15A NCAC 05H .0XX1 WELL CONSTRUCTION REQUIREMENTS

These Rules establish general and specific requirements for the drilling, completion or abandonment and development of any well drilled for the production of oil or gas or any operations concerned with the production of oil and gas. The provisions of this Rule shall apply to all new oil or gas wells for which an initial drilling permit is issued on or after the effective date of this Rule and in accordance with § 113-391.

15A NCAC 05H .0XX2 DEFINITIONS

The terms used in this Section shall have the definitions assigned by § 113-389. In addition, the words defined in this Section shall have the following meanings:

(1) "Blowout" means an uncontrolled flow of reservoir fluids into the wellbore, or to the surface.

(2) "Blowout Preventer (BOP)" means a large valve at the top of an oil or gas well that may be closed if the drilling crew loses control of formation fluids.

(i) "Annular-type blow out preventer" means a large valve used to control wellbore fluids. In this type of valve, the sealing element resembles a large rubber doughnut that is mechanically squeezed inward to seal on either pipe (drill collar, drill pipe, casing, or tubing) or the open hole.

(ii) "Shear ram type blow out preventer" means a closing element fitted with hardened tool steel blades designed to cut the drill pipe when the BOP is closed.

(3) "Borehole" means the wellbore itself, including the open hole or uncased portion of the well.

(4) "Casing" shall mean the following:

(i) "Conductor casing" means the casing string ordinarily used to support unconsolidated surface deposits and to prevent the subsurface infiltration of surface water or fluids into the borehole;

(ii) "Intermediate casing" means a casing string that is generally set in place after the surface casing and before the production casing;

(iii) "Production casing" means a casing string that is set across the reservoir interval and within which the primary completion components are installed; and

(iv) "Surface casing" means a large diameter, relatively low pressure casing string set in shallow yet competent formations.

(5) "Formation Integrity Test" means a pressure test applied to the formation directly below the base of the casing string to determine the maximum pressure that may be applied without risk of formation breakdown.

(6) "Cellar" means a dug-out area, possibly lined with wood, cement or very large diameter (6 ft [1.8 m]) thin-wall pipe, located below the rig.

(7) "Cement basket" means a slip-on style device made of high strength, flexible steel staves, mounted on a steel slip-on ring with heavy duty canvas liners riveted to staves.

(8) "Cement Bond Log" means a geophysical tool that uses sound attenuation to determine bonding of cement to the casing. .

(9) "Centralizer" means a mechanical device used to position the casing concentrically in the borehole.

(10) "Float collar" means a component that is installed near the bottom of the casing string on which wiper plugs seat during the primary cementing operation.

(11) "Float joint" means a full-sized length of casing placed at the bottom of the production casing string.

(12) "Float shoe" means a rounded profile component attached to the down hole end of the production casing string to prevent reverse flow of cement slurry into the casing string.

(13) "Lost circulation material (LCM)" means solid material intentionally introduced into a mud system to reduce and eventually prevent the flow of drilling fluid into a weak, fractured, or vugular formation.

(14) "Master gate" means a valve used to control the well when the drill pipe is out of the hole.

(15) "Packer" means a device that can be run into a wellbore with a smaller initial outside diameter that then expands externally to seal the borehole.

(16) "Production tubing" means a casing string used to produce reservoir fluids.

(17) "Rotating diverter system" means a system that provides an effective annular seal around the drill pipe during drilling and tripping operations.

(18) "Wellhead" means the upper terminal of the well including adapters, ports, valves, seals, and other attachments.

(19) "Wiper plug" means a rubber plug used to separate the cement slurry from other fluids.

15A NCAC 05H .0XX3 SETBACK DISTANCES

15A NCAC 05H .0XX4 RESTRICTED DRILLING UNITS

15A NCAC 05H .0XX5 DRILLING FLUIDS AND ADDITIVES

(a) Only additives that do not cause contamination to exceed standards within 15A NCAC 02L, shall be used while constructing oil or gas wells.

