wellbore. The shape of the salt cavern roof may be flat or domed.

Cavern Well—a well extending into the salt stock to facilitate the injection and withdrawal of fluids into a salt cavern.

Cementing—the operation (either primary, secondary, or squeeze) whereby a cement slurry is pumped into a drilled hole and/or forced behind the casing.

Circulate to the Surface—the observing of actual cement returns to the surface during the primary cementing operation.

Closed Cavern Well—a storage well or cavern that is no longer used or capable of being used to store liquid, liquefied, or gaseous hydrocarbons and is thus subject to the closure and post-closure requirements of §337. The term does not include an inactive well or a previously closed well.

Commissioner—the Commissioner of Conservation of the State of Louisiana.

Contamination—the introduction of substances or contaminants into a groundwater aquifer, a USDW or soil in such quantities as to render them unusable for their intended purposes.

Discharge—the placing, releasing, spilling, percolating, draining, pumping, leaking, mixing, migrating, seeping, emitting, disposing, by-passing, or other escaping of pollutants on or into the air, ground, or waters of the state. A discharge shall not include that which is allowed through a federal or state permit.

Effective Date—the date of final promulgation of these rules and regulations.

Emergency Shutdown Valve—for the purposes of these rules, a valve that automatically closes to isolate a salt cavern well from surface piping in the event of a specified condition that, if uncontrolled, may cause an emergency.

Exempted Aquifer—an aquifer or its portion that meets the criteria of the definition of underground source of drinking water but which has been exempted according to the procedures set forth in §303.E.2.

Existing Cavern Well or Storage Project—a well, salt cavern, or project permitted to store liquid, liquefied, or gaseous hydrocarbons before the effective date of these regulations.

Facility or Activity—any facility or activity, including land or appurtenances thereto, that is subject to these regulations

Fluid—any material or substance that flows or moves whether in a semisolid, liquid, sludge, gas or any other form or state.

Ground Subsidence—the downward settling of the earth's surface with little or no horizontal motion in response to natural or manmade subsurface actions.

Groundwater Aquifer—water in the saturated zone beneath the land surface that contains less than 10,000 mg/l total dissolved solids.

Groundwater Contamination—the degradation of naturally occurring groundwater quality either directly or indirectly as a result of human activities.

Hanging String—casing whose weight is supported at the wellhead and hangs vertically in a larger cemented casing or another larger hanging string.

Hydrocarbon Storage Cavern—a salt cavern created within the salt stock by solution mining and used to store liquid, liquefied, or gaseous hydrocarbons.

Improved Sinkhole—a naturally occurring karst depression or other natural crevice found in volcanic terrain and other geologic settings which have been modified by man for the purpose of directing and emplacing fluids into the subsurface.

Inactive Cavern Well—a storage well or cavern that is capable of being used to store liquid, liquefied, or gaseous hydrocarbons but is not being so used, as evidenced by the filing of a written notice with the Office of Conservation in accordance with §309.I.3 and §331.

Injection and Mining Division—the Injection and Mining Division of the Louisiana Office of Conservation within the Department of Natural Resources.

Injection Well—a well into which fluids are injected other than fluids associated with active drilling operations.

Injection Zone—a geological formation, group of formations or part of a formation receiving fluids through an injection well.

Leaching—the process of introducing an under-saturated fluid into a salt cavern thereby dissolving additional salt and increasing the volume of the salt cavern.

Mechanical Integrity—an injection well has mechanical integrity if there is no significant leak in the casing, tubing, or packer and there is no significant fluid movement into an underground source of drinking water through vertical channels adjacent to the injection well bore.

Migrating—any movement of fluids by leaching, spilling, discharging, or any other uncontained or uncontrolled manner, except as allowed by law, regulation, or permit.

New Cavern Well—a storage well or cavern permitted after the effective date of these regulations.

Office of Conservation—the Louisiana Office of Conservation within the Department of Natural Resources.

Open Borehole—that portion of a well below the production casing and above the salt cavern.

Operator—the person recognized by the Office of Conservation as being responsible for the physical operation of the facility or activity subject to regulatory authority under these rules and regulations.

Owner—the person recognized by the Office of Conservation as owning the facility or activity subject to regulatory authority under these rules and regulations.

Permit—an authorization, license, or equivalent control document issued by the commissioner to implement the requirements of these regulations. Permit includes, but is not limited to, area permits and emergency permits. Permit does not include UIC authorization by rule or any permit which has not yet been the subject of final agency action, such as a draft permit.

Person—an individual, association, partnership, public or private corporation, firm, municipality, state or federal agency and any agent or employee thereof, or any other juridical person.

Post-Closure Care—the appropriate monitoring and other actions (including corrective action) needed following cessation of a storage project to ensure that USDWs are not endangered.

Previously Closed Cavern Well—a storage well or cavern that is no longer used or capable of being used to store liquid, liquefied, or gaseous hydrocarbons and was closed prior to the effective date of these regulations.

Produced Water—liquids and suspended particulate matter that is obtained by processing fluids brought to the surface in conjunction with the recovery of oil and gas from underground geologic formations, with underground storage of hydrocarbons, or with solution mining for brine.

Public Water System—a system for the provision to the public of piped water for human consumption, if such system has at least 15 service connections or regularly serves at least 25 individuals. Such term includes:

1. any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system; and
2. any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system.

Project—a group of wells or salt caverns used in a single operation.

Release—the accidental or intentional spilling, pumping, leaking, pouring, emitting, leaching, escaping, or dumping of pollutants into or on any air, land, groundwater, or waters of the state. A release shall not include that which is allowed through a federal or state permit.

Salt Dome—a diapiric, typically circular structure that penetrates, uplifts, and deforms overlying sediments as a result of the upward movement of a salt stock in the subsurface. Collectively, the salt dome includes the salt stock and any overlying uplifted sediments.

Salt Stock—a typically cylindrical formation composed chiefly of an evaporite mineral that forms the core of a salt dome. The most common form of the evaporite mineral is halite known chemically as sodium chloride (NaCl). Cap rock shall not be considered a part of the salt stock.

Schedule of Compliance—a schedule or remedial measures included in a permit, including an enforceable sequence of interim requirements (for example, actions,

operations, or milestone events) leading to compliance with the act and these regulations.

Site—the land or water area where any facility or activity is physically located or conducted including adjacent land used in connection with the facility or activity.

Solution-Mined Salt Cavern—a cavity or cavern created within the salt stock by dissolution with water.

Solution Mining Injection Well—a well used to inject fluids, other than fluids associated with active drilling operations, for the extraction of minerals or energy.

State—the state of Louisiana.

Subsidence—see *ground subsidence*.

Surface Casing—the first string of casing installed in a well, excluding conductor casing.

UIC—the Louisiana State Underground Injection Control Program.

Unauthorized Discharge—a continuous, intermittent, or one-time discharge, whether intentional or unintentional, anticipated or unanticipated, from any permitted or unpermitted source which is in contravention of any provision of the Louisiana Environmental Quality Act (R.S. 30:2001 et seq.) or of any permit or license terms and conditions, or of any applicable regulation, compliance schedule, variance, or exception of the Commissioner of Conservation.

Underground Source of Drinking Water—an aquifer or its portion:

1. which supplies any public water system; or
2. which contains a sufficient quantity of groundwater to supply a public water system; and
 - a. currently supplies drinking water for human consumption; or
 - b. contains fewer than 10,000 mg/l total dissolved solids; and which is not an exempted aquifer.

USDW—see *underground source of drinking water*.

Waters of the State—both surface and underground waters within the state of Louisiana including all rivers, streams, lakes, ground waters, and all other water courses and waters within the confines of the state, and all bordering waters, and the Gulf of Mexico.

Well—a bored, drilled, or driven shaft whose depth is greater than the largest surface dimension; or, a dug hole whose depth is greater than the largest surface dimension; or an improved sinkhole; or, a subsurface fluid distribution system.

Well Plug—a fluid-tight seal installed in a borehole or well to prevent the movement of fluids.

Well Stimulation—several processes used to clean the well bore, enlarge channels, and increase pore space in the interval to be injected thus making it possible for injection

fluids to move more readily into the formation, and includes such actions as:

1. surging;
2. jetting;
3. blasting;
4. acidizing;
5. hydraulic fracturing.

Workover—to perform one or more of a variety of remedial operations on an injection well, such as cleaning, perforation, changing tubing, deepening, squeezing, plugging back, etc.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:4 et seq.

HISTORICAL NOTE: Promulgated by the Department of Natural Resources, Office of Conservation, LR _____.

§303. General Provisions

A. Applicability

1. These rules and regulations shall apply to applicants, owners, or operators of a solution-mined salt cavern to store liquid, liquefied, or gaseous hydrocarbons.

2. That except as to liquid, liquefied, or gaseous hydrocarbon storage projects begun before October 1, 1976, no such project to develop or use a salt dome in the State of Louisiana for the injection, storage and withdrawal of liquid, liquefied, or gaseous hydrocarbons shall be allowed until the commissioner has issued an order following a public hearing after 30-day notice, under the rules covering such matters, which order shall include the following findings of fact:

a. That the area of the salt dome sought to be used for the injection, storage, and withdrawal of liquid, liquefied, or gaseous hydrocarbons is suitable and feasible for such use as to area, salt volume, depth and other physical characteristics;

b. That the use of the salt dome cavern for the storage of liquid, liquefied, or gaseous hydrocarbons will not contaminate other formations containing fresh water, oil, gas, or other commercial mineral deposits, except salt.

c. That the proposed storage, including all surface pits and surface storage facilities incidental thereto which are used in connection with the salt dome cavern storage operation, will not endanger lives or property and is environmentally compatible with existing uses of the salt dome area, and which order shall provide that:

i. liquid, liquefied, or gaseous hydrocarbons, which are injected and stored in a salt dome cavern, shall at all times be deemed the property of the injector, his successors or assigns, subject to the provisions of any contract with the affected land or mineral owners; and

ii. in no event shall the owner of the surface of the lands or water bottoms or of any mineral interest under or adjacent to which the salt dome cavern may lie, or any other person, be entitled to any right of claim in or to such liquid,

liquefied, or gaseous hydrocarbons stored unless permitted by the injector.

d. That temporary loss of jobs caused by the storage of liquid, liquefied, or gaseous hydrocarbons will be corrected by compensation, finding of new employment, or other provisions made for displaced labor.

3. That in presenting evidence to the commissioner to enable him to make the findings described above, the applicant shall demonstrate that the proposed storage of liquid, liquefied, or gaseous hydrocarbons will be conducted in a manner consistent with established practices to preserve the integrity of the salt deposit and the overlying sediments. This shall include an assessment of the stability of the proposed cavern design, particularly with regard to the size, shape and depth of the cavern, the amount of separation among caverns, the amount of separation between the outermost cavern wall and the periphery of the salt deposit, and any other requirements of this rule.

4. That these regulations shall apply to all liquid, liquefied, or gaseous hydrocarbon storage projects begun before October 1, 1976, as specified in §303.A.2, except for the requirements under §307 and §311.A-H. Any liquid, liquefied, or gaseous hydrocarbon storage projects begun before October 1, 1976 shall fulfill the requirements of §309.K within one (1) year of the effective date of these regulations.

B. Prohibition of Unauthorized Injection

1. The construction, conversion, or operation of a hydrocarbon storage well or salt cavern without obtaining a permit from the Office of Conservation is a violation of these rules and regulations and applicable laws of the state of Louisiana.

2. For existing hydrocarbon storage caverns that are in compliance with Statewide Order No. 29-M, but not in compliance with Statewide Order No. 29-M (Revision 3) as of the effective date of these rules, they may continue to operate for one (1) year under Statewide Order No. 29-M. Within that year, the owner or operator must submit an alternate means of compliance or a request for a variance pursuant to §303.F and/or present a corrective action plan to meet the requirements of Statewide Order No. 29-M (Revision 3). During the review period of the request until a final determination is made regarding the alternate means of compliance or variance and/or corrective action plan, the affected hydrocarbon storage well may continue to operate in compliance with Statewide Order No. 29-M in effect as of the effective date of these regulations.

3. By no later than one (1) year after the effective date of these rules the owner or operator shall provide for review documentation of any variance previously authorized by the Office of Conservation. Based on that review, the commissioner may terminate, modify, or revoke and reissue the existing permit with the variance if it is determined that continued operations cannot be conducted in a way that is protective of the environment, or the health, safety, and welfare of the public. The process for terminating,

modifying, or revoking and reissuing the permit with the variance is set forth in 311.K. During the review period the affected hydrocarbon storage well may continue to operate in compliance with such variance. If the commissioner does not terminate, modify, or revoke and reissue the existing permit, the affected solution-mining well may continue to operate in compliance with such variance.

C. Prohibition on Movement of Fluids into Underground Sources of Drinking Water

1. No authorization by permit shall allow the movement of injected or stored fluids into underground sources of drinking water or outside the salt stock. The owner or operator of the hydrocarbon storage well shall have the burden of showing that this requirement is met.

2. The Office of Conservation may take emergency action upon receiving information that injected or stored fluid is present in or likely to enter an underground source of drinking water or may present an imminent and substantial endangerment to the environment, or the health, safety and welfare of the public.

D. Prohibition of Surface Discharges. The intentional, accidental, or otherwise unauthorized discharge of fluids, wastes, or process materials into manmade or natural drainage systems or directly into waters of the state is prohibited.

E. Identification of Underground Sources of Drinking Water and Exempted Aquifers

1. The Office of Conservation may identify (by narrative description, illustrations, maps, or other means) and shall protect as an underground source of drinking water, except where exempted under §303.E.2 all aquifers or parts of aquifers that meet the definition of an underground source of drinking water. Even if the Office of Conservation has not specifically identified an aquifer, it is an underground source of drinking water if it meets the definition.

2. After notice and opportunity for a public hearing, the Office of Conservation may identify (by narrative description, illustrations, maps, or other means) and describe in geographic or geometric terms (such as vertical and lateral limits and gradient) that are clear and definite, all aquifers or parts thereof that the Office of Conservation proposes to denote as exempted aquifers if they meet the following criteria:

a. the aquifer does not currently serve as a source of drinking water; and

b. the aquifer cannot now and shall not in the future serve as a source of drinking water because:

i. it is mineral, hydrocarbon, or geothermal energy producing or can be demonstrated to contain minerals or hydrocarbons that when considering their quantity and location are expected to be commercially producible;

ii. it is situated at a depth or location that makes recovery of water for drinking water purposes economically or technologically impractical;

iii. it is so contaminated that it would be economically or technologically impractical to render said water fit for human consumption; or

iv. it is located in an area subject to severe subsidence or catastrophic collapse; or

c. the total dissolved solids content of the groundwater is more than 3,000 mg/l and less than 10,000 mg/l and it is not reasonably expected to supply a public water system.

