

1 **15A NCAC 05H .XX17 PERMANENT WELL CLOSURE REQUIREMENTS**

2 (a) The permittee shall plug and abandon all lost or dry holes, any wells incapable of production, and any wells
3 identified by the Department as a health, safety, or environmental concern. In addition to the requirements detailed
4 within paragraph (a)(1) through (a)(4) and paragraphs (b) through (j) all of which apply to plugging and
5 abandonment activities, the permittee shall ensure that plugging and abandonment activities meet the standards
6 delineated in API Recommended Practice 51-R "Environmental Protection for Onshore Oil and Gas Production
7 Operations and Leases," which is incorporated by reference, including subsequent amendments and editions. This
8 document, published by API, may be viewed online at no charge at <http://publications.api.org/default.aspx> or may
9 be purchased at a cost of fifty two dollars (\$52.00) at <http://www.techstreet.com/api/products/1633286> or by mail at
10 Techstreet, 3916 Ranchero Drive, Ann Arbor, MI 48108.

11 (1) The permittee shall complete and submit Form 001, Notice of Intent to Plug, to the Department for
12 approval prior to commencement of all plugging and abandonment operations, replugging, or to
13 plug-back a formation. The permittee shall include with its filed Form 001:

- 14 (i) A fee in accordance with §113-395(c);
- 15 (ii) Wellbore diagrams depicting the current well configuration; and
- 16 (iii) Diagrams depicting the proposed well configuration with cement plugs.

17 (2) The permittee shall provide notice of plugging and abandonment operations to any surface
18 owner(s) of the property on which the well has been constructed 30 days prior to commencement
19 of operations pursuant to §113-420(b);

20 (3) The permittee shall notify the Department 72 hours prior to commencement of plugging
21 operations for all existing wells and eight hours for lost and dry holes; and

22 (4) The permittee shall plug and abandon lost and dry holes prior to releasing the drilling rig from the
23 well pad.

24 (b) The permittee shall not place in any wellbore any non-drillable material that would prevent re-entry of a well.

25 (c) The permittee shall not place in any wellbore any trash or refuse during plugging and abandonment operations.

26 (d) The permittee shall not remove conductor casing or surface casing from any wellbore during plugging and
27 abandonment operations.

28 (e) If intermediate casing has been installed in accordance with Section .XXX8 (well installation) paragraph (k)(1),
29 then during the plugging and abandonment operations the permittee shall either remove the non-cemented section of
30 the intermediate casing from the wellbore or perforate the intermediate casing at a depth required by the Department
31 and place cement into the annulus. Cement placed into the annulus shall be returned to the surface.

32 (f) The permittee shall either remove the non-cemented section of the production casing from the wellbore or
33 perforate the production casing at a depth(s) required by the Department and place cement into the annulus.

34 (g) All pits or tanks utilized during well plugging and abandonment operations shall conform to 15A NCAC 05H
35 .XXX4 (construction requirements for waste management infrastructure).

Comment [RC1]: Plug and abandon (P&A) – To place cement plugs into a dry hole and abandon it (OSHA). To prepare a well to be closed permanently by setting cement plugs across any open hydrocarbon bearing formations, across all casing shoes, across freshwater aquifers, and near the surface (Schlumberger).

Comment [RC2]: Any well that does not produce oil or gas in commercial quantities. A dry hole may flow water, gas, or oil but not in amounts large enough to justify production.

Comment [RC3]: [JRL1]: Is there somewhere reserved to the Department the ability to do this?

Comment [RC4]: [JRL2]: I added this as a possible way to address the issue I raise below – somehow make this statement once so we do not have to repeat it ad nauseum

Comment [RC5]: To place cement in or near the bottom of a well to exclude bottom water, to sidetrack, or to produce from a formation higher in the well.

Comment [RC6]: [JLR3]: We should specify what this notice should look like – E.g., Said notice shall include the operator's name, the well number, the mailing address for the affected property, the proposed date on which the plugging operations will commence, etc.

Comment [RC7]: [JLR4]: Does this mean that should a well come up dry the operator needs to determine that at the time of drilling and thus retain the drill rig to conduct the plugging?
Ryan Channell: yes, the intent is to plug and abandon lost or dry holes while the drilling rig is on site.