(b) Only fresh groundwater, as defined in 15A NCAC 02L .0102 and freshwater, as defined in 15A NCAC 02B .0101, shall be used for mixing all drilling fluids.

15A NCAC 05H .0XX6 CASING AND EQUIPMENT REQUIREMENTS

(a) The Commission incorporates by reference, including subsequent amendments and editions, "API Specification 5CT, Specification for Casing and Tubing" published by the American Petroleum Institute (API). This document may be purchased at a cost of two hundred thirty seven dollars ($237.00) at

http://www.techstreet.com/api/products/1802047 or by mail at Techstreet, 3916 Ranchero Drive, Ann Arbor, MI 48108. The Commission incorporates by reference, including subsequent amendments and editions, "API Specification 5B, Specification for Threading, Gauging, and Thread Inspection of Casing, Tubing, and Line Pipe Threads" published by the API. This document may be purchased at a cost of one hundred eighteen dollars ($118.00) at http://www.techstreet.com/api/products/1555125 or by mail at Techstreet, 3916 Ranchero Drive, Ann Arbor, MI 48108. All casing or tubing installed in an oil or gas well shall be steel, steel alloy or other material that has been approved by the API; casing and tubing material must be manufactured and tested to comply with API Specification 5CT "Specification for Casing and Tubing" and API Specification 5B "Specification for Threading, Gauging, and Thread Inspection of Casing, Tubing, and Line Pipe Threads."

(1) Casing shall be designed to have a minimum internal yield pressure rating that is 20% greater than the maximum anticipated pressure to which the casing may be subjected during drilling, production or stimulation operations;

(2) Where subsurface reservoir pressure is unknown and cannot be reasonably anticipated, the well operator shall assume a pressure gradient of 0.433 pounds per square inch per foot in a fully evacuated hole, under shut-in conditions;

(3) The Commission incorporates by reference, including subsequent amendments and editions, "API Specification 5CT, Specification for Casing and Tubing" published by the API. This document may be purchased at a cost of two hundred thirty seven dollars ($237.00) at http://www.techstreet.com/api/products/1802047 or by mail at Techstreet, 3916 Ranchero Drive, Ann Arbor, MI 48108. All used casing shall pass a hydrostatic test, drift test, and wall thickness test pursuant with API Specification 5CT "Specification for Casing and Tubing", consistent with well design parameters, and be appropriate to the site specific geological conditions. The casing shall be marked to verify the test results and the well operator shall provide a copy of the test results to the Department before the casing is installed in the well; and

(4) The Commission incorporates by reference, including subsequent amendments and editions, "API Recommended Practice 5A3, Recommended Practice on Thread Compounds for Casing, Tubing, Line Pipe, and Drill Stem Elements" published by the API. This document may be purchased at a cost of one hundred forty five dollars ($145.00) at http://www.techstreet.com/api/products/1657246 or by mail at Techstreet, 3916 Ranchero Drive, Ann Arbor, MI 48108. The Commission incorporates by reference, including subsequent amendments and editions, "API Recommended Practice 5C5, Recommended Practice on Procedures for Testing Casing and Tubing Connections" published by the API. This document may be purchased at a cost of one hundred sixty three dollars ($163.00) at http://www.techstreet.com/api/products/1087582 or by mail at Techstreet, 3916 Ranchero Drive, Ann Arbor, MI 48108. All casing and tubing connections shall be torqued to the manufacturer's specifications and shall comply with API Recommended Practice 5A3 "Recommended Practice on Thread Compounds for Casing, Tubing, Line Pipe, and Drill Stem Elements" and API

Recommended Practice 5C5 "Recommended Practice on Procedures for Testing Casing and Tubing Connections."

(b) To verify casing integrity, the well operator shall pressure test each cemented casing string greater than 200 feet in length in accordance with the test method outlined in paragraph (b)(1) of this rule.