F. Exceptions/Variances/Alternative Means of Compliance

1. Except where noted in specific provisions of these rules and regulations, the Office of Conservation may allow, on a case-by-case basis, exceptions or variances to these rules and regulations. It shall be the obligation of the applicant, owner, or operator to show that the requested exception or variance and any associated mitigating measures shall not result in an unacceptable increase of endangerment to the environment, or the health, safety and welfare of the public. The applicant, owner, or operator shall submit a written request to the Office of Conservation detailing the reason for the requested exception or variance. No deviation from the requirements of these rules or regulations shall be undertaken by the applicant, owner, or operator without prior written authorization from the Office of Conservation.

a. When injection does not occur into, through, or above an underground source of drinking water, the commissioner may authorize a hydrocarbon storage well or project with less stringent requirements for area-of review, construction, mechanical integrity, operation, monitoring, and reporting than required herein to the extent that the reduction in requirements will not result in an increased risk of movement of fluids into an underground source of drinking water or endanger the public.

b. The commissioner shall issue an order explaining the reasons for the action when reducing requirements under this Section.

2. Granting of exceptions or variances to these rules and regulations shall only be considered upon proper showing by the applicant, owner, or operator at a public hearing that such exception or variance is reasonable, justified by the particular circumstances, and consistent with the intent of these rules and regulations regarding physical and environmental safety and the prevention of waste. The requester of the exception or variance shall be responsible for all costs associated with a public hearing.

3. Hydrocarbon storage caverns in existence, as of the effective date of these rules, or hydrocarbon storage wells and/or caverns with approved applications containing information submitted pursuant to Subsection 307.F, may operate in accordance with alternative means of compliance

approved by the Commissioner of Conservation. Alternative means of compliance shall mean operations that are capable of demonstrating a level of performance, which meets or exceeds the standards contemplated by these regulations. Owners or operators of caverns existing at the time of these rules may submit alternative means of compliance to be approved by the Commissioner of Conservation. The Commissioner may review and approve upon finding that the alternative means of compliance meet, ensure, and comply with the purpose of the rules and regulations set forth herein provided the proposed alternative means of compliance ensures comparable or greater safety of personnel and property, protection of the environment and public, quality of operations and maintenance, and protection of the USDW.

G. Additional Requirements. The commissioner may prescribe additional requirements for hydrocarbon storage wells or projects in order to protect USDWs and the public.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:4 et seq.

HISTORICAL NOTE: Promulgated by the Department of Natural Resources, Office of Conservation, LR_____.

§305. Permit Requirements

A. Applicability. No person shall construct, convert, or operate a hydrocarbon storage well or cavern without first obtaining written authorization (permit) from the Office of Conservation.

B. Application Required. Applicants for a hydrocarbon storage well or cavern, permittees with expiring permits, or any person required to have a permit shall complete, sign, and submit an application form with all required attachments and documentation to the Office of Conservation. The complete application shall contain all information necessary to show compliance with applicable state laws and these regulations.

C. Who Applies. It is the duty of the owner or proposed owner of a facility or activity to submit a permit application and obtain a permit. When a facility or activity is owned by one person and operated by another, it is the duty of the operator to file and obtain a permit.

D. Signature Requirements. All permit applications shall be signed as follows.

1. Corporations. By a principal executive officer of at least the level of vice-president, or duly authorized representative of that person if the representative performs similar policy making functions for the corporation. A person is a duly authorized representative only if:

a. the authorization is made in writing by a principal executive officer of at least the level of vice-president;

b. the authorization specifies either an individual or position having responsibility for the overall operation of a hydrocarbon storage facility, such as the position of plant manager, superintendent, or position of equivalent responsibility. A duly authorized representative may thus be

either a named individual or any individual occupying a named position; and

c. the written authorization is submitted to the Office of Conservation.

2. Limited Liability Company (LLC). By a member if the LLC is member-managed, by a manager if the LLC is manager-managed, or by a duly authorized representative only if:

a. the authorization is made in writing by an individual who would otherwise have signature authority as outlined in §305.D.2 above;

b. the authorization specifies either an individual or position having responsibility for the overall operation of a hydrocarbon storage well, such as the position of plant manager, superintendent, or position of equivalent responsibility. A duly authorized representative may thus be either a named individual or any individual occupying a named position; and

c. the written authorization is submitted to the Office of Conservation.

3. Partnership or Sole Proprietorship. By a general partner or proprietor, respectively; or

4. Public Agency. By either a principal executive officer or a ranking elected official of a municipality, state, federal, or other public agency.

E. Signature Reauthorization. If an authorization above is no longer accurate because a different individual or position has responsibility for the overall operation of a hydrocarbon storage facility, a new authorization satisfying the signature requirements must be submitted to the Office of Conservation before or concurrent with any reports, information, or applications required to be signed by an authorized representative.

F. Certification. Any person signing an application shall make the following certification on the application:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine, and/or imprisonment."

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:4 et seq.

HISTORICAL NOTE: Promulgated by the Department of Natural Resources, Office of Conservation, LR_____.

§307. Application Content

A. The following minimum information shall be submitted in a permit application. The applicant shall also refer to the appropriate application form for any additional information that may be required.

B. Administrative Information:

1. all required state application form(s);

2. nonrefundable application fee(s) as per LAC 43:XIX.Chapter 7 or successor document;

3. name and mailing address of the applicant and the physical address of the hydrocarbon storage facility;

4. operator's name, address, telephone number, and e-mail address;

5. ownership status as federal, state, private, public, or other entity;

6. brief description of the nature of the business associated with the activity;

7. activity or activities conducted by the applicant which require the applicant to obtain a permit under these regulations;

8. up to four SIC Codes which best reflect the principal products or services provided by the facility;

9. a listing of all permits or construction approvals that the applicant has received or applied for under any of the following programs and which specifically affect the legal or technical ability of the applicant to undertake the activity or activities to be conducted by the applicant under the permit being sought:

a. the Louisiana Hazardous Waste Management;

b. this or any other Underground Injection Control Program;

c. NPDES Program under the Clean Water Act;

d. Prevention of Significant Deterioration (PSD) Program under the Clean Air Act;

e. Nonattainment Program under the Clean Air Act;

f. National Emission Standards for Hazardous Pollutants (NESHAPS) preconstruction approval under the Clean Air Act;

g. Ocean Dumping Permit under the Marine Protection Research and Sanctuaries Act;

h. dredge or fill permits under Section 404 of the Clean Water Act; and

i. other relevant environmental permits including, but not limited to any state permits issued under the Louisiana Coastal Resources Program, the Louisiana Surface Mining Program, or the Louisiana Natural and Scenic Streams System;

10. acknowledgment as to whether the facility is located on Indian lands or other lands under the jurisdiction or protection of the federal government, or whether the facility is located on state water bottoms or other lands owned by or under the jurisdiction or protection of the state of Louisiana;

11. documentation of financial responsibility for closure and post-closure, or documentation of the method by which proof of financial responsibility for closure and post-closure will be provided. Before making a final permit

decision, the instrument of financial responsibility for closure and post-closure must be submitted to and approved by the Office of Conservation;

12. names and addresses of all property owners within the Area of Review of the solution-mined cavern.

C. Maps and Related Information:

1. certified location plat of the hydrocarbon storage well prepared and certified by a registered civil engineer or registered land surveyor. The location plat shall be prepared according to standards of the Office of Conservation;

2. topographic or other map(s) extending at least one (1) mile beyond the property boundaries of the hydrocarbon storage facility depicting the facility and each well where fluids are injected underground, and those wells, springs, or surface water bodies, and drinking water wells listed in public records or otherwise known to the applicant in the map area;

3. the section, township and range of the area in which the hydrocarbon storage well is located and any parish, city or municipality boundary lines within one (1) mile of the facility location;

4. map(s) showing the hydrocarbon storage well for which the permit is sought, the project area or property boundaries of the facility in which the hydrocarbon storage well is located, and the applicable area-of-review. Within the area-of-review, the map(s) shall show the well name, well number, well state serial number, and location of all existing producing wells, injection wells, abandoned wells and dry holes, public water systems and water wells. The map(s) shall also show surface bodies of water, mines (surface and subsurface), quarries, and other pertinent surface features including residences and roads. Only information of public record and pertinent information known to the applicant is required to be included on the map(s);

5. maps and cross-sections indicating the vertical limits of all underground sources of drinking water within the area-of-review, their position relative to the injection formation, and the direction of water movement, where known, in every underground source of drinking water which may be affected by the proposed injection;

6. generalized maps and cross-sections illustrating the regional geologic setting;

7. structure contour mapping of the salt stock on a scale no smaller than 1 inch to 500 feet;

8. maps and vertical cross-sections detailing the geologic structure of the local area. The cross sections shall be structural (as opposed to stratigraphic cross sections), be referenced to sea level, show the hydrocarbon storage well and the cavern being permitted, all surrounding salt caverns regardless of use and current status, conventional (room and pillar) mines, and all other boreholes and wells that penetrate the salt stock. Cross-sections should be oriented to indicate the closest approach to surrounding caverns, boreholes, wells, the edge of the salt stock, etc. and shall extend at least one (1) mile beyond the edge of the salt stock unless the

edge of the salt stock and any existing oil and gas production can be demonstrated in a shorter distance and is administratively approved by the Office of Conservation. Salt caverns shall be depicted on the cross sections using data from the most recent salt cavern sonar. Known faulting in the area shall be illustrated on the cross sections such that the displacement of subsurface formations is accurately depicted;

9. sufficient information, including data and maps, to enable the Office of Conservation to identify oil and gas activity in the vicinity of the salt dome and potential effects upon the proposed well; and

10. any other information required by the Office of Conservation to evaluate the hydrocarbon storage well, salt cavern, storage project, and related surface facility.

D. Area-of-Review Information. Refer to §313.E for area-of-review boundaries and exceptions. Only information of public record or otherwise known to the applicant need be researched or submitted with the application, however, a diligent effort must be made to identify all wells and other manmade structures that penetrate or are within the salt stock in response to the area-of-review requirements. The applicant shall provide the following information on all wells or structures within the defined area-of-review:

1. a discussion of the protocol used by the applicant to identify wells and manmade structures that penetrate or are within the salt stock in the defined area-of-review;

2. a tabular listing of all known water wells in the area-of-review to include the name of the operator, well location, well depth, well use (domestic, irrigation, public, etc.), and current well status (active, abandoned, etc.);

3. a tabular listing of all known wells (excluding water wells) in the area-of-review with penetrations into the cap rock or salt stock to include at a minimum:

a. operator name, well name and number, state serial number (if assigned), and well location;

b. well type and current well status (producing, disposal, storage, solution mining, shut-in, plugged and abandoned), date the well was drilled, and the date the current well status was assigned;

c. well depth, construction, completion (including completion depths), plug and abandonment data; and

d. any additional information the commissioner may require.

4. the following information shall be provided on manmade structures within the salt stock regardless of use, depth of penetration, or distance to the hydrocarbon storage well or cavern being the subject of the application:

a. a tabular listing of all salt caverns to include:

i. operator name, well name and number, state serial number, and well location;

ii. current or previous use of the cavern (waste disposal, hydrocarbon storage, solution mining), current

status of the cavern (active, shut-in, plugged and abandoned), date the well was drilled, and the date the current well status was assigned;

iii. cavern depth, construction, completion (including completion depths), plug and abandonment data;

b. a tabular listing of all conventional (dry or room and pillar) mining activities, whether active or abandoned. The listing shall include the following minimum items:

i. owner or operator name and address;

ii. current mine status (active, abandoned);

iii. depth and boundaries of mined levels;

iv. the closest distance of the mine in any direction to the hydrocarbon storage well and cavern.

E. Technical Information. The applicant shall submit, as an attachment to the application form, the following minimum information:

1. for existing caverns, the results of a current cavern sonar survey and mechanical integrity pressure and leak tests;

2. corrective action plan required by §313.F for wells or other manmade structures within the area-of-review that penetrate the salt stock but are not properly constructed, completed, or plugged and abandoned;

3. plans for performing the geological, geomechanical, engineering, and other site assessment studies of §313 to assess the stability of the salt stock and overlying and surrounding sediments based on past, current, and planned well and cavern operations. If such studies are complete, submit the results obtained along with an interpretation of the results;

4. properly labeled schematic of the surface construction details of the hydrocarbon storage well to include the wellhead, gauges, flowlines, and any other pertinent details;

5. properly labeled schematic of the subsurface construction and completion details of the hydrocarbon storage well and cavern to include borehole diameters; all cemented casings with cement specifications, casing specifications (size, depths, etc.); all hanging strings showing sizes and depths set; total depth of well; top, bottom, and diameter of cavern; and any other pertinent details;

6. surface site diagram(s) of the facility in which the hydrocarbon storage well is located, including but not limited to surface pumps, piping and instrumentation, controlled access roads, fenced boundaries, field offices, monitoring and safety equipment, etc.;

7. unless already obtained, a proposed formation testing program to obtain the geomechanical properties of the salt stock;

8. proposed injection and withdrawal procedures;

9. plans and procedures for operating the hydrocarbon storage well, cavern, and related surface facility to include at a minimum:

a. average and maximum daily rate and volume of fluid to be injected;

b. average and maximum injection pressure; and

c. the cavern design requirements of §315, including, but not limited to cavern spacing requirements;

d. enhanced monitoring plan implementation for any existing cavern within the mandatory setback distance location of §315.B.3.

e. the well construction and completion requirements of §317, including, but not limited to open borehole surveys, casing and cementing, casing and casing seat tests, cased borehole surveys, hanging strings, and wellhead components and related connections;

f. the operating requirements of §319, including, but not limited to cavern roof restrictions, blanket material, remedial work, well recompletion, multiple well caverns, cavern allowable operating pressure and rates, and disposition of extracted cavern fluid for pressure management.

g. the safety requirements of §321, including, but not limited to an emergency action plan, controlled site access, facility identification, personnel, wellhead protection and identification, valves and flowlines, alarm systems, emergency shutdown valves, systems test and inspections, and surface facility retaining walls and spill containment, contingency plans to cope with all shut-ins as a result of noncompliance with these regulations or well failures to prevent the migration of contaminating fluids into underground sources of drinking water.

h. the monitoring requirements of §323, including, but not limited to equipment requirements such as pressure gauges, pressure sensors and flow sensors, continuous recording instruments, and subsidence monitoring, as well as a description of methods that will be undertaken to monitor cavern growth;

i. the pre-operating requirements of §325, specifically the submission of a completion report, and the information required therein;

j. the mechanical integrity pressure and leak test requirements of §327, including, but not limited to frequency of tests, test methods, submission of pressure and leak test results, and notification of test failures;

k. the cavern configuration and capacity measurement procedures of §329, including, but not limited to sonar caliper surveys, frequency of surveys, and submission of survey results;

l. the requirements for inactive caverns in §331;

m. the reporting requirements of §333, including, but not limited to the information required in monthly operation reports;

n. the record retention requirements of §335;

o. the closure and post-closure requirements of §337, including, but not limited to closure plan requirements, notice of intent to close, standards for closure, and post-closure requirements;

p. any other information pertinent to the operation of the hydrocarbon storage well, including, but not limited to any waiver for surface siting, monitoring equipment and safety procedures.