1 (h) The permittee shall place cement or mechanical bridge plugs within the wellbore to isolate hydrocarbon bearing
2 zones, prevent migration of fluids in the wellbore, protect freshwater aquifers, and prevent surface water from
3 entering the wellbore.

Comment [RC8]: Down hole tool, composed primarily of slips, a plug mandrel, and a rubber sealing element that is run and set incasing to isolate a zone

- 4 (1) All cement used to plug a well shall conform to Section .XXX7 (cement standards – well
5 construction rule);
- 6 (2) Cement plugs shall be placed using a circulation method through tubing, casing, or drill pipe;
- 7 (3) All intervals between the cement and mechanical bridge plugs shall be filled with a bentonite
8 based mud that has a minimum weight of nine and one half pounds per gallon;
- 9 (4) Vertical wellbores shall have cement plugs placed in the following intervals:
- 10 (i) From either the total depth, or a minimum of 50 feet below the base of the lowest
11 hydrocarbon bearing zone penetrated, to a minimum of 100 feet above the top of the
12 lowest hydrocarbon bearing zone;
- 13 (ii) From a minimum of 50 feet below to a minimum of 100 feet above each succeeding
14 hydrocarbon bearing or freshwater zone, not isolated by intermediate or surface casing;
- 15 (iii) From a minimum of 100 feet below to a minimum of 100 feet above the base of
16 intermediate and surface casing strings;
- 17 (iv) From a minimum of 200 feet below ground elevation to three feet below ground
18 elevation;
- 19 (v) All casing remaining in the wellbore shall be cut off three feet below ground elevation;
20 and
- 21 (vi) The top of the wellbore shall be sealed with a steel plate welded in place and the API
22 number for the well shall be identifiable on the steel plate.
- 23 (5) Horizontal wellbores shall have cement plugs placed in accordance with paragraph (h)(4)(i) to
24 (h)(4)(vi) with the exception that the bottom plug, as outlined in paragraph (h)(4)(i), shall be
25 placed at the depth of the well curve kick-off point and extend above that point a minimum of 200
26 feet; and
- 27 (6) If mechanical bridge plugs are used, the plug shall be set immediately above each zone identified
28 in paragraph (h)(4)(i) to (h)(4)(vi) and covered with a minimum of 50 feet of cement.

Comment [RC9]: KOP: the depth in a vertical hole at which a deviated or slant hole is started; used in directional drilling.

29 (h) The permittee shall fill all openings on or around the rig or drilling operations that have been created by the
30 permittee with bentonite or cement to a depth of three feet below ground surface, and then filled to the surface with
31 soil.

32 (i) The permittee shall disconnect all gathering lines from the wellhead.

- 33 (1) Gathering line outlets shall be permanently sealed;
- 34 (2) Gathering lines shall be cut off a minimum of three feet below ground surface; and
- 35 (3) The location of all abandoned gathering lines shall be identified on a facility map and submitted as
36 required in Form 002, Well Plugging Report.

Comment [TS010]: Do they not need any approvals from the NC Utilities Commission for this?
[JLR5]: NO NCUC does not regulate gathering lines

Comment [RC11]: Please think about these three bullets. I could delete everything except the first sentence.

(j) The permittee shall complete and submit Form 002, Well Plugging Report, to the Department within 90 days of cessation of activities indicating the well has been plugged and abandoned. The permittee shall attach to Form 002 a wellbore diagram depicting the cement plugs that were set, the casing remaining in the wellbore, wireline logs, cementing tickets, any other job summaries from plugging contractors, and any site or facility maps as required in paragraph (i)(5) of this section.

*History Note: Authority
Eff.*

15A NCAC 05H .XX18 TEMPORARY WELL CLOSURE REQUIREMENTS

(a) Wells that are completed according to Section 0XX8 (well installation), are equipped with a wellhead according to Section XX11 (wellhead standards), and are capable of production may be temporarily closed and assigned a well status of shut-in. The permittee shall ensure that a shut-in well be isolated from the atmosphere by closing the master valve.