(1) Prior to drilling the cement plug, the well operator shall test the casing string at a minimum pump pressure, in pounds per square inch, that is calculated by multiplying the length of the casing string, in feet, by 0.2; maximum test pressure shall not exceed 1,500 pounds per square inch. This pressure test shall be conducted for 30 minutes; if the pressure has dropped by more than 10% , then casing has failed to meet the integrity requirements and the well operator shall not resume further operations until the condition has been corrected;

(i) If after a subsequent pressure test of 30 minutes, the pressure drop is equal to or less than 10% this is evidence that the condition has been corrected.

(c) To verify proper cement displacement, the well operator shall pressure test the wiper plug and float collar assembly in accordance with the test method outlined in paragraph (c)(1) of this rule.

(1) Once the wiper plug is seated on the float collar, the well operator shall increase displacement pressure by at least 500 pounds per square inch.

(d) Casing shall be centralized to allow cement to fill the entire annular space back to the surface in order to isolate critical zones including; aquifers, flow zones, voids, lost circulation zones, coal layers, and hydrocarbon production zones.

(1) The Commission incorporates by reference, including subsequent amendments and editions, "API Specification 10D, Specification for Bow-Spring Casing Centralizers" published by the API. This document may be purchased at a cost of eighty nine dollars ($89.00) at http://www.techstreet.com/api/products/957236 or by mail at Techstreet, 3916 Ranchero Drive, Ann Arbor, MI 48108. All bow-spring centralizers shall comply with API Specification 10D "Specification for Bow-Spring Casing Centralizers;" and

(2) The Commission incorporates by reference, including subsequent amendments and editions, "API Technical Report 10TR4, Technical Report on Considerations Regarding Selection of Centralizers for Primary Cementing Operations" published by the API. This document may be purchased at a cost of sixty one dollars ($61.00) at http://www.techstreet.com/api/products/1568067 or by mail at Techstreet, 3916 Ranchero Drive, Ann Arbor, MI 48108. All rigid centralizers shall comply with API Technical Report 10TR4 "Considerations Regarding Selection of Centralizers for Primary Cementing Operations."

(e) All other casing hardware (float shoe, float collar, cement baskets, centralizers, packers, and wiper plugs) shall comply with API standards, design objectives for the well, and site specific geological conditions.

15A NCAC 05H .0XX7 CEMENT STANDARDS

Comment [RC1]: Stakeholder recommendation No. 10. API Recommended Practice 10D-2 for Centralizer Placement and Stop Collar Testing: Provides calculations for determining centralizer spacing, based on centralizer performance and desired standoff, in deviated and dogleg holes in wells for the petroleum and natural gas industries. It also provides a procedure for testing stop collars and reporting test results.
Document is available for purchase $77.00 and is not available to view for free online.

(a) The Commission incorporates by reference, including subsequent amendments and editions, "API Specification 10A, Specification for Cements and Materials for Well Cementing" published by the API. This document may be purchased at a cost of one hundred forty five dollars ($145.00) at http://www.techstreet.com/api/products/1757666 or by mail at Techstreet, 3916 Ranchero Drive, Ann Arbor, MI 48108. The Commission incorporates by reference, including subsequent amendments and editions, "ASTM C150/C150M – 12, Standard Specification for Portland Cement" published by the American Society for Testing and Materials (ASTM). This document may be purchased at a cost of forty one dollars ($41.00) at http://www.astm.org/Standards/C150.htm or by mail at 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959. All cement placed into the borehole shall be Portland cement that is manufactured pursuant to API Specification 10A "Specification for Cements and Materials for Well Cementing" or the ASTM Standard Specification "C150/C150M Standard Specification for Portland Cement."

(b) The well operator shall ensure that only freshwater is used to mix cement slurries. The well operator, or an authorized representative of the well operator, shall be on site for all cement mixing and placement operations to monitor the cement mixing equipment and to ensure that cement slurry design parameters are followed. Cement shall be pumped at a rate and in a flow regime that inhibits channeling of the cement in the annulus.