F. If an alternative means of compliance has previously been approved by the Commissioner of Conservation within an Area Permit, applicants may submit means of compliance for new applications for wells and/or storage caverns within the same Area Permit in order to meet the requirements of E.9.f, g, and h of this Section.

G. Confidentiality of Information. In accordance with R.S. 44.1, et seq., any information submitted to the Office of Conservation pursuant to these regulations may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application for, or instructions or, in the case of other submissions, by stamping the words "Confidential Business Information" on each page containing such information. If no claim is made at the time of submission, the Office of Conservation may make the information available to the public without further notice. If a claim is asserted, the information will be treated in accordance with the procedures in R.S. 44.1, et seq. (Public Information).

1. Claims of confidentiality for the following information will be denied:

a. the name and address of any permit applicant or permittee; and

b. information which deals with the existence, absence, or level of contaminants in drinking water or zones other than the approved injection zone.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:4 et seq.

HISTORICAL NOTE: Promulgated by the Department of Natural Resources, Office of Conservation, LR_____.

§309. Legal Permit Conditions

A. Signatories. All reports required by permit or regulation and other information requested by the Office of Conservation shall be signed as in applications by a person described in §305.D or §305.E.

B. Financial Responsibility

1. Closure and Post-Closure. The owner or operator of a hydrocarbon storage well shall maintain financial responsibility and the resources to close, plug and abandon and where necessary, post-closure care of the hydrocarbon storage well, cavern, and related facility as prescribed by the Office of Conservation. Evidence of financial responsibility shall be by submission of a surety bond, a letter of credit, certificate of deposit, or other instrument acceptable to the Office of Conservation. The amount of funds available shall

be no less than the amount identified in the cost estimate of the closure plan of §337.A and post-closure plan of §337.B. Any financial instrument filed in satisfaction of these financial responsibility requirements shall be issued by and drawn on a bank or other financial institution authorized under state or federal law to operate in the State of Louisiana. In the event that an operator has previously provided financial security pursuant to LAC 43: XVII .309, such operator shall provide increased financial security if required to remain in compliance with this Section, within 30 days after notice from the commissioner.

2. Renewal of Financial Responsibility. Any approved instrument of financial responsibility coverage shall be renewable yearly. Financial security shall remain in effect until release thereof is granted by the commissioner pursuant to written request by the operator. Such release shall only be granted after plugging and abandonment and associated site restoration is completed and inspection thereof indicates compliance with applicable regulations or upon transfer of such well approved by the commissioner.

C. Duty to Comply. The operator must comply with all conditions of a permit. Any permit noncompliance is a violation of the act, the permit and these rules and regulations and is grounds for enforcement action, permit termination, revocation and possible reissuance, modification, or denial of any future permit renewal applications if the commissioner determines that such noncompliance endangers underground sources of drinking water. If the commissioner determines that such noncompliance is likely to endanger underground sources of drinking water, it shall be the duty of the operator to prove that continued operation of the hydrocarbon storage well shall not endanger the environment, or the health, safety and welfare of the public.

D. Duty to Halt or Reduce Activity. It shall not be a defense for an owner or operator in an enforcement action to claim it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this rule or permit.

E. Duty to Mitigate. The owner or operator shall take all reasonable steps to minimize or correct any adverse impact on the environment such as the contamination of underground sources of drinking water resulting from a noncompliance with the permit or these rules and regulations.

F. Proper Operation and Maintenance

1. The operator shall always properly operate and maintain all facilities and systems of injection, withdrawal, and control (and related appurtenances) installed or used to achieve compliance with the permit or these rules and regulations. Proper operation and maintenance include effective performance (including well and cavern mechanical integrity), adequate funding, adequate operation, staffing and training, and adequate process controls. This provision requires the operation of back-up, auxiliary facilities, or similar systems when necessary to achieve

compliance with the conditions of the permit or these rules and regulations.

2. The operator shall address any unauthorized escape, discharge, or release of any material from the hydrocarbon well, or part thereof that is in violation of any state or federal permit or which is not incidental to normal operations, with a corrective action plan. The plan shall address the cause, delineate the extent, and determine the overall effects on the environment resulting from the escape, discharge, or release. The Office of Conservation shall require the operator to formulate a plan to remediate the escaped, discharged, or released material if the material is believed to have entered or has the possibility of entering an underground source of drinking water.

3. The operator shall agree to provide the following:

a. Assistance to residents of areas deemed to be at immediate potential risk in the event of a sinkhole developing or other incident that requires an evacuation if the potential risk or evacuation is associated with the operation of the solution-mining well or cavern.

b. Reimbursement to the state or any political subdivision of the state for reasonable and extraordinary costs incurred in responding to or mitigating a disaster or emergency due to a violation of this Chapter or any rule, regulation or order promulgated or issued pursuant to this Chapter. Such costs shall be subject to approval by the director of the Governor's Office of Homeland Security and Emergency Preparedness prior to being submitted to the permittee for reimbursement. Such payments shall not be construed as an admission of responsibility or liability for the emergency or disaster.

4. The Office of Conservation may immediately prohibit further operations if it determines that continued operations at a hydrocarbon storage well, or part thereof, may cause unsafe operating conditions, or endanger the environment, or the health, safety and welfare of the public. The prohibition shall remain in effect until it is determined that continued operations can and shall be conducted safely. It shall be the duty of the operator to prove that continued operation of the hydrocarbon storage well, or part thereof, shall not endanger the environment, or the health, safety and welfare of the public.

G. Inspection and Entry. Inspection and entry at a hydrocarbon storage well facility by Office of Conservation personnel shall be allowed as prescribed in R.S. 30:4.

H. Property Rights. The issuance of a permit does not convey any property rights of any sort, or any exclusive privilege or servitude.

I. Notification Requirements. The operator shall give written, and where required, verbal notice to the Office of Conservation concerning activities indicated herein.

1. Any change in the principal officers, management, owner or operator of the hydrocarbon storage well shall be reported to the Office of Conservation in writing within 10 days of the change.

2. Planned physical alterations or additions to the hydrocarbon storage well, cavern, surface facility or parts thereof that may constitute a modification or amendment of the permit. No mechanical integrity tests, sonar caliper surveys, remedial work, well or cavern abandonment, or any test or work on a cavern well (excluding an interface survey not associated with a mechanical integrity test) shall be performed without prior authorization from the Office of Conservation. The operator must submit the appropriate work permit request form (Form UIC-17 or subsequent document) for approval.

3. Whenever a hydrocarbon storage cavern is removed from service and the cavern is expected to remain out of service for one (1) year or more, the operator shall notify the Office of Conservation in writing within seven days of the cavern becoming inactive (out-of-service). The notification shall include the date the cavern was removed from service, the reason for taking the cavern out of service, and the expected date, if known, when the cavern may be returned to service. See §331 for additional requirements for inactive caverns.

4. The operator of a new or converted hydrocarbon storage well shall not begin storage operations until the Office of Conservation has been notified of the following:

a. well construction or conversion is complete, including submission of a notice of completion, a completion report, and all supporting information (e.g., as-built diagrams, records, sampling and testing results, well and cavern tests, logs, etc.) required in §325;

b. a representative of the commissioner has inspected the well and/or facility within 10 working days of the notice of completion required in Subparagraph a. above and finds it is in compliance with the conditions of the permit; and

c. the operator has received written approval from the Office of Conservation indicating hydrocarbon storage operations may begin.

5. Noncompliance or anticipated noncompliance with the permit or applicable regulations (which may result from any planned changes in the permitted facility or activity) including a failed mechanical integrity pressure and leak test.

6. Permit Transfer. A permit is not transferable to any person except after giving written notice to and receiving written approval from the Office of Conservation indicating that the permit has been transferred. This action may require modification or revocation and re-issuance of the permit to change the name of the operator and incorporate other requirements as may be necessary, including but not limited to financial responsibility.

7. Compliance Schedules. Report of compliance or noncompliance with interim and final requirements contained in any compliance schedule in these regulations, or any progress reports, shall be submitted to the commissioner no later than 14 days following each schedule date.

8. Twenty-Four Hour Reporting

a. The operator shall report any noncompliance that may endanger the environment, or the health, safety and welfare of the public. Any information pertinent to the noncompliance shall be reported to the Office of Conservation by telephone at 225-342-5515 within 24 hours from when the operator became aware of the circumstances. In addition, a written submission shall be provided within five days from when the operator became aware of the circumstances. The written notification shall contain a description of the noncompliance and its cause, the periods of noncompliance including exact times and dates, and if the noncompliance has not been corrected, the anticipated time it is expected to continue, and steps taken or planned to reduce, eliminate and prevent recurrence of the noncompliance.

b. The following additional information must also be reported within the 24-hour period:

i. monitoring or other information (including a failed mechanical integrity test) that suggests the hydrocarbon storage operations may cause an endangerment to underground sources of drinking waters, oil, gas, other commercial mineral deposits (excluding the salt), neighboring salt operations of any kind, or movement outside the salt stock or cavern;

ii. any noncompliance with a regulatory or permit condition or malfunction of the injection/withdrawal system (including a failed mechanical integrity test) that may cause fluid migration into or between underground sources of drinking waters or outside the salt stock or cavern.

9. The operator shall give written notification to the Office of Conservation upon permanent conclusion of hydrocarbon storage operations. Notification shall be given within seven days after concluding storage operations. The operator shall review its post-closure plan to determine if changes to the plan are needed. The Office of Conservation must approve any changes to the post-closure plan before operator implementation.

10. The operator shall give written notification before abandonment (closure) of the hydrocarbon storage well, related surface facility, or in the case of area permits before closure of the project. Abandonment (closure) shall not begin before receiving written authorization from the Office of Conservation.

11. When the operator becomes aware that it failed to submit any relevant facts in a permit application or submitted incorrect information in a permit application or in any report to the Office of Conservation, the operator shall promptly submit such facts and information.

J. Duration of Permits

1. Authorization to Operate. Authorization by permit to operate a hydrocarbon storage well and salt cavern shall be valid for the life of the well and salt cavern, unless suspended, modified, revoked and reissued, or terminated

for cause as described in §311.K. The commissioner may issue for cause any permit for a duration that is less than the full allowable term under this Section.

2. Authorization to Drill, Construct, or Convert. Authorization by permit to drill, construct, or convert a hydrocarbon storage well shall be valid for one (1) year from the effective date of the permit. If drilling or conversion is not completed in that time, the permit shall be null and void and the operator must obtain a new permit.

3. Extensions. The operator shall submit to the Office of Conservation a written request for an extension of the time of Paragraph 2 above; however, the Office of Conservation shall approve the request only for just cause and only if the permitting conditions have not changed. The operator shall have the burden of proving claims of just cause.

K. Compliance Review. The commissioner shall review each hydrocarbon storage well permit or area permit at least once every five (5) years to determine whether it should be modified, revoked and reissued, terminated, or if minor modifications are needed. Commencement of the permit review process for each facility shall proceed as authorized by the Commissioner of Conservation.

1. As a part of the five (5) year permit review, the operator shall submit to the Office of Conservation updated maps and cross sections based upon best available information depicting the locations of its own caverns and proposed caverns in relation to each other, in relation to the periphery of the salt stock, and in relation to other operators' salt caverns (including solution mining caverns, disposal caverns, storage caverns) in the salt stock. Also, refer to §313 and §315.

2. As a part of the five (5) year permit review, the well operator shall review the closure and post-closure plan and associated cost estimates of §337 to determine if the conditions for closure are still applicable to the actual conditions.

L. Schedules of Compliance. The permit may specify a schedule of compliance leading to compliance with the act and these regulations.

1. Time for Compliance. Any schedules of compliance under this Section shall require compliance as soon as possible but not later than three (3) years after the effective date of the permit.

2. Interim Dates. Except as provided in Subparagraph b. below, if a permit establishes a schedule of compliance which exceeds one (1) year from the date of permit issuance, the schedule shall set forth interim requirements and the dates for their achievement.

a. The time between interim dates shall not exceed one (1) year.

b. If the time necessary for completion of any interim requirements (such as the construction of a control facility) is more than one (1) year and is not readily divisible into stages for completion, the permit shall specify interim

dates for submission of reports of progress toward completion of the interim requirements and indicate a projected completion date.

3. The permit shall be written to require that progress reports be submitted no later than 30 days following each interim date and the final date of compliance.

M. Area or Project Permit Authorization

1. The commissioner may issue a hydrocarbon storage well or cavern permit on an area basis, rather than for each well or cavern individually, provided that the permit is for wells or caverns:

a. described and identified by location in permit applications if they are existing wells, except that the commissioner may accept a single description of wells or caverns with substantially the same characteristics;

b. within the same salt dome, storage facility site, or storage project; and

c. operated by a single owner or operator.

2. Area permits shall specify:

a. the area within which hydrocarbon storage is authorized; and

b. the requirements for construction, monitoring, reporting, operation, and abandonment, for all wells authorized by the permit.

3. The area permit may authorize the operator to construct and operate, convert, or plug and abandon wells within the permit area provided:

a. the operator notifies the commissioner at such time as the permit requires;

b. the additional well satisfies the criteria in §309.M.1 and meets the requirements specified in the permit under §309.M.2; and

c. the cumulative effects of drilling and operation of additional hydrocarbon storage wells are considered by the commissioner during evaluation of the area permit application and are acceptable to the commissioner.

4. If the commissioner determines that any well constructed pursuant to §309.M.3 does not satisfy any of the requirements of §309.M.3.a and b, the commissioner may modify the permit under §311.K.3, terminate under §311.K.6, or take enforcement action. If the commissioner determines that cumulative effects are unacceptable, the permit may be modified under §311.K.3.

N. Recordation of Notice of Existing Solution-Mined Caverns. The owner or operator of an existing solution-mined storage cavern shall record a certified survey plat of the well location for the cavern in the mortgage and conveyance records of the parish in which the property is located. Such notice shall be recorded no later than (6) six months after the effective date of these rules and the owner or operator shall furnish a date/file stamped copy of the recorded notice to the Office of Conservation within fifteen

(15) days of its recording. If an owner or operator fails or refuses to record such notice, the commissioner may, if he determines that the public interest requires, and after due notice and an opportunity for a hearing has been given to the owner and operator, cause such notice to be recorded.

O. Additional Conditions. The Office of Conservation shall, on a case-by-case basis, impose any additional conditions or requirements as are necessary to protect the environment, the health, safety and welfare of the public, underground sources of drinking waters, oil, gas, or other mineral deposits (excluding the salt), and preserve the integrity of the salt dome.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:4 et seq.

HISTORICAL NOTE: Promulgated by the Department of Natural Resources, Office of Conservation, LR _____.

§311. Permitting Process

A. Applicability. This Section has procedures for issuing and transferring permits to operate a hydrocarbon storage well and cavern. Any person required to have a permit shall apply to the Office of Conservation as stipulated in §305. The Office of Conservation shall not issue a permit before receiving an application form and any required supplemental information showing compliance with these rules and regulations, and that is administratively and technically complete to the satisfaction of the Office of Conservation.