- (1) The permittee shall complete and submit Form 003, Temporary Abandoned Well Status, to the Department for approval;
- (2) Shut-in status is valid for a period of one year, with an annual renewal required if the permittee desires to maintain shut-in status beyond one year. A maximum of three renewal periods may be authorized before the well shall be placed into production or temporarily abandoned;
- (3) The Department shall approve a well shut-in if:
 - (i) The permittee provides a plan to the Department outlining the future utilization of the well;
 - (ii) The wellhead and well pad meet the requirements of Section .XX11 (Wellhead Requirements) and Section .XX12 (Well Maintenance and Site Security);
 - (iii) The permittee commits to monitor the integrity of the well on an annual basis and report the inspection results to the Department by submitting Form 004, Notice of Continued Temporary Abandonment Status; and
 - (iv) The permittee maintains bonding requirements until the well is permanently plugged and abandoned.
- (4) If the permittee fails to maintain all of the criteria outlined in paragraphs (3)(i) through (3)(iv), the Department may require the permittee, at the permittee's discretion to either put the well into production or plug and abandon the well.

(b) Wells that are completed according to Section XXX8 (well installation) but are not equipped with a wellhead according to Section XX11 (wellhead standards) and are capable of production may be temporarily abandoned.

- (1) Wells shall be temporarily abandoned according to section .XX17 paragraph (h)(4)(i) to paragraph (h)(4)(vi) for vertical wellbores and paragraph (h)(5) for horizontal wellbores; Non-drillable

Comment [RC12]: Shut-in – (timeframe) To close the valves on a well so that it stops producing (OSHA).

Comment [RC13]: Master valve is the lowermost valve on the vertical bore of the christmas tree, used to completely shut-in the well – API

Comment [RC14]: [JLR6]: Existing form or are we needing to create them? Shouldn't we indicate what should be on the form?
Ryan Channell: This is not an existing form. I'm just identify the needed forms. Other states reference various forms throughout the rules but the permittee doesn't know the detail of required information being requested by the regulatory agency until reviewing the form.

Comment [RC15]: Colorado 6 months (temporary abandonment) for a completed well that shall be isolated from the atmosphere with a valve or packer.

Comment [RC16]: Ohio requires inspection of shut-in wells every six months.

Comment [RC17]: [JLR7]: I would think this would be up to the permittee b/c we do not want to dictate placing an uneconomic well into production

Comment [RC18]: [JLR8]: Under what circumstances would this happen?
Ryan Channell: An exploratory well may be developed at a future date.

1 | ~~material that would prevent reentry of a well or refuse shall not be placed in any wellbore during~~
2 | ~~temporary abandonment operations.~~

Comment [RC19]: [JLR9]: Is this last sentence already stated in the referenced regulations?

3 (2) The permittee shall complete and submit Form 003, Temporary Abandoned Well Status, to the
4 Department for approval;

5 (3) Temporary abandonment is valid for a period of five years, with a maximum of one renewal
6 period authorized before the well shall be placed into production or permanently plugged and
7 abandoned; and

Comment [RC20]: Pennsylvania 5 years (inactive status) with annual monitoring. Arkansas 3 years (temporary abandonment). Ohio 4 years with increasing fees each year.

8 (4) The Department shall approve the temporary abandonment of a well if:

9 (i) The permittee provides a plan to the Department outlining the future utilization of the
10 well;

11 (ii) The permittee provides data showing that significant reserves remain in place and a
12 commitment from the permittee that it plans to produce the well;

13 (iii) The well pad meets the requirements of Section .XX12 (Well Maintenance and Site
14 Security);

15 (iv) The permittee commits to monitoring the integrity of the well on an annual basis and
16 report the inspection results to the Department by submitting Form 004, Notice of
17 Continued Temporary Abandonment Status;

18 (v) The permittee maintains bonding requirements until the well is permanently plugged
19 abandoned.

20 (f) The permittee shall complete and submit Form 005, Request to Commence Production, to the Department for
21 approval prior to producing from a well that has been shut-in or temporarily abandoned.

Comment [RC21]: [JLR10]: Again, forms – do we need to somewhere state what is on them. And for this one do we need to add requirement that the Department shall approve the request if certain criteria are met? Or is this “Request to Commence Production” captured elsewhere in our regulations?

22 *History Note:* Authority

23 *Eff.*