(c) Cement mixtures for which published performance data are not available shall be tested by the well operator, or the company providing the cementing services, prior to the commencement of cementing operations. The well operator shall submit the proposed cement design, testing parameters, and test results to the Department for approval prior to use.

(d) The Commission incorporates by reference, including subsequent amendments and editions, "API Recommended Practice 10B-2, Recommended Practice for Testing Well Cements" published by the API. This document may be purchased at a cost of two hundred twenty dollars ($220.00) at http://www.techstreet.com/api/products/1855370 or by mail at Techstreet, 3916 Ranchero Drive, Ann Arbor, MI 48108. The density of the cement slurry shall be based upon a laboratory free fluid separation test demonstrating an average fluid loss no more than three milliliters per 250 milliliters of cement tested in accordance with API Recommended Practice 10B-2 "Recommended Practice for Testing Well Cements." The cement slurry should be mixed and pumped at a rate that ensures consistent slurry density.

(e) The Department may require, by permit condition, a specific cement mixture to be used in any well if evidence of local conditions indicate a specific cement is necessary.

(f) Cemented casing strings shall remain static until all cement has reached a compressive strength of at least 500 pounds per square inch before drilling or initiating any testing.

(g) A Cement Bond Log (CBL) or equivalent diagnostic tool shall be conducted following the installation of intermediate and production casing, to the point of refusal, to ensure an effective cement bond and to locate the casing collars and centralizers for future reference.

15A NCAC 05H .0XX8 WELL INSTALLATION

(a) The Department may establish alternative well construction standards that are well-specific by permit conditions to ensure protection of public health, safety, and the environment.

(b) The well operator shall notify the Department at least 48 hours prior to setting and cementing any casing string. The notification will allow the Department the opportunity to participate in pre-job safety and procedural meetings, independently test cement mix water, evaluate casing condition, and observe and document the execution of the cementing operation.

(c) If a mouse hole or rat hole are used, it shall be constructed of liquid tight steel pipe with a welded basal plate or bull plug.

(d) A well operator shall drill a borehole using air, freshwater, freshwater based drilling fluid, or a combination of the above until all freshwater zones have been isolated.

(e) Borehole diameters:

(1) Well operators shall drill a borehole providing a minimum of a one inch annulus, as measured from the casing, unless otherwise approved by the Department; and

(2) The borehole diameter shall be consistent with manufacturer's recommendations for all float equipment, centralizers, packers, cement baskets, and all other devices set into the borehole.

(f) Borehole conditioning:

(1) Prior to cementing, the borehole shall be conditioned to ensure an adequate cement bond between the casing and the formation by:

(i) Circulating drilling fluid in the borehole a minimum of two bottoms up;

(ii) Adjusting drilling fluid rheology to optimize conditions for displacement of the drilling fluid; and

(iii) Ensuring that the borehole is static and that all fluid and gas flows are killed.

(g) All casing strings shall be rotated and reciprocated during the emplacement of cement to effectuate the circulation of cement surrounding the casing string to fill the annulus and prevent annular flow.

(h) Well operator shall take appropriate measures to prevent surface water infiltration into the borehole; for example, crowning the location around the borehole to divert fluids to a flow ditch.

(i) **Conductor casing** design and setting depth shall be based on engineering and geologic factors relevant to the immediate vicinity, including the presence or absence of hydrocarbons, and potential drilling hazards.

(1) Conductor casing shall be cemented from bottom to top, ensuring the one inch annular space is filled for sufficient zonal isolation and protection by the return of cement to the surface. If cement does not return to the surface, the well operator shall consult with the Department to determine the appropriate method to emplace cement.

(2) Conductor casing shall be installed to:

(i) Stabilize unconsolidated sediments;

(ii) Isolate and seal off shallow freshwater zones;

(iii) Isolate any shallow drilling hazards, hydrocarbon bearing zones, or coal formations;

(iv) Provide a stable platform for well construction; and

(v) Provide solid structural anchorage for a diverter system in air drilling operations.

(3) A mechanical or cement seal shall be installed at the surface to block downward migration of surface pollutants.