B. Notice of Intent to File Application

1. The applicant shall make public notice that a permit application is proposed for filing with the Office of Conservation. A notice of intent shall be published at least 30 days but not more than 180 days before filing the permit application with the Office of Conservation. Without exception, the applicant shall publish a new notice of intent if the application is not received by the Office of Conservation within the filing period.

2. The notice shall be published once in the legal advertisement sections in the official state journal and in the official journal of the parish of the proposed project location. The cost for publishing the notices is the responsibility of the applicant and shall contain the following minimum information:

a. name and address of the permit applicant and, if different, the facility to be regulated by the permit;

b. the geographic location of the proposed project;

c. name and address of the regulatory agency to process the permit action where interested persons may obtain information concerning the application or permit action; and

d. a brief description of the business conducted at the facility or activity described in the permit application.

3. The applicant shall submit the proof of publication of the notice of intent when submitting the application.

C. Application Submission and Review

1. The applicant shall complete, sign, and submit one original paper application form, with required attachments and documentation, and one copy of the same to the Office of Conservation. The complete application shall contain all information to show compliance with applicable state laws and these rules and regulations. In addition to submitting the application on paper, the applicant shall submit an exact duplicate of the paper application in an electronic format approved by the commissioner. The commissioner may request additional paper copies of the application—either in its entirety or in part—as needed. The electronic version of the application shall contain the following certification statement:

“This document is an electronic version of the application titled (Insert Document Title) dated (Insert Application Date). This electronic version is an exact duplicate of the paper copy submitted in (Insert the Number of Volumes Comprising the Full Application) to the Louisiana Office of Conservation.”

2. The applicant shall be notified if a representative of the Office of Conservation decides that a site visit is necessary for any reason in conjunction with the processing of the application. Notification may be either oral or written and shall state the reason for the visit.

3. If the Office of Conservation deems an application to be incomplete, deficient of information, or requires additional data, a notice of application deficiency indicating the information necessary to make the application complete shall be transmitted to the applicant.

4. The Office of Conservation shall deny an application if an applicant fails, refuses, is unable to respond adequately to the notice of application deficiency, or if the Office of Conservation determines that the proposed activity cannot be conducted safely.

a. The Office of Conservation shall notify the applicant by certified mail of the decision denying the application.

b. The applicant may appeal the decision to deny the application in a letter to the commissioner who may call a public hearing through §311.D.

D. Public Hearing Requirements. A public hearing for new well applications shall not be scheduled until administrative and technical review of an application has been completed to the satisfaction of the Office of Conservation.

1. Public Notice of Permit Actions

a. Upon acceptance of a permit application as complete and meeting the administrative and technical requirements of these rules and regulations, the commissioner shall give public notice that the following actions have occurred:

- i. an application has been received;
- ii. a draft permit has been prepared under §311.E; and
- iii. a public hearing has been scheduled under §311.D.

b. No public notice or public hearing is required for additional wells drilled or for conversion under an approved area permit or when a request for permit modification, revocation and reissuance, or termination is denied under §311.K.

2. Public Notice by Office of Conservation

a. Public notice shall be published by the Office of Conservation in the legal advertisement section of the official state journal and the official journal of the parish of the proposed project location not less than 30 days before the scheduled hearing.

b. The Office of Conservation shall provide notice of the scheduled public hearing by forwarding a copy of the notice by mail or e-mail to:

- ii. the applicant;
- iii. all property owners within 1320 feet of the hydrocarbon storage facility's property boundary;
- iv. operators of existing projects located on or within the salt stock of the proposed project;
- v. United States Environmental Protection Agency;
- vi. Louisiana Department of Wildlife and Fisheries;
- vii. Louisiana Department of Environmental Quality;
- viii. Louisiana Office of Coastal Management;
- ix. Louisiana Office of Conservation, Pipeline Division;
- x. Louisiana Department of Culture, Recreation and Tourism, Division of Archaeology;
- xii. the governing authority for the parish of the proposed project; and
- xiii. any other interested parties.

3. Public Notice Contents. The public notices shall contain the following minimum information:

- a. name and address of the permit applicant and, if different, the facility or activity regulated by the permit;
- b. name and address of the regulatory agency processing the permit action;
- c. name, address, and phone number of a person within the regulatory agency where interested persons may obtain information concerning the application or permit action;
- d. a brief description of the business conducted at the facility or activity described in the permit application;
- e. a statement that a draft permit has been prepared under §311.E;
- f. a brief description of the public comment procedures;

g. a brief statement of procedures whereby the public may participate in the final permit decision;

h. the time, place, and a brief description of the nature and purpose of the public hearing;

i. a reference to the date of any previous public notices relating to the permit;

j. any additional information considered necessary or proper by the commissioner.

4. Application Availability for Public Review:

a. The applicant shall file at least one copy of the complete permit application with:

i. the local governing authority of the parish of the proposed project location; and

ii. in a public library in the parish of the proposed project location.

b. The applicant shall deliver copies of the application to the aforementioned locations before the public notices are published in the respective journals.

E. Draft Permit. The Office of Conservation shall prepare a draft permit after an application is determined to be complete. Draft permits shall be publicly noticed and made available for public comment.

F. Fact Sheet.

1. The Office of Conservation shall prepare a fact sheet for every draft permit. It shall briefly set forth principal facts and significant factual, legal, and policy questions considered in preparing the draft permit.

2. The fact sheet shall include, when applicable:

a. a brief description of the type of facility or activity that is the subject of the draft permit or application;

b. the type and proposed quantity of material to be injected;

c. a brief summary of the basis for the draft permit conditions including references to applicable statutory or regulatory provision;

d. a description of the procedures for reaching a final decision on the draft permit or application including the beginning and ending date of the public comment period, the address where comments shall be received, and any other procedures whereby the public may participate in the final decision;

e. reasons why any requested variances or alternative to required standards do or do not appear justified;

f. procedures for requesting a hearing and the nature of that hearing; and

g. the name and telephone number of a person within the permitting agency to contact for additional information.

h. that due consideration has been given to alternative sources of water for the leaching of cavities.

3. The fact sheet shall be distributed to the permit applicant and to any interested person on request.

G. Public Hearing

1. The Office of Conservation shall fix a time, date, and location for a public hearing. The public hearing shall be held in the parish of the proposed project location. The cost of the public hearing is set by LAC 43:XIX.Chapter 7 (Fees, as amended) and is the responsibility of the applicant.

2. The public hearing shall be fact finding in nature and not subject to the procedural requirements of the Louisiana Administrative Procedure Act. All public hearings shall be publicly noticed as required by these rules and regulations.

3. At the hearing, any person may make oral statements or submit written statements and data concerning the application or permit action being the basis of the hearing. Reasonable limits may be set upon the time allowed for oral statements; therefore, submission of written statements may be required. The hearing officer may extend the public comment period by so stating before the close of the hearing.

4. A transcript shall be made of the hearing and such transcript shall be available for public review.

H. Public Comments, Response to Comments, and Permit Issuance

1. Any interested person may submit written comments concerning the permitting activity during the public comment period. All comments pertinent and significant to the permitting activity shall be considered in making the final permit decision.

2. The Office of Conservation shall issue a response to all pertinent and significant comments as an attachment to and at the time of final permit decision. The final permit with response to comments shall be made available to the public. The response shall:

a. specify which provisions, if any, of the draft permit have been changed in the final permit decision, and the reasons for the change; and

b. briefly describe and respond to all significant comments on the draft permit or the permit application raised during the public comment period or hearing.

3. The Office of Conservation may issue a final permit decision within 30 days following the close of the public comment period; however, this time may be extended due to the nature, complexity, and volume of public comments received.

4. A final permit decision shall be effective on the date of issuance.

5. The owner or operator of a solution-mined storage cavern permit shall record a certified survey plat and final permit in the mortgage and conveyance records of the parish

in which the property is located. A date/file stamped copy of the plat and final permit is to be furnished to the Office of Conservation within fifteen (15) days of its recording. If an owner or operator fails or refuses to record such notice, the commissioner may, if he determines that the public interest requires, and after due notice and an opportunity for a hearing has been given to the owner and operator, cause such notice to be recorded.

6. Approval or the granting of a permit to construct or convert a hydrocarbon storage well shall be valid for one (1) year from its effective date and if not completed in that time, the permit shall be null and void. The permittee may request an extension of this one (1) year requirement; however, the commissioner shall approve the request only for just cause and only if the conditions existing at the time the permit was issued have not changed. The permittee shall have the burden of proving claims of just cause.

I. Permit Application Denial

1. The Office of Conservation may refuse to issue, reissue, or reinstate a permit or authorization if an applicant or operator has delinquent, finally determined violations of the Office of Conservation or unpaid penalties or fees, or if a history of past violations demonstrates the applicant's or operator's unwillingness to comply with permit or regulatory requirements.

2. If an application is denied, the applicant may request a review of the Office of Conservation's decision to deny the permit application. Such request shall be made in writing and shall contain facts or reasons supporting the request for review.

3. Grounds for application denial review shall be limited to the following reasons:

a. the decision is contrary to the laws of the state, applicable regulations, or evidence presented in or as a supplement to the permit application;

b. the applicant has discovered since the permit application public hearing or permit denial, evidence important to the issues that the applicant could not with due diligence have obtained before or during the initial permit application review;

c. there is a showing that issues not previously considered should be examined so as to dispose of the matter; or

d. there is other good ground for further consideration of the issues and evidence in the public interest.

J. Permit Transfer

1. Applicability. A permit may be transferred to a new owner or operator only upon written approval from the Office of Conservation. Written approval must clearly show that the permit has been transferred. It is a violation of these rules and regulations to operate a hydrocarbon storage well without a permit or other authorization if a person attempting to acquire a permit transfer allows operation of

the hydrocarbon storage well before receiving written approval from the Office of Conservation.

2. Procedures

a. The proposed new owner or operator must apply for and receive an operator code by submitting a completed Organization Report (Form OR-1), or subsequent form, to the Office of Conservation.

b. The current operator shall submit an application for permit transfer at least 30 days before the proposed permit transfer date. The application shall contain the following:

i. name and address of the proposed new owner or operator;

ii. date of proposed permit transfer; and

iii. a written agreement between the existing and new owner or operator containing a specific date for transfer of permit responsibility, financial responsibility, and liability between them.

c. If no agreement described in Subparagraph b.iii. above is provided, responsibility for compliance with the terms and conditions of the permit and liability for any violation will shift from the existing operator to the new operator on the date the transfer is approved.

d. The new operator shall submit an application for a change of operator using Form MD-10-R-A, or subsequent form, to the Office of Conservation containing the signatories of §305.D and E along with the appropriate filing fee.

e. The new operator shall submit evidence of financial responsibility under §309.B.

f. If a person attempting to acquire a permit causes or allows operation of the facility before approval by the commissioner, it shall be considered a violation of these rules for operating without a permit or other authorization.

g. If the commissioner does not notify the existing operator and the proposed new owner or operator of his intent to modify or revoke and reissue the permit under §309.K.3.b, the transfer is effective on the date specified in the agreement mentioned in Subparagraph b.iii. above.

h. Any additional information as may be required to be submitted by these regulations or the Office of Conservation.

K. Permit Suspension, Modification, Revocation and Reissuance, Termination. This subsection sets forth the standards and requirements for applications and actions concerning suspension, modification, revocation and reissuance, termination, and renewal of permits. A draft permit must be prepared and other applicable procedures must be followed if a permit modification satisfies the criteria of this subsection. A draft permit, public notice, or public participation is not required for minor permit modifications defined in §311.K.6.

1. Permit Actions

a. The permit may be suspended, modified, revoked and reissued, or terminated for cause.

b. The operator shall furnish the Office of Conservation within 30 days, any information that the Office of Conservation may request to determine whether cause exists for suspending, modifying, revoking and reissuing, or terminating a permit, or to determine compliance with the permit. Upon request, the operator shall furnish the Office of Conservation with copies of records required to be kept by the permit.

c. The Office of Conservation may, upon its own initiative or at the request of any interested person, review any permit to determine if cause exists to suspend, modify, revoke and reissue, or terminate the permit for the reasons specified in §§311.K.2, 3, 4, 5, and 6. All requests by interested persons shall be in writing and shall contain only factual information supporting the request.

d. If the Office of Conservation decides the request is not justified, the person making the request shall be sent a brief written response giving a reason for the decision. Denials of requests for suspension, modification, revocation and reissuance, or termination are not subject to public notice, public comment, or public hearing.

e. If the Office of Conservation decides to suspend, modify, or revoke and reissue a permit under §311.K.2, 3, 4, 5, and 6, additional information may be requested and, in the case of a modified permit, may require the submission of an updated permit application. In the case of revoked and reissued permits, the Office of Conservation shall require the submission of a new application.

f. The suitability of an existing well or salt cavern location shall not be considered at the time of permit modification or revocation and reissuance unless new information or standards suggest continued operation at the site endangers the environment, or the health, safety and welfare of the public that was unknown at the time of permit issuance. If the hydrocarbon storage well location is no longer suitable for its intended purpose, it may be ordered closed according to applicable sections of these rules and regulations.

2. Suspension of Permit. The Office of Conservation may suspend the operator's right to store hydrocarbons until violations are corrected. If violations are corrected, the Office of Conservation may lift the suspension. Suspension of a permit or subsequent corrections of the causes for the suspension by the operator shall not preclude the Office of Conservation from terminating the permit, if necessary. The Office of Conservation shall issue a Notice of Violation (NOV) to the operator that lists the specific violations of the permit or these regulations. If the operator fails to comply with the NOV by correcting the cited violations within the date specified in the NOV, the Office of Conservation shall issue a Compliance Order requiring the violations be corrected within a specified time and may include an assessment of civil penalties. If the operator fails to take corrective action within the time specified in the Compliance

Order, the Office of Conservation shall assess a civil penalty, and shall suspend, revoke, or terminate the permit.

