Operator Guidance Summary and Structure

C-103F NOI to Plug and Abandon

The Oil Conservation Division ("OCD") Operator guidance is designed to outline the base line of which documents, file types, and parameters are needed for the submission type listed in the header of this document. This guidance is written to be a high-level guide and is not intended to be all inclusive as there are times when variables occur outside the scope covered herein and may require additional information or steps. The structure of these documents utilizes a bulleted system and is formatted as follows:

Introduction summary of the form and applicable rules.

- Prerequisite submissions
    - ☐ Submission A
    - ☐ Submission B
- Main application/sundry name (links will be included if applicable)
    - List of required attachments
        - ☐ File A
        - ☐ File B
        - ☐ File C
    - List of additional attachments (information helpful but not required in most cases)
        - ☐ File D
        - ☐ File E
- Information needed on each file listed above (required and additional files)
    - File A
        - ☐ [Information here] I.E. API #
            - ❖ ☐ [Parameter here] I.E. Must not be duplicate API #
    - Continued as needed.
        - ☐ [Information here] I.E. API #
            - ❖ ☐ [Parameter here] I.E. Must not be duplicate API #

********** End of Structure **********

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A C-103F NOI to Plug and Abandon a well consists of multiple attachments. These attachments are reviewed together by OCD for State, Fee, and Federal wells in order to ensure that the plugging of the wellbore will be sufficient to plug the well in a manner that permanently confines all oil, gas and water in the separate strata in which they are originally found.

Per 19.15.25.9 NMAC

A. The operator shall file notice of intention to plug with the division on form C-103 prior to commencing plugging operations. The notice shall provide all the information 19.15.7.14 NMAC requires including operator and well identification and proposed procedures for plugging the well.
B. In addition, the operator shall provide a well bore diagram showing the proposed plugging procedure