(j) **Surface casing** shall be set into competent bedrock to a depth of at least 100 feet below the base of the deepest freshwater zone, but above any hydrocarbon strata containing fluids or gases that could negatively impact the quality of the cement or proper functioning of the well, unless otherwise approved by the Department.

(1) Surface casing shall be cemented from bottom to top, ensuring the one inch annular space is filled for sufficient zonal isolation and protection by the return of cement to the surface. If cement does not return to the surface, the well operator shall consult with the Department to determine the appropriate method to emplace cement.

(2) Surface casing shall be installed to:

(i) Isolate and seal off shallow freshwater zones;

(ii) Provide a stable platform for well construction; and

(iii) Contain pressures and fluids from subsequent drilling, completion and production operations.

(3) Surface casing shall be set deep enough and into a competent formation to ensure the BOP can contain any formation pressure that may be encountered when drilling the next section of the borehole below the base of the surface casing string.

(4) Correlation logs and samples shall be collected to identify freshwater, zones of formational instability, and competent bedrock.

(5) Surface casing shall be cemented before drilling through hydrocarbon bearing flow zones, unless otherwise approved by the Department;

(6) If a shallow gas hazard is encountered, drilling shall stop, and casing shall be set and cemented before drilling continues;

(7) The Commission incorporates by reference, including subsequent amendments and editions, "API Standard 65-Part 2, Isolating Potential Flow Zones During Well Construction" published by the API. This document may be viewed online at no charge at http://publications.api.org/default.aspx or may be purchased at a cost of one hundred thirty dollars ($130.00) at http://www.techstreet.com/api/products/1757706 or by mail at Techstreet, 3916 Ranchero Drive, Ann Arbor, MI 48108. A formation integrity test (FIT) shall be completed after drilling out below the base of the surface casing, into at least 20 feet, but not more than 50 feet of new formation. The FIT shall be completed in accordance with API Standard 65-Part 2 "Isolating Potential Flow Zones During Well Construction."

(i) If the FIT fails, the well operator shall consult with the Department to determine remedial or corrective actions necessary before operations continue.

(k) **Intermediate casing** shall be set into competent bedrock to a depth of at least 200 feet below the deepest freshwater zone or to a depth consistent with the well design parameters in consideration of the planned kick off point for horizontal drilling and the length of the horizontal run or to mitigate unanticipated geologic hazards

encountered in the borehole such as heaving shale, abnormal pressure, or flow zones that require sealing off, unless otherwise approved by the Department.

(1) Intermediate casing installed to isolate a zone other than freshwater shall be cemented from bottom to 200 feet above the base of the previous casing string, unless otherwise approved by the Department, ensuring the one inch annular space is filled for sufficient zonal isolation and protection of the cemented interval.

(2) If intermediate casing is installed to isolate a freshwater zone, the casing string shall be cemented from bottom to top, ensuring the one inch annular space is filled for sufficient zonal isolation and protection by the return of cement to the surface. If cement does not return to the surface, the well operator shall consult with the Department to determine the appropriate method to emplace cement.

(3) Intermediate casing shall be installed to:

(i) Isolate freshwater that has not been isolated by the surface casing;

(ii) Isolate flow zones, lost circulation zones, or other geologic hazards, unless otherwise required by the approved permit.

(4) Correlation logs and samples shall be collected to identify freshwater, zones of formational instability, and competent bedrock;

(5) The Commission incorporates by reference, including subsequent amendments and editions, "API Standard 65-Part 2, Isolating Potential Flow Zones During Well Construction" published by the API. This document may be viewed online at no charge at http://publications.api.org/default.aspx or may be purchased at a cost of one hundred thirty dollars ($130.00) at http://www.techstreet.com/api/products/1757706 or by mail at Techstreet, 3916 Ranchero Drive, Ann Arbor, MI 48108. If the intermediate borehole penetrates one or more flow zones, the cement used to control annular gas migration from the flow zones shall be designed to be consistent with API Standard 65-Part 2 "Isolating Potential Flow Zones During Well Construction;"

(6) A CBL shall be completed after cement has reached a compressive strength of 500 pounds per square inch. Upon completion of the CBL and establishment of a sufficient cement bond, drilling may continue;

(i) If cement evaluation indicates insufficient isolation of freshwater zones, flow zones, lost circulation zones or other geologic hazards, well operator shall submit a plan of remediation to the Department for approval and implement such plan by performing remedial operations prior to continuing drilling operations. If the deficiencies cannot be remedied, the well shall be plugged and abandoned.