3. Modification or Revocation and Reissuance of Permits. The following are causes for modification and may be causes for revocation and reissuance of permits.

a. Alterations. There are material and substantial alterations or additions to the permitted facility or activity which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit.

b. Information. The Office of Conservation has received information pertinent to the permit. Permits may be modified during their terms for this cause only if the information was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and would have justified the application of different permit conditions at the time of issuance. Cause shall include any information indicating that cumulative effects on the environment, or the health, safety and welfare of the public are unacceptable.

c. New Regulations

i. The standards or regulations on which the permit was based have been changed by promulgation of new or amended standards or regulations or by judicial decision after the permit was issued and conformance with the changed standards or regulations is necessary for the protection of the environment, or the health, safety and welfare of the public. Permits may be modified during their terms when:

(a). the permit condition to be modified was based on a promulgated regulation or guideline;

(b). there has been a revision, withdrawal, or modification of that portion of the regulation or guideline on which the permit condition was based; or

(c). an operator requests modification within 90 days after *Louisiana Register* notice of the action on which the request is based.

ii. The permit may be modified as a minor modification without providing for public comment when standards or regulations on which the permit was based have been changed by withdrawal of standards or regulations or by promulgation of amended standards or regulations which impose less stringent requirements on the permitted activity or facility and the operator requests to have permit conditions based on the withdrawn or revised standards or regulations deleted from his permit.

iii. For judicial decisions, a court of competent jurisdiction has remanded and stayed Office of Conservation regulations or guidelines and all appeals have been exhausted, if the remand and stay concern that portion of the regulations or guidelines on which the permit condition was based and a request is filed by the operator to have permit conditions based on the remanded or stayed standards or regulations deleted from his permit.

d. Compliance Schedules. The Office of Conservation determines good cause exists for modification of a compliance schedule, such as an act of God, strike, flood, or materials shortage or other events over which the operator has little or no control and for which there is no reasonable available remedy.

4. Causes for Modification or Revocation and Reissuance. The following are causes to modify or, alternatively, revoke and reissue a permit.

a. Cause exists for termination under §311.K.6, and the Office of Conservation determines that modification or revocation and reissuance is appropriate.

b. The Office of Conservation has received notification of a proposed transfer of the permit and the transfer is determined not to be a minor permit modification. A permit may be modified to reflect a transfer after the effective date but will not be revoked and reissued after the effective date except upon the request of the new operator.

5. Facility Siting. Suitability of an existing facility location will not be considered at the time of permit modification or revocation and reissuance unless new information or standards indicate that continued operations at the site pose a threat to the health or safety of persons or the environment that was unknown at the time of the permit issuance. A change of injection site or facility location may require modification or revocation and issuance as determined to be appropriate by the commissioner.

6. Minor Modifications of Permits. The Office of Conservation may modify a permit to make corrections or allowances for changes in the permitted activity listed in this subsection without issuing a draft permit and providing for public participation. Minor modifications may only:

a. correct administrative or make informational changes;

b. correct typographical errors;

c. amend the frequency of or procedures for monitoring, reporting, sampling, or maintenance activities;

d. change an interim compliance date in a schedule of compliance, provided the new date does not interfere with attainment of the final compliance date requirement;

e. allow for a change in ownership or operational control of a hydrocarbon storage well where the Office of Conservation determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittees has been submitted to the Office of Conservation;

f. change quantities or types of fluids injected which are within the capacity of the facility as permitted and, in the judgment of the commissioner, would not interfere with the operation of the facility or its ability to meet conditions prescribed in the permit, and would not change its classification;

g. change construction requirements or plans approved by the Office of Conservation provided that any such alteration is in compliance with these rules and regulations. No such changes may be physically incorporated into construction or conversion of the hydrocarbon storage well or cavern without written approval from the Office of Conservation; or

h. amend a closure or post-closure plan.

7. Termination of Permits

a. The Office of Conservation may terminate a permit during its term for the following causes:

i. noncompliance by the operator with any condition of the permit;

ii. the operator's failure in the application or during the permit issuance process to fully disclose all relevant facts, or the operator's misrepresentation of any relevant facts at any time; or

iii. a determination that continued operation of the permitted activity cannot be conducted in a way that is protective of the environment, or the health, safety and welfare of the public.

b. If the Office of Conservation decides to terminate a permit, he shall issue a notice of intent to terminate. A notice of intent to terminate is a type of draft permit that follows the same procedures as any draft permit prepared under §311.E. The Office of Conservation may alternatively decide to modify or revoke and reissue a permit for the causes in §311.K.7.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:4 et seq.

HISTORICAL NOTE: Promulgated by the Department of Natural Resources, Office of Conservation, LR _____.

§313. Site Assessment

A. Applicability. This Section applies to all applicants, owners, or operators of hydrocarbon storage wells and caverns. The applicant, owner, or operator shall be responsible for showing that the hydrocarbon storage operation shall be accomplished using good engineering and geologic practices for hydrocarbon storage operations to preserve the integrity of the salt stock and overlying sediments. In addition to all applicants showing this in their application and as part of the compliance review found in §309.K, the commissioner shall require any owner or operator of a hydrocarbon storage well to provide the same or similar information required in this Section. This shall include, but not be limited to:

1. an assessment of the engineering, geological, geomechanical, geochemical, geophysical properties of the salt stock;

2. stability of salt stock and overlying and surrounding sediments;

3. stability of the cavern design (particularly regarding its size, shape, depth, and operating parameters);

4. the amount of separation between the cavern of interest and adjacent caverns and structures within the salt stock; and

5. the amount of separation between the outermost cavern wall and the periphery of the salt stock.

6. an assessment of well information and oil and gas activity within the vicinity of the salt dome.

B. Geological Studies and Evaluations. The applicant, owner, or operator shall do a thorough geological, geophysical, geomechanical, and geochemical evaluation of the salt stock to determine its suitability for hydrocarbon storage, stability of the cavern under the proposed set of operating conditions, and where applicable, the structural integrity of the salt stock between an adjacent cavern and salt periphery under the proposed set of operating conditions. A listing of data or information used to characterize the structure and geometry of the salt stock shall be included.

1. Where applicable, the evaluation shall include, but should not be limited to:

a. geologic mapping of the structure of the salt stock and any cap rock;

b. geologic history of salt movement;

c. an assessment of the impact of possible anomalous zones (salt spines, shear planes, etc.) on the hydrocarbon storage well or cavern;

d. deformation of the cap rock and strata overlying the salt stock;

e. investigation of the upper salt surface and adjacent areas involved with salt dissolution;

f. cap rock formation and any non-vertical salt movement.

2. The applicant shall perform a thorough hydrogeologic study on strata overlying the salt stock to determine the occurrence of the lowermost underground source of drinking water immediately above and near the salt stock.

3. The applicant shall investigate regional tectonic activity and the potential impact (including ground subsidence) of the project on surface and subsurface resources.

4. The proximity of all existing and proposed hydrocarbon storage caverns to the periphery of the salt stock and to manmade structures within the salt stock shall be demonstrated to the Office of Conservation at least once every five (5) years (see §309.K) by providing the following:

a. an updated structure contour map of the salt stock on a scale no smaller than 1 inch to 500 feet. The updated map should make use of all available data. The horizontal configuration of the salt cavern should be shown on the structure map and reflect the caverns' maximum

lateral extent as determined by the most recent sonar caliper survey; and

b. vertical cross sections of the salt caverns showing their outline and position within the salt stock. Cross sections should be oriented to indicate the closest approach of the salt cavern wall to the periphery of the salt stock. The outline of the salt cavern should be based on the most recent sonar caliper survey.

C. Core Sampling

1. At least one well at the site of the hydrocarbon storage well (or the salt dome) shall be or shall have been cored over sufficient depth intervals to yield representative samples of the subsurface geologic environment. This shall include coring of the salt stock and may include coring of overlying formations, including any cap rock. Cores should be obtained using the whole core method. Core acquisition, core handling, and core preservation shall be done according to standard field sampling practices considered acceptable for laboratory tests of recovered cores.

2. Data from previous coring projects may be used instead of actual core sampling provided the data is specific to the salt dome of interest. If site-specific data is unavailable, data may be obtained from sources that are not specific to the area as long as the data can be shown to closely approximate the properties of the salt dome of interest. It shall be the responsibility of the applicant to make a satisfactory demonstration that data obtained from other sources are applicable to the salt dome of interest.

D. Core Analyses and Laboratory Tests. Analyses and tests shall consider the characteristics of the injected materials and should provide data on the salt's geomechanical, geophysical, geochemical, mineralogical properties, microstructure, and where necessary, potential for adjacent cavern connectivity, with emphasis on cavern shape and the operating conditions. All laboratory tests, experimentation, and numeric modeling shall be conducted using methods that simulate the proposed operating conditions of the cavern. Test methods shall be selected to define the deformation and strength properties and characteristics of the salt stock under cavern operating conditions.

E. Area-of-Review. A thorough evaluation shall be undertaken of both surface and subsurface activities in the defined area-of-review of the individual hydrocarbon storage well or project area (area permit) that may influence the integrity of the salt stock, hydrocarbon storage well, and cavern, or contribute to the movement of injected fluids outside the cavern, wellbore, or salt stock.

1. Surface Delineation

a. The area-of-review for individual hydrocarbon storage wells shall be a fixed radius around the wellbore of not less than 1320 feet.

b. The area-of-review for wells in a hydrocarbon storage project area (area permit), shall be the project area

plus a circumscribing area the width of which is not less than 1320 feet.

c. Exception shall be noted as in Subparagraphs 2.c and d below.

2. Subsurface Delineation. At a minimum, the following shall be identified within the area-of-review:

a. all known active, inactive, and abandoned wells within the area-of-review with known depth of penetration into the cap rock or salt stock;

b. all known water wells within the area-of-review;

c. all salt caverns within the salt stock regardless of use, depth of penetration, or distance to the proposed hydrocarbon storage well or cavern;

d. all conventional (dry or room and pillar) mining activity either active or abandoned occurring anywhere within the salt stock regardless of distance to the proposed hydrocarbon storage well or cavern.

e. all producing formations either active or depleted.

F. Corrective Action

1. For manmade structures identified in the area-of-review that penetrate the salt stock and are not properly constructed, completed, or plugged and abandoned, the applicant shall submit a corrective action plan consisting of such steps, procedures, or modifications as are necessary to prevent the movement of fluids outside the cavern or into underground sources of drinking water.

a. Where the plan is adequate, the provisions of the corrective action plan shall be incorporated into the permit as a condition.

b. Where the plan is inadequate, the Office of Conservation shall require the applicant to revise the plan, or prescribe a plan for corrective action as a condition of the permit, or the application shall be denied.

2. Any permit issued for an existing hydrocarbon storage well for which corrective action is required shall include a schedule of compliance for complete fulfillment of the approved corrective action procedures. If the required corrective action is not completed as prescribed in the schedule of compliance, the permit shall be suspended, modified, revoked and possibly reissued, or terminated according to these rules and regulations.

3. No permit shall be issued for a new hydrocarbon storage well until all required corrective action obligations have been fulfilled.

4. The commissioner may require as a permit condition that injection pressure be so limited that pressure in the injection zone does not cause the movement of fluids into a underground source of drinking water through any improperly completed or abandoned well within the area-of-review. This pressure limitation shall satisfy the corrective action requirement. Alternatively, such injection pressure

limitation can be part of a compliance schedule and last until all other corrective action has been taken.

5. When setting corrective action requirements for hydrocarbon storage wells, the commissioner shall consider the overall effect of the project on the hydraulic gradient in potentially affected underground sources of drinking water, and the corresponding changes in potentiometric surface(s) and flow direction(s) rather than the discrete effect of each well. If a decision is made the corrective action is not necessary, the monitoring program required in §323 shall be designed to verify the validity of such determination.

6. In determining the adequacy of proposed corrective action and in determining the additional steps needed to prevent fluid movement into underground sources of drinking water, the following criteria and factors shall be considered by the commissioner:

a. nature and volume of injection fluid;

b. nature of native fluids or by-products of injection;

c. potentially affected population;

d. geology;

e. hydrology;

f. history of the injection operation;

g. completion and plugging records;

h. abandonment procedures in effect at the time the well was abandoned; and

i. hydraulic connections with underground sources of drinking water.

7. The Office of Conservation may prescribe additional requirements for corrective action beyond those submitted by the applicant.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:4 et seq.

HISTORICAL NOTE: Promulgated by the Department of Natural Resources, Office of Conservation, LR____.

§315. Cavern Design and Spacing Requirements

A. This Section provides general standards for design of caverns to ensure that project development can be conducted in a reasonable, prudent, and a systematic manner and shall stress physical and environmental safety. The owner or operator shall continually review the design throughout the construction and operation phases taking into consideration pertinent additional detailed subsurface information and shall include provisions for protection from damage caused by hydraulic shock. If necessary, the original development and operational plans shall be modified to conform to good engineering practices.

B. Cavern Spacing Requirements

1. Property Boundary.

a. Existing Hydrocarbon Storage Caverns. No part of a hydrocarbon storage cavern permitted as of the date

these regulations are promulgated shall extend closer than 100 feet to the property of others without consent of the owner(s). Continued operation without this consent of an existing hydrocarbon storage cavern within 100 feet of the property of others may be allowed as follows:

i. The operator of the cavern shall make a good faith effort to provide notice in a form and manner approved by the Commissioner to the adjacent property owner(s) of the location of its cavern.

ii. The Commissioner shall hold a public hearing at Baton Rouge if a non-consenting adjacent owner whose property line is within 100 feet objects to the cavern's continued operation. Following the public hearing the Commissioner may approve the cavern's continued operation upon a determination that the continued operation of the cavern has no adverse effects to the rights of the non-consenting adjacent property owner(s).

iii. If no objection from a non-consenting adjacent property owner is received within thirty days of the notice provided in accordance with subparagraph 1(i) above, then the Commissioner may approve the continued operation of the cavern administratively.

b. New Hydrocarbon Storage Caverns. No part of a newly permitted hydrocarbon storage cavern shall extend closer than 100 feet to the property of others without the consent of the owner(s).

2. Adjacent Structures within the Salt. As measured in any direction, the minimum separation between walls of adjacent caverns or between the walls of the cavern and any adjacent cavern or any other manmade structure within the salt stock shall not be less than 200 feet. Caverns must be operated in a manner that ensures the walls between any cavern and any other manmade structure maintain the minimum separation of 200 feet. For hydrocarbon storage caverns permitted prior to the effective date of these regulations and which are already within two hundred (200) feet of any other cavern or manmade structure within the salt stock, the Commissioner of Conservation may approve continued operation upon a proper showing by the owner or operator that the cavern is capable of continued safe operations.

3. Salt Periphery.

a. Without exception or variance to these rules and regulations, at no time shall the minimum separation between the cavern walls at any point and the periphery of the salt stock for a newly permitted hydrocarbon storage cavern be less than 300 feet.

b. An existing hydrocarbon storage cavern with less than 300 feet of salt separation at any point between the cavern walls and the periphery of the salt stock shall provide the Office of Conservation with an enhanced monitoring plan that has provisions for ongoing monitoring of the structural stability of the cavern and salt through methods that may include, but are not limited to, increased frequency of sonar caliper surveys, vertical seismic profiles, micro-seismic monitoring, increased frequency of subsidence

monitoring, mechanical integrity testing, continuous cavern pressure data monitoring, etc. A combination of enhanced monitoring methods may be proposed where appropriate. Once approved, the owner or operator shall implement the enhanced monitoring plan.

c. Without exception or variance to these rules and regulations, an existing hydrocarbon storage cavern with cavern walls 100 feet or less from the periphery of the salt stock shall be removed from hydrocarbon storage service immediately and permanently. An enhanced monitoring plan of Subparagraph b above shall be prepared and submitted to the Office of Conservation. Once approved, the owner or operator shall implement the enhanced monitoring plan.

C. Cavern Coalescence. The Office of Conservation may permit the use of coalesced caverns for hydrocarbon storage, but only for hydrocarbons that are liquid at standard temperature and pressure. It shall be the duty of the applicant, owner, or operator to demonstrate that operation of coalesced caverns under the proposed cavern operating conditions can be accomplished in a physically and environmentally safe manner and that the stability and integrity of the cavern and salt stock shall not be compromised. The intentional subsurface coalescing of adjacent caverns must be requested by the applicant, owner, or operator in writing and be approved by the Office of Conservation before beginning or resumption of hydrocarbon storage operations. If the design of adjacent caverns should include approval for the subsurface coalescing of adjacent caverns, the minimum spacing requirement of §315.B.2 shall not apply to the coalesced caverns.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:4 et seq.

HISTORICAL NOTE: Promulgated by the Department of Natural Resources, Office of Conservation, LR _____.

§317. Well Construction and Completion

A. General Requirements

1. All materials and equipment used in the construction of the hydrocarbon storage well and related appurtenances shall be designed and manufactured to exceed the operating requirements of the specific project. Consideration shall be given to depth and lithology of all subsurface geologic zones, corrosiveness of formation fluids, hole size, anticipated ranges and extremes of operating conditions, subsurface temperatures and pressures, type and grade of cement, and projected life of the hydrocarbon storage well, etc.

2. All hydrocarbon storage wells and caverns shall be designed, constructed, completed, and operated to prevent the escape of injected materials out of the salt stock, into or between underground sources of drinking water, or otherwise create or cause pollution or endanger the environment or public safety. All phases of design, construction, completion, and testing shall be prepared and supervised by qualified personnel.

a. Where the hydrocarbon storage well penetrates an underground source of drinking water in an area subject to subsidence or catastrophic collapse, an adequate number of monitoring wells shall be completed into the USDW to detect any movement of injected fluids, process by-products or formation fluids into the USDW. The monitoring wells shall be located outside the physical influence of the subsidence or catastrophic collapse.

b. The following criteria shall be considered in determining the number, location, construction, and frequency of monitoring of any monitor wells:

- i. the population relying on the USDW affected or potentially affected by the injection operation;
- ii. the proximity of the hydrocarbon storage operation to points of withdrawal of drinking water;
- iii. the local geology and hydrology;
- iv. the operating pressures and whether a negative pressure gradient is being maintained;
- v. the nature and volume of the injected fluid, the formation water, and the process by-products; and
- vi. the injected fluid density.

B. Open Borehole Surveys

1. Open hole wireline surveys that delineate subsurface lithologies, formation tops (including top of cap rock and salt), formation fluids, formation porosity, and fluid resistivities shall be performed on all new wells from total well depth to either ground surface or base of conductor pipe. Wireline surveys shall be presented with gamma-ray and, where applicable, spontaneous potential curves. All surveys shall be presented on a scale of 1 inch to 100 feet and a scale of 5 inches to 100 feet. A descriptive report interpreting the results of such logs and tests shall be prepared and submitted to the commissioner.

2. Gyroscopic multi-shot surveys of the borehole shall be taken at intervals not to exceed every 100 feet of drilled borehole.

3. Where practicable, caliper logging to determine borehole size for cement volume calculations shall be performed before running casings.

4. The owner or operator shall submit all wireline surveys as one paper copy and an electronic version in a format approved by the commissioner.

C. Casing and Cementing. Except as specified below, the wellbore of the hydrocarbon storage well shall be cased, completed, and cemented according to rules and regulations of the Office of Conservation and good industry engineering practices for wells of comparable depth that are applicable to the same locality of the cavern. Design considerations for casings and cementing materials and methods shall address the nature and characteristics of the subsurface environment, the nature of injected materials, the range of conditions under which the well, cavern, and facility shall be operated,

and the expected life of the well including closure and post-closure.

1. Cementing shall be by the pump-and-plug method or another method approved by the Office of Conservation and shall be circulated to the surface. Circulation of cement may be done by staging.

a. For purposes of these rules and regulations, circulated (cemented) to the surface shall mean that actual cement returns to the surface were observed during the primary cementing operation. A copy of the cementing company's job summary or cementing ticket indicating returns to the surface shall be submitted as part of the pre-operating requirements of §325.

b. If returns are lost during cementing, the owner or operator shall have the burden of showing that sufficient cement isolation is present to prevent the upward movement of injected material into zones of porosity or transmissive permeability in the overburden along the wellbore and to protect underground sources of drinking water.

2. In determining and specifying casing and cementing requirements, the following factors shall be considered:

- a. depth of the storage zone;
- b. injection pressure, external pressure, internal pressure, axial loading, etc.;
- c. borehole size;
- d. size and grade of all casing strings (wall thickness, diameter, nominal weight, length, joint specification, construction material, etc.);
- e. corrosiveness of injected fluids and formation fluids;
- f. lithology of subsurface formations penetrated;
- g. type and grade of cement.

3. Surface casing shall be set to a depth below the base of the lowermost underground source of drinking water and shall be cemented to ground surface where practicable.

4. At a minimum, all hydrocarbon storage wells shall be dually cased from the surface into the salt, one casing string being an intermediate string, the other being the final cemented string. The surface casing shall not be considered one of the two casings.

5. The final cemented casing shall be set a minimum distance of 300 feet into the salt and shall make use of a sufficient number of casing centralizers.

6. The following applies to wells existing in caverns before the effective date of these rules and regulations. If the design of the well or cavern precludes having distinct intermediate and final casing seats cemented into the salt, the wellbore shall be cased with two concentric casings run from the surface of the well to a minimum distance of 300 feet into the salt. The inner casing shall be cemented from its base to surface.

7. All cemented casings shall be cemented from their respective casing seats to the surface when practicable; however, in every case, casings shall be cemented a sufficient distance to prevent migration of the stored products into zones of porosity or permeability in the overburden.

D. Casing and Casing Seat Tests. When performing tests under this subsection, the owner or operator shall monitor and record the tests by use of a surface readout pressure gauge and a chart or a digital recorder. All instruments shall be properly calibrated and in good working order. If there is a failure of the required tests, the owner or operator shall take necessary corrective action to obtain a passing test.

1. Casing. After cementing each casing, but before drilling out the respective casing shoe, all casings will be hydrostatically pressure tested to verify casing integrity and the absence of leaks. The stabilized test pressure applied at the well surface will be calculated such that the pressure gradient at the depth of the respective casing shoe will not be less than 0.7 PSI/FT of vertical depth or greater than 0.9 PSI/FT of vertical depth. All casing test pressures will be maintained for 1-hour after stabilization. Allowable pressure loss is limited to 5 percent of the test pressure over the stabilized test duration. Test results will be reported as part of the Pre-Operating Requirements.

2. Casing Seat. The casing seat and cement of the intermediate and production casings will each be hydrostatically pressure tested after drilling out the casing shoe. At least 10 feet of formation below the respective casing shoes will be drilled before the test.

a. For all casings below the surface casing—excluding the final cemented casing—the stabilized test pressure applied at the well surface will be calculated such that the pressure at the casing shoe will not be less than the 85 percent of the predicted formation fracture pressure at that depth. The test pressures will be maintained for 1 hour after pressure stabilization. Allowable pressure loss is limited to 5 percent of the test pressure over the stabilized test duration. Test results will be reported as part of the Pre-Operating Requirements.

b. For the final cemented casing, the test pressure applied at the surface will be the greater of the maximum predicted salt cavern operating pressure or a pressure gradient of 0.85 PSI/FT of vertical depth calculated with respect to the depth of the casing shoe. The test pressures will be maintained for 1 hour after pressure stabilization. Allowable pressure loss is limited to 5 percent of the test pressure over the stabilized test duration. Test results will be reported as part of the Pre-Operating Requirements.

3. Casing or casing seat test pressures shall never exceed a pressure gradient equivalent to 0.90 PSI/FT of vertical depth at the respective casing seat or exceed the known or calculated fracture gradient of the appropriate subsurface formation. The test pressure shall never exceed the rated burst or collapse pressures of the respective casings.

E. Cased Borehole Surveys. A cement bond with variable density log (or similar cement evaluation tool) and a temperature log shall be run on all casings. The Office of Conservation may consider requests for alternative means of compliance for wireline logging in large diameter casings or justifiable special conditions. A descriptive report interpreting the results of such logs shall be prepared and submitted to the commissioner.

1. It shall be the duty of the well applicant, owner or operator to prove adequate cement isolation on all cemented casings. Remedial cementing shall be done before proceeding with further well construction, completion, or conversion if adequate cement isolation between the hydrocarbon storage well and subsurface formations cannot be demonstrated.

2. A casing inspection log (or similar log) shall be run on the final cemented casing.

3. When submitting wireline surveys, the owner or operator shall submit one paper copy and an electronic copy in a format approved by the commissioner.

F. Hanging Strings. Hanging strings shall be designed with a collapse, burst, and tensile strength rating conforming to all expected operating conditions. The design shall also consider the physical and chemical characteristics of fluids placed into and withdrawn from the cavern.

G. Wellhead Components and Related Connections. All wellhead components, valves, flanges, fittings, flowlines, and related connections shall be manufactured of steel. All components shall be designed with a test pressure rating of at least 125 percent of the maximum pressure that could be exerted at the surface. Selection and design criteria for components shall consider the physical and chemical characteristics of fluids placed into and withdrawn from the cavern under the specific range of operating conditions, including flow induced vibrations. The fluid withdrawal side of the wellhead shall be rated for the same pressure as the fluid injection side. All components and related connections shall be periodically inspected by the well operator and maintained in good working order.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:4 et seq.

HISTORICAL NOTE: Promulgated by the Department of Natural Resources, Office of Conservation, LR ____.

§319. Operating Requirements

A. Cavern Roof. Without exception or variance to these rules and regulations, no cavern shall be used for hydrocarbon storage if the cavern roof has grown above the top of the salt stock. The operation of an already permitted storage cavern shall cease and shall not be allowed to continue if information becomes available that shows this condition exists. The Office of Conservation may order the hydrocarbon storage well and cavern removed from storage service according to an approved closure and post-closure plan.

B. Remedial Work. No remedial work or repair work of any kind shall be done on the hydrocarbon storage well or

cavern without prior authorization from the Office of Conservation. The provision for prior authorization shall also extend to doing mechanical integrity pressure and leak tests and sonar caliper surveys; however, a work permit is not required in order to conduct interface surveys. The owner, operator, or its agent shall submit a valid work permit request form (Form UIC-17 or successor). Before beginning well or cavern remedial work, the pressure in the cavern shall be relieved, as practicable.

C. **Well Recompletion—Casing Repair.** The following applies to hydrocarbon storage wells where remedial work results from well upgrade, casing wear, or similar condition. For each paragraph below, a casing inspection log shall be done on the entire length of the innermost cemented casing in the well before doing any casing upgrade or repair. Authorization from the Office of Conservation shall be obtained before beginning any well recompletion, repair, upgrade, or closure. A hydrocarbon storage well that cannot be repaired or upgraded shall remain out-of-service and be closed according to an approved closure and post-closure plan.

1. **Liner.** A liner may be used to recomplete or repair a well with severe casing damage. The liner shall be run from the well surface to the base of the innermost cemented casing. The liner shall be cemented over its entire length and shall be successfully pressure tested.

2. **Casing Patch.** Internal casing patches shall not be used to repair severely corroded or damaged casing. Casing patches shall only be used for repairing or covering isolated pitting, corrosion, or similar localized damage. The casing patch shall extend a minimum of 10 feet above and below the area being repaired. The entire casing shall be successfully pressure tested.

D. **Multiple Well Caverns.** No newly permitted well shall be drilled into an existing cavern until the cavern pressure has been relieved, as practicable, to 0 PSI measured at the surface.

E. **Cavern Allowable Operating Pressure.**

1. The maximum and minimum surface injection pressures (gauge) for the storage well and cavern shall be determined after considering the geomechanical characteristics of the salt, the properties of the injected fluid, well and cavern design, and neighboring activities within salt stock.

2. The maximum and minimum allowable surface injection pressures shall be calculated at a depth referenced to the well's deepest cemented casing seat. The injection pressure at the wellhead shall be calculated to ensure that the pressure induced within the salt cavern during injection does not initiate fractures or propagate existing fractures in the salt. In no case shall the injection pressure initiate fractures in the confining zone or cause the migration of injected fluids out of the salt stock or into an underground source of drinking water.

3. When measured at the surface and calculated with respect to the appropriate reference depth, the maximum

allowable cavern injection pressure shall not exceed a pressure gradient of 0.90 PSI/FT of vertical depth.

4. The hydrocarbon storage well shall not be operated at pressures above the maximum allowable injection pressure defined above, exceed the maximum allowable pressure as may be established by permit, or exceed the rated burst or collapse pressure of all well tubulars (cemented or hanging strings) even for short periods, including pressure pulsation peaks, abnormal operating conditions, well or cavern tests, etc.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:4 et seq.

HISTORICAL NOTE: Promulgated by the Department of Natural Resources, Office of Conservation, LR _____.

§321. Safety

A. **Emergency Action Plan.** A plan outlining procedures for facility personnel to follow in case of an emergency shall be prepared and submitted as part of the permit application. The plan shall contain emergency contact telephone numbers, procedures and specific information for facility personnel to respond to a release, upset, incident, accident, or other site emergency. A copy of the plan shall be kept at the facility and shall be reviewed and updated as needed.

B. **Controlled Site Access.** Access to hydrocarbon storage facilities shall be controlled by fencing or other means around the facility property. All points of entry into the facility shall be through by a lockable gate system.

C. **Personnel.** Personnel shall be on duty at the storage facility 24 hours a day. During periods of stored product injection or withdrawal, trained personnel shall be stationed at the storage well, facility's onsite local control room, or other facility control location at the storage site. If the storage facility chooses to use an offsite monitoring and control automated telemetry surveillance system, approved by the commissioner, provisions shall be made for trained personnel to be on-call at all times and 24 hours a day staffing of the facility may not be required.

D. **Wellhead Protection and Identification**

1. A barrier shall be installed and maintained around the storage wellhead as protection from physical or accidental damage by mobile equipment or trespassers.

2. An identifying sign shall be placed at the wellhead of each storage well and, at a minimum, shall include the operator's name, well/cavern name and number, well's state serial number, section-township-range, and any other information required by the Office of Conservation. The sign shall be of durable construction with all lettering kept in a legible condition.

E. **Valves and Flowlines**

1. All valves, flowlines, flanges, fittings, and related connections shall be manufactured of steel. All components shall be designed with a test pressure rating of at least 125 percent of the maximum pressure that could be exerted at the surface. All components and related connections shall be

maintained in good working order and shall be periodically inspected by the operator.

2. All valves, flowlines for injection and withdrawal, and any other flowlines shall be designed to prevent pressures over maximum operating pressure from being exerted on the storage well and cavern and prevent backflow or escape of injected material. The fluid withdrawal side of the wellhead shall have the same pressure rating as the injection side.