(7) The Commission incorporates by reference, including subsequent amendments and editions, "API Standard 65-Part 2, Isolating Potential Flow Zones During Well Construction" published by the API. This document may be viewed online at no charge at http://publications.api.org/default.aspx or may be purchased at a cost of one hundred thirty dollars ($130.00) at

http://www.techstreet.com/api/products/1757706 or by mail at Techstreet, 3916 Ranchero Drive, Ann Arbor, MI 48108. A FIT shall be completed after drilling out below the base of the intermediate casing, into at least 20 feet, but not more than 50 feet of new formation. The FIT shall be completed in accordance with API Standard 65-Part 2 "Isolating Potential Flow Zones During Well Construction."

(i) If the FIT fails, the well operator shall consult with the Department to determine remedial or corrective actions necessary before operations continue.

(8) If operations, such as fluid returns, lift pressure, and displacement, indicate inadequate coverage of any flow zones, lost circulation zones, or any strata containing freshwater, the well operator shall;

(i) Run a radial cement evaluation tool, a temperature survey, or another test approved by the Department to identify the top of cement; and

(ii) Submit a plan of remediation to the Department for approval and implementation.

(l) **Production casing** shall be installed and cemented from bottom to 600 feet above the uppermost perforation, a potential corrosive zone, an oil or gas bearing zone, or a potential water supply, ensuring the one inch annular space is filled for sufficient zonal isolation and protection of the cemented interval.

(1) A production liner may be hung from the base of the intermediate casing and used as production casing as long as the surface casing is used as the freshwater isolation casing and the intermediate casing is set for a reason other than isolation of freshwater. The production liner shall be cemented with a minimum of 200 feet of cement above the base of the previous casing string. The liner top must be pressure tested to at least 500 pounds per square inch, for a period of 30 minutes, above the maximum anticipated pressure in the borehole during well completion and production operations;

(i) If after 30 minutes the pressure has dropped by more than 10%, the well operator shall not resume operations until the condition has been corrected and verified by a subsequent passing 30 minute pressure test.

(2) Wireline logging of the borehole shall be completed prior to installation of the production casing to measure and evaluate the rock sections;

(3) A CBL shall be completed after the cement has reached a compressive strength of 500 pounds per square inch. Upon completion of the CBL and establishment of a sufficient cement bond, well construction activity may continue;

(i) If cement evaluation indicates insufficient isolation of freshwater zones, flow zones, lost circulation zones or other geologic hazards, well operator shall submit a plan of remediation to the Department for approval and implement such plan by performing remedial operations prior to continuing drilling operations. If the deficiencies cannot be remedied, the well shall be plugged and abandoned.

(4) For cemented well completions, the base of the production casing shall be cemented into or below the productive horizon(s). For open hole well completions, the base of the production casing shall be cemented into or above the productive horizon(s).

(m) Packer and open hole completions. Packer or other non-cemented completions may be used in place of cemented completions. If intermediate casing is not installed in the borehole, a multiple-stage cementing tool shall be run above the top external packer and cemented to fill the annular space outside the casing to the surface. The Department shall require approval of all alternative completion proposals.

15A NCAC 05H .0XX9 WELL STIMULATION AND ENHANCED RECOVERY

15A NCAC 05H .0XX10 CHEMICAL TREATMENT

15A NCAC 05H .0XX11 WELLHEAD REQUIREMENTS

15A NCAC 05H .0XX12 WELL CONTROL AND BLOWOUT PREVENTION

(a) All wells during drilling, shall be equipped with a well control system to include a master gate or equivalent, blowout preventer (BOP), and a properly sized flow line valve.