3. All flowlines for injection and withdrawal connected to the wellhead shall be equipped with remotely operated shut-off valves and shall have manually operated positive shut-off valves at the wellhead. All remotely operated shut-off valves shall be fail-safe and tested and inspected according to §321.I.

F. Alarm Systems. Manual and automatically activated alarms shall be installed at all cavern facilities. All alarms shall be audible and visible from any normal work location within the facility. The alarms shall be maintained in proper working order. Automatic alarms designed to activate an audible and a visible signal shall be integrated with all pressure, flow, heat, fire, cavern overfill, leak sensors and detectors, emergency shutdown systems, or any other safety system. The circuitry shall be designed such that failure of a detector or sensor shall activate a warning.

G. Emergency Shutdown Valves. Manual and automatically actuated emergency shutdown valves shall be installed on all systems of cavern injection and withdrawal and any other flowline going into or out from each storage wellhead. All emergency shutdown valves shall be fail-safe and shall be tested and inspected according to §321.I.

1. Manual controls for emergency shutdown valves shall be designed to operate from a local control room, at storage wellhead, any remote monitoring and control location, and at a location that is likely to be accessible to emergency response personnel.

2. Automatic emergency shutdown valves shall be designed to actuate on detection of abnormal pressures of the injection system, abnormal increases in flow rates, responses to any heat, fire, cavern overfill, leak sensors and detectors, loss of pressure or power to the well, cavern, or valves, or any abnormal operating condition.

H. Vapor Detection. The operator shall develop and implement a plan as required in §323.D to detect the presence of combustible gases or any potentially ignitable substances in the atmosphere resulting from the storage operation.

1. A continuous flare or other safety system shall be installed at or near each brine pit or at any other location where the uncontrollable escape of liquefied gases are likely to occur and the flare shall be burned continuously when a liquefied gas is being injected into a cavern.

I. Safety Systems Test. The operator shall function-test all critical systems of control and safety at least once every six months. This includes testing of alarms, test tripping of

emergency shutdown valves ensuring their closure times are within design specifications, and ensuring the integrity of all electrical, pneumatic, or hydraulic circuits. Tests results shall be documented and kept onsite for inspection by an agent of the Office of Conservation.

J. Safety Inspections

1. The operator shall conduct twice-yearly safety inspections and file with the commissioner a written report consisting of the inspection procedures and results within 30 days following the inspection. Such inspections shall be conducted during the winter and summer months of each year. The operator shall notify the commissioner at least five days prior to such inspections so that his representative may be present to witness the inspections. Inspections shall include, but not be limited to, the following:

- a. operations of all manual wellhead valves;
- b. operation of all automatic shut-in safety valves, including sounding or alarm devices;
- c. flare system installation or hydrocarbon filters;
- d. brine pits, tanks, firewalls, and related equipment;
- e. flowlines, manifolds, and related equipment;
- f. warning signs, safety fences, etc.

2. Representatives of the Office of Conservation may inspect the storage well and facility at any time during the storage facility regular working hours.

K. Spill Containment. Levees, booms, or other containment devices suitable to retain liquids released by accidental spillage shall surround the wellheads of caverns storing hydrocarbons that exist as liquids at ambient conditions.

L. Assistance to Residents. As soon as practicable following the issuance of an evacuation order pursuant to La. R.S. 29:721, et seq., and associated with a sinkhole or other incident at a hydrocarbon storage cavern facility the commissioner of conservation shall:

1. After consulting with the authority which issued the evacuation order and local governmental officials for the affected area, establish assistance amounts for residents subject to the evacuation order and identify the operator(s) responsible for providing assistance. The assistance amount shall remain in effect until the evacuation order is lifted or until a subsequent order is issued by the commissioner in accordance with paragraph 2 of this subsection.

2. Upon request of an interested party, call for a public hearing to take testimony from all interested parties in order to consider modifying the evacuation assistance amounts and/or consider a challenge to the finding of the responsible operator(s). The public hearing shall be noticed and held in accordance with La. R.S. 30:6. The order shall remain in effect until the evacuation is lifted or the

commissioner's order is modified, supplemented, or revoked and reissued, whichever occurs first.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:4 et seq.

HISTORICAL NOTE: Promulgated by the Department of Natural Resources, Office of Conservation, LR _____.

§323. Monitoring Requirements

A. Pressure Gauges, Pressure Sensors, Flow Sensors

1. Pressure gauges or pressure sensors/transmitters that show pressure on the fluid injection string, fluid withdrawal string, and any other string in the well shall be installed at each wellhead. Gauges or pressure sensors/transmitters shall be designed to read gauge pressure in 10 PSIG increments. All gauges or pressure sensors/transmitters shall be properly calibrated and shall always be maintained in good working order. The pressure valves onto which the pressure gauges are affixed shall have 1/2 inch female fittings.

2. Pressure sensors designed to actuate the automatic closure of all emergency shutdown valves in response to a preset pressure (high/low) shall be installed and properly maintained for all fluid injection, withdrawal, and any other appropriate string in the well.

3. Flow sensors designed to actuate the automatic closure of all emergency shutdown valves in response to abnormal changes in cavern injection and withdrawal flow rates shall be installed and properly maintained on each storage well.

B. Continuous Recording Instruments. Continuous recording instrumentation shall be installed and properly maintained for each storage well. Continuous recordings may consist of circular charts, digital recordings, or similar type. Unless otherwise specified by the Commissioner, digital instruments shall record the required information at no greater than one (1) minute intervals. Mechanical charts shall not exceed a clock period of 24-hour duration. The chart shall be selected such that its scaling is of sufficient sensitivity to record all fluctuations of pressure or any other parameter being monitored. The chart shall be scaled such that the parameter being recorded is 30 percent to 70 percent of full scale. Instruments shall be housed in weatherproof enclosures when located in areas exposed to climatic conditions. All fluid volumes shall be determined by metering or an alternate method approved by the Office of Conservation. Minimum data recorded shall include the following:

1. wellhead pressures on the fluid injection, fluid withdrawal, and any other string in the well;
2. volume and flow rate of fluid injected;
3. volume of fluid withdrawn.

C. Casing Inspection.

1. For existing permitted liquid hydrocarbon storage caverns without a casing inspection or similar log run on the

entire length of the innermost cemented casing within five (5) years prior to the effective date of these rules, one shall be run within five (5) years of the effective date.

2. For existing permitted natural gas storage caverns without a casing inspection or similar log run on the entire length of the innermost cemented casing within ten (10) years prior to the effective date of these rules, one shall be run within five (5) years of the effective date.

3. A casing inspection or similar log shall be run on the entire length of the cemented casing in each well at least once every ten (10) years for hydrocarbon storage caverns and fifteen (15) years for natural gas storage caverns.

4. Equivalent alternate monitoring programs to ensure the integrity of the innermost, cemented casing may be approved by the Office of Conservation in place of §323.C.1 and §323.C.2,

D. Vapor Detection. The operator shall develop a monitoring plan designed to detect the presence of a buildup of combustible gases or any potentially ignitable substances in the atmosphere resulting from the hydrocarbon storage operation. Variations in topography, atmospheric conditions typical to the area, characteristics of the stored product, nearness of the facility to homes, schools, commercial establishments, etc., should be considered in developing the monitoring plan. The plan shall be submitted as part of the permit application and should include provisions for strategic placement of stationary detection devices at various areas of the facility, portable monitoring devices, or any other appropriate system acceptable to the commissioner.

1. Any stationary detection devices or systems identified in the monitoring plan shall include their integration into the facility's automatic alarm system.

2. Detection of a buildup of combustible gases or any potentially ignitable substances in the atmosphere or system alarm shall cause an immediate investigation by the operator for reason of and correction of the detection.

E. Subsidence Monitoring and Frequency. The owner or operator shall prepare and carry out a plan approved by the commissioner to monitor ground subsidence at and in the area of the storage cavern(s). A monitoring report shall be prepared and submitted to the Office of Conservation after completion of each monitoring event.

1. The frequency of conducting subsidence-monitoring surveys for caverns in gas storage shall be every 6 months.

2. The frequency of conducting subsidence-monitoring surveys for caverns in liquid storage shall be every 12 months.

F. Wind Sock. At least one windsock shall be installed at all storage cavern facilities. The windsock shall be visible from any normal work location within the facility.

G. Monitor Wells. Quarterly monitoring of any monitor wells required by §317.A.2.a.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:4 et seq.

HISTORICAL NOTE: Promulgated by the Department of Natural Resources, Office of Conservation, LR ____.

§325. Pre-Operating Requirements—Completion Report

A. The operator shall submit a report describing, in detail, the work performed resulting from the approved permitted activity. The report shall include all information relating to the work and information that documents compliance with these rules and the approved permitted activity. The report shall be prepared and submitted for any approved work relating to the construction, conversion, completion, or workover of the storage well or cavern. Product storage shall not commence until all required information has been submitted to the Office of Conservation and the operator has received written authorization from the Office of Conservation stating storage operations may begin. Preauthorization pursuant to this Subsection is not required for workovers.

B. Where applicable to the approved permitted activity, information in a completion report shall include:

1. all required state reporting forms containing original signatures;
2. revisions to any operation or construction plans since approval of the permit application;
3. as-built schematics of the layout of the surface portion of the facility;
4. as-built piping and instrumentation diagram(s);
5. copies of applicable records associated with drilling, completing, working over, or converting the well and cavern including a daily chronology of such activities;
6. revised certified location plat of the storage well if the actual location of the well differs from the location plat submitted with the well application;
7. as-built subsurface diagram of the storage well and cavern labeled with appropriate construction, completion, or conversion information, i.e., depth and diameter of all tubulars, depths of top of cap rock and salt, and top and bottom of the cavern;
8. as-built diagram of the wellhead labeled with appropriate construction, completion, or conversion information, i.e., valves, gauges, and flowlines;
9. results of any core sampling and testing;
10. results of well or cavern tests such as casing and casing seat tests, well/cavern mechanical integrity pressure and leak tests;
11. copies of any wireline logging such as open hole logs, cased hole logs, the most recent cavern sonar survey, and mechanical integrity test;
12. the status of corrective action on wells in the area-of-review;

13. the proposed operating data, if different from proposed in the application;

14. the proposed injection procedures, if different from proposed in the application;

15. any additional data documenting the work performed for the permitted activity, information requested by the Office of Conservation, or any additional reporting requirements imposed by the approved permit.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:4 et seq.

HISTORICAL NOTE: Promulgated by the Department of Natural Resources, Office of Conservation, LR ____.

§327. Well and Cavern Mechanical Integrity Pressure and Leak Tests

A. The operator of the storage well and cavern shall have the burden of meeting the requirements for well and cavern mechanical integrity. The Office of Conservation shall be notified in writing at least seven days before any scheduled mechanical integrity test. The test may be witnessed by Office of Conservation personnel, but must be witnessed by a qualified third party. Generally accepted industry methods and standards shall apply when conducting and evaluating the tests required in this rule.

B. Frequency of Tests

1. Without exception or variance to these rules and regulations, all hydrocarbon storage wells and caverns shall be tested for and satisfactorily demonstrate mechanical integrity before beginning storage activities.

2. For hydrocarbon storage caverns permitted on the effective date of these regulations, if a mechanical integrity test (MIT) has not been run on the storage cavern within three (3) years prior to the effective date of these regulations, the operator must run an MIT within two (2) years in order to remain in compliance.

3. All subsequent demonstrations of mechanical integrity shall occur at least once every five (5) years. Additionally, mechanical integrity testing shall be done for the following reasons regardless of test frequency:

- a. after physical alteration to any cemented casing or cemented liner;
- b. after performing any remedial work to reestablish well or cavern integrity;
- c. before returning the cavern to hydrocarbon storage service after a period of salt solution mining or washing to purposely increase storage cavern size or capacity;
- d. after completion of any additional mining or salt washing for caverns engaging in simultaneous storage and salt solution mining or washing that results in a significant increase in cavern volume or change in cavern configuration;
- e. before well closure;

f. whenever the commissioner determines a test is warranted.

C. Test Method

1. All mechanical integrity pressure and leak tests shall demonstrate no significant leak in the cavern, wellbore, casing seat, and wellhead and the absence of significant fluid movement. Test schedules and methods shall consider neighboring activities occurring at the salt dome to reduce any influences those neighboring activities may have on the cavern being tested.

2. Tests shall be conducted using the nitrogen-brine interface method with density interface and temperature logging. An alternative test method may be used if the alternative test can reliably demonstrate well/cavern mechanical integrity and with prior written approval from the Office of Conservation.

3. The cavern pressure shall be stabilized before beginning the test. Pressure stabilization shall be when the rate of cavern pressure change is no more than 10 PSIG during 24 hours.

4. The stabilized test pressure to apply at the surface shall be calculated with respect to the depth of the shallowest occurrence of either the cavern roof or deepest cemented casing seat and shall not exceed a pressure gradient of 0.90 PSI per foot of vertical depth. However, the well or cavern shall never be subjected to pressures that exceed the storage well's maximum allowable operating pressure or exceed the rated burst or collapse pressure of all well tubulars (cemented or hanging strings) even for short periods during testing.

5. A mechanical integrity pressure and leak test shall be run for at least 24 hours after cavern pressure stabilization and must be of sufficient time duration to ensure a sensitive test. All pressures shall be monitored and recorded continuously throughout the test. Continuous pressure recordings may be achieved through mechanical charts or recorded digitally. Mechanical charts shall not exceed a clock period of 24-hour duration. The chart shall be scaled such that the test pressure is 30 percent to 70 percent of full scale. All charts shall be selected such that its scaling is of sufficient sensitivity to record all fluctuations of pressure, temperature, or any other monitored parameter.

D. Submission of Pressure and Leak Test Results. Submit one complete copy of the mechanical integrity pressure and leak test results to the Office of Conservation within 60 days after test completion. The report shall include the following minimum information:

1. current well and cavern completion data;
2. description of the test procedure including pretest preparation and the test method used;
3. one paper copy and an electronic version of all wireline logs performed during testing;
4. tabulation of measurements for pressure, volume, temperature, etc.;

5. interpreted test results showing all calculations including error analysis and calculated leak rates; and

6. any information the owner or operator of the cavern determines is relevant to explain the test procedure or results.

E. Mechanical Integrity Test Failure

1. Without exception or variance to these rules and regulations, a storage well or cavern that fails a test for mechanical integrity shall be immediately taken out of service. The failure shall be reported to the Office of Conservation according to the Notification Requirements of §309.I. The owner or operator shall investigate the reason for the failure and shall take appropriate steps to return the storage well or cavern to a full state of mechanical integrity. A storage well or cavern is considered to have failed a test for mechanical integrity for the following reasons:

a. failure to maintain a change in test pressure of no more than 10 PSIG over a 24-hour period;

b. not maintaining interface levels according to standards applied in the cavern storage industry; or

c. fluids are determined to have escaped from the storage well or cavern during storage operations.