(1) The entire well control system shall be in good working condition at all times and shall have been tested to working pressures at least 50% above the hydrostatic pressures anticipated in the well;

(2) The Commission incorporates by reference, including subsequent amendments and editions, "API Standard 53, Blowout Prevention Equipment Systems for Drilling Wells" published by the API. This document may be viewed online at no charge at http://publications.api.org/default.aspx or may be purchased at a cost of one hundred fifty five dollars ($155.00) at http://www.techstreet.com/api/products/1846173 or by mail at Techstreet, 3916 Ranchero Drive, Ann Arbor, MI 48108. BOP equipment shall be in compliance with API Standard 53 "Blowout Prevention Equipment Systems for Drilling Wells;"

(3) The BOP shall be installed and tested prior to drilling the surface casing cement plug;

(4) During drilling operations, the shear ram type BOP shall be tested by closing at least once each trip; the annular type BOP shall be tested by closing on the drill pipe at least once each week; and

(5) The well operator shall notify the Department at least 48 hours prior to testing the BOP. Test results must be posted at the well site for review.

(b) Adequate supplies of drilling fluid of sufficient weight shall be located at the well site to maintain well control.

(c) If drilling with a mud system, the drilling fluid system must be designed to maintain control of the well to minimize the potential of a hydrostatic pressure surge when the drilling assembly is run into or pulled out of the borehole. The fluid drilling system shall remain functional at all times.

(d) If drilling with air, a rotating diverter system shall be installed to divert any borehole fluids and gases away from the rig floor to a circulation pit at least eighty (80) feet from the borehole. The rotating diverter system shall be secured and remain functional at all times.

(e) The well operator shall have an individual certified from an accredited well control training program for well control and BOP management on site during the installation and completion of an oil or gas well.

15A NCAC 05H .0XX13 WELL MAINTENANCE

15A NCAC 05H .0XX14 COMPLETION REPORT AND MAPS

15A NCAC 05H .0XX15 LAND OWNER REQUEST FOR SURVEY

15A NCAC 05H .0XX16 FILING OF DRILLING LOGS

15A NCAC 05H .0XX17 PLUGGING AND ABANDONMENT

15A NCAC 05H .0XX18 LIMITATION OF PRODUCTION AND ALLOCATION

15A NCAC 05H .0XX19 SPECIFIC NOTIFICATIONS

(a) Well operators shall report defective casing or cementing within 24 hours of discovery and shall immediately correct the defect, unless the Department determines that the defect does not warrant immediate repairs to protect human health, safety and the environment and can safely be completed within a time period approved by the Department.

(b) Well operators shall immediately report any loss of well control to the Department.

15A NCAC 05H .0XX20 RECORD KEEPING AND REPORTING

15A NCAC 05H .0XX21 VARIANCE AUTHORITY

(a) The Department may grant a variance from any construction standard under the Rules of section **.0XX8**. The well operator of a well for which a variance is sought, shall submit the variance in writing to the Department for review. If the Department finds facts to support the following conclusions a variance may be granted:

(1) The use of the well will not endanger human health and welfare or any water resource;

(2) Construction in accordance with the standards was not technically feasible in such a manner as to afford a reasonable oil or gas well at a reasonable cost.

(b) The Department may require the variance applicant to submit such information as the Department deems necessary to make a decision to grant or deny the variance. The Department may impose such conditions on a variance or the use of a well for which a variance is granted as deemed necessary to protect human health and

welfare and all water resources. The findings of fact supporting any variance under this Rule shall be in writing and made part of the variance.

(c) The Department shall respond in writing to a request for a variance within 30 days from the receipt of the variance request.

(d) A variance applicant who is dissatisfied with the decision of the Department may commence a contested case by filing a petition pursuant to G.S. 150B-23 within 60 days after receipt of the decision.