2. Written procedures to rehabilitate the storage well or cavern, extended cavern monitoring, or abandonment (closure and post-closure) of the storage well or cavern shall be submitted to the Office of Conservation within 60 days of mechanical integrity test failure.

3. If a storage well or cavern fails to demonstrate mechanical integrity and where mechanical integrity cannot be reestablished, the Office of Conservation may require the owner or operator to begin closure of the well or cavern according to an approved closure and post-closure plan.

a. The Office of Conservation may waive implementation of closure requirement if the owner or operator is engaged in a cavern remediation study and implements an interim cavern monitoring plan. The owner or operator must seek written approval from the Office of Conservation before implementing a salt cavern monitoring program. The basis for the Office of Conservation's approval shall be that any waiver granted shall not endanger the environment, or the health, safety and welfare of the public. The Office of Conservation may establish a time schedule for salt cavern rehabilitation, cessation of interim cavern monitoring, and eventual cavern closure and post-closure activities.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:4 et seq.

HISTORICAL NOTE: Promulgated by the Department of Natural Resources, Office of Conservation, LR ____.

§329. Cavern Configuration and Capacity Measurements

A. Sonar caliper surveys shall be performed on all storage caverns. With prior approval of the Office of Conservation, the operator may use another similar proven

technology designed to determine cavern configuration and measure cavern capacity as a substitute for a sonar survey.

B. Frequency of Surveys. For liquid hydrocarbon storage caverns, a sonar caliper survey, or other approved survey, shall be performed at least once every five (5) years. At least once every ten (10) years a sonar caliper survey, or other approved survey, shall be performed that logs the roof of the cavern. For natural gas storage caverns, a sonar caliper survey, or other approved survey, shall be run that logs the roof of the cavern at least once every fifteen (15) years. Additional surveys as specified by the Office of Conservation shall be performed for any of the following reasons regardless of frequency:

1. before commencing cavern closure operations;
2. whenever leakage into or out of the cavern is suspected;
3. after performing any remedial work to reestablish cavern integrity or raise the deepest casing seat;
4. before returning the cavern to storage service after a period of salt solution mining or washing to purposely increase storage cavern size or capacity;
5. after completion of any additional mining or salt washing for caverns engaging in simultaneous storage and salt solution mining or washing;
6. whenever the Office of Conservation determines a survey is warranted.

C. Submission of Survey Results. One complete paper copy and an electronic version of each survey shall be submitted to the Office of Conservation within 60 days of survey completion.

1. Survey readings shall be taken a minimum of every 10 feet of vertical depth. Sonar reports shall contain the following minimum information and presentations:

- a. tabulation of incremental and total cavern volume for every survey reading;
- b. tabulation of the cavern radii at various azimuths for every survey reading;
- c. tabulation of the maximum cavern radii at various azimuths;
- d. graphical plot of Cavern Depth versus Volume;
- e. graphical plot of the maximum cavern radii;
- f. vertical cross sections of the cavern at various azimuths drawn to an appropriate horizontal and vertical scale;
- g. vertical cross section overlays comparing results of current survey and previous surveys;
- h. isometric or 3-D shade profile of the cavern at various azimuths and rotations.

2. The information submitted resulting from use of an approved alternative survey method to determine cavern

configuration and measure cavern capacity shall be determined based on the method or type of survey.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:4 et seq.

HISTORICAL NOTE: Promulgated by the Department of Natural Resources, Office of Conservation, LR _____.

§331. Inactive Caverns

A. The following minimum requirements apply when a storage cavern is removed from storage service and is expected to remain out of service for one (1) year or more:

1. notify the Office of Conservation in writing within seven (7) days of the well or cavern becoming inactive (out-of-service). The notification shall include the date the cavern was removed from service, the reason for taking the cavern out of service, and the expected date when the cavern may be returned to service (if known);
2. disconnect all flowlines for injection to the well;
3. maintain continuous monitoring of cavern pressures, fluid withdrawal, and other parameters required by the permit;
4. maintain and demonstrate well and cavern mechanical integrity if storage operations were suspended for reasons other than a lack of mechanical integrity;
5. maintain compliance with financial responsibility requirements of these rules and regulations;
6. any additional requirements of the Office of Conservation to document the storage well and cavern shall not endanger the environment, or the health, safety and welfare of the public during the period of cavern inactivity.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:4 et seq.

HISTORICAL NOTE: Promulgated by the Department of Natural Resources, Office of Conservation, LR _____.

§333. Operating Reports

A. Operation reports shall be submitted quarterly to the Office of Conservation. Reports are due no later than 15 days following the end of the reporting period.

B. Reports shall be submitted electronically on the appropriate Form and reference the operator name, well name, well number, well state serial number, salt dome name, and contain the following minimum information acquired daily during the reporting quarter:

1. maximum wellhead pressures (PSIG) on the hanging string;
2. maximum wellhead pressure (PSIG) on the hanging string/casing annulus;
3. description of any event resulting in non-compliance with these rules that triggered an alarm or shutdown device and the response taken;
4. description of any event that exceeds operating parameters for annulus pressure or injection pressure as may be specified in the permit.

C. Upon emergency declaration by the commissioner pursuant to R.S. 30:6 the inventory of stored hydrocarbon in the cavern shall be reported. Report volumes in:

1. barrels (42-gallon barrels) for liquid or liquefied storage, or
2. thousand cubic feet (MCF) for gas storage.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:4 et seq.

HISTORICAL NOTE: Promulgated by the Department of Natural Resources, Office of Conservation, LR _____.

§335. Record Retention

A. The owner or operator shall retain copies of all records, data, and information concerning the design, permitting, construction, workovers, tests, and operation of the well and cavern. Records shall be retained throughout the operating life of the well and cavern and for five (5) years following conclusion of any post-closure care requirements. Records, data, and information shall include, but shall not be limited to the permit application, cementing (primary and remedial), wireline logs, drill records, casing records, casing pressure tests, well recompletion records, well/cavern mechanical integrity tests, cavern capacity and configuration surveys, surface construction, closure, post-closure activities, corrective action, sampling data, etc. Unless otherwise specified by the Commissioner, monitoring records obtained pursuant to §323.B shall be retained by the owner or operator for a minimum of 5 years from the date of collection. All documents shall be available for inspection by agents of the Office of Conservation.

B. When there is a change in the owner or operator of the well and cavern, copies of all records shall be transferred to the new owner or operator. The new owner or operator shall then have the responsibility of maintaining such records.

C. The Office of Conservation may require the owner or operator to deliver the records to the Office of Conservation at the conclusion of the retention period.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:4 et seq.

HISTORICAL NOTE: Promulgated by the Department of Natural Resources, Office of Conservation, LR _____.

§337. Closure and Post-Closure

A. Closure. The owner or operator shall close the storage well, cavern, and associated parts as approved by the Office of Conservation. Closure shall not begin without written authorization from the Office of Conservation.

1. Notice of Intent to Close

a. The operator shall review the closure plan before seeking authorization to begin closure activities to determine if the conditions for closure are still relevant to the actual conditions of the storage well, cavern, or facility. Revisions to the method of closure reflected in the plan shall be submitted to the Office of Conservation for approval no

later than the date on which the notice of closure is required to be submitted.

b. The operator shall notify the Office of Conservation in writing at least 30 days before the expected closure of the storage well, cavern, or surface facility. Notification shall be by submission of a request for a work permit. At the discretion of the Office of Conservation, a shorter notice period may be allowed.

2. Closure Plan. Plans to close the storage well, cavern, and related surface facility shall be submitted as part of the permit application. The closure plan shall meet the requirements of these rules and regulations, shall use accepted industry practices, and be acceptable to the Office of Conservation. The obligation to implement the closure plan survives the termination of a permit or the cessation of storage operations or related activities. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. The Office of Conservation may modify a closure plan where necessary.

3. Closure Plan Requirements. The owner or operator shall review the closure plan at least every five years to determine if the conditions for closure are still applicable to the actual conditions. Any revision to the plan shall be submitted to the Office of Conservation for approval. At a minimum, a closure plan shall address the following:

a. assurance of financial responsibility as required in §309.B.1. All instruments of financial responsibility shall be reviewed according to the following process:

i. a detailed cost estimate for closure of the well and related appurtenances (well, cavern, surface appurtenances, etc.) as prepared by a qualified professional. The closure plan and cost estimate shall include provisions for closure acceptable to the Office of Conservation;

ii. after reviewing the required closure cost estimate, the Office of Conservation may amend the required financial surety to reflect the estimated costs to the Office of Conservation to complete the approved closure of the facility;

iii. documentation from the operator showing that the required financial instrument has been renewed shall be received each year by the date specified in the permit. When an operator is delinquent in submitting documentation of financial instrument renewal, the Office of Conservation shall initiate procedures to take possession of funds guaranteed by the financial instrument and suspend or revoke the operating permit. Permit suspensions shall remain in effect until renewal documentation is received and accepted by the Office of Conservation;

b. a prediction of the pressure build-up in the cavern following closure;

c. an analysis of potential pathways for leakage from the cavern, cemented casing shoe, and wellbore. Consideration shall be given to site specific elements of geology, salt cavern geometry and depth, cavern pressure

build-up over time due to salt creep and other factors inherent to the salt stock and/or salt dome;

d. procedures for determining the mechanical integrity of the well and cavern before closure;

e. removal and proper disposal of any waste or other materials remaining at the facility;

f. closing, dismantling, and removing all equipment and structures located at the surface (including site restoration);

g. the type, number, and placement of each wellbore or cavern plug including the elevation of the top and bottom of each plug;

h. the type, grade, and quantity of material to be used in plugging;

i. a description of the amount, size, and location (by depth) of casing and any other well construction materials to be left in the well;

j. any proposed test or measurement to be made before or during closure.

4. Standards for Closure. The following are minimum standards for closing the storage well or cavern. The Office of Conservation may require additional standards prior to actual closure.

a. After permanently concluding storage operations with the cavern but before closing the well or cavern, the owner or operator shall:

i. observe and accurately record the shut-in salt cavern pressures and cavern fluid volume for no less than five (5) years or a time period specified by the Office of Conservation to provide information regarding the cavern's natural closure characteristics and any resulting pressure buildup;

ii. using actual pre-closure monitoring data, show and provide predictions that closing the well or cavern as described in the closure plan will not result in any pressure buildup within the cavern that could adversely affect the integrity of the well, cavern, or any seal of the system.

b. Unless the well is being plugged and abandoned due to a failed mechanical integrity test and the condition of the casing and cavern are known, before closure, the owner or operator shall confirm the mechanical integrity of both the well and cavern by well/cavern test methods or analysis of the data collected during the period between the end of storage operations and well/cavern closure.

c. Before closure, the owner or operator shall remove and properly manage any hydrocarbons remaining in the well or cavern.

d. Upon permanent closure, the owner or operator shall plug the well with cement in a way that will not allow the movement of fluids into or between underground sources of drinking water or outside the salt stock.

5. Plugging and Abandonment

a. The well and cavern shall be in a state of static equilibrium before plugging and abandoning.

b. A continuous column of cement shall fill the deepest cemented casing from its shoe to the surface via a series of balanced cement plugs:

i. each cement plug shall be tagged to verify the top of cement and pressure tested to at least 300 PSI for 30 minutes before setting the next cement plug;

ii. an attempt shall be made to place a cement plug in the open borehole below the deepest cemented casing;

iii. a balanced cement plug shall be placed across the shoe of the deepest cemented casing; and

iv. subsequent balanced cement plugs shall be spotted immediately on top of the previously placed balanced cement plug.

c. After placing the top plug, the operator shall:

i. on land locations cut and pull the casings a minimum of 5 feet below ground level. A 1/2 inch thick steel plate shall be welded across the top of all casings. The well's plug and abandonment date and well serial number shall be inscribed on top of the steel plate.

ii. on water locations cut and pulled the casings a minimum of 15 feet below the mud line.

d. The operator may alter the plan of abandonment if new or unforeseen conditions arise during the well work, but only after approval by the Office of Conservation.

6. Closure Report. The owner or operator shall submit a closure report to the Office of Conservation within 60 days after closing the storage well, cavern, facility, or part thereof. The report shall be certified as accurate by the owner or operator and by the person charged with overseeing the closure operation (if other than the owner or operator). The report shall contain the following information:

a. detailed procedures of the closure operation. Where actual closure differed from the plan previously approved, the report shall include a written statement specifying the differences between the previous plan and the actual closure;

b. one original of the appropriate Office of Conservation plug and abandon report form (Form UIC-P&A or successor); and

c. any information pertinent to the closure activity including test or monitoring data.

B. Post-Closure. Plans for post-closure care of the storage well, cavern, and related facility shall be submitted as part of the permit application. The post-closure plan shall meet the requirements of these rules and regulations and be acceptable to the Office of Conservation. The obligation to implement the post-closure plan survives the termination of a permit or the cessation of storage operations or related

activities. The requirement to maintain and implement an approved post-closure plan is directly enforceable regardless of whether the requirement is a condition of the permit. The Office of Conservation may modify a post-closure plan where necessary.

HISTORICAL NOTE: Promulgated by the Department of Natural Resources, Office of Conservation, LR _____.

1. The owner or operator shall review the post-closure plan at least every five (5) years to determine if the conditions for post-closure are still applicable to actual conditions. Any revision to the plan shall be submitted to the Office of Conservation for approval. At a minimum, a post-closure plan shall address the following:

a. assurance of financial responsibility as required in §309.B.1. All instruments of financial responsibility shall be reviewed according to the following process:

i. a detailed cost estimate for adequate post-closure care of the well and cavern shall be prepared by a qualified, independent third party. The post-closure care plan and cost estimate shall include provisions acceptable to the Office of Conservation;

ii. after reviewing the closure cost estimate, the Office of Conservation may amend the amount to reflect the costs to the Office of Conservation to complete the approved closure of the facility;

iii. documentation from the operator showing that the required financial instrument has been renewed must be received each year by the date specified in the permit. When an operator is delinquent in submitting documentation of financial instrument renewal, the Office of Conservation shall initiate procedures to take possession of the funds guaranteed by the financial instrument and suspend or revoke the operating permit. Any permit suspension shall remain in effect until renewal documentation is received and accepted by the Office of Conservation;

b. any plans for monitoring, corrective action, site remediation, site restoration, etc., as may be necessary.

2. Where necessary and as an ongoing part of post-closure care, the owner or operator shall continue the following activities:

a. conduct subsidence monitoring for a period of no less than ten (10) years after closure of the facility;

b. complete any corrective action or site remediation resulting from the operation of a storage well;

c. conduct any groundwater monitoring if required by the permit until pressure in the cavern displays a trend of behavior that can be shown to pose no threat to cavern integrity, underground sources of drinking water, or other natural resources of the state;

d. complete any site restoration.

3. The owner or operator shall retain all records as required in §335 for five (5) years following conclusion of post-closure requirements.

AUTHORITY NOTE: Promulgated in accordance with R.S. 30:4 et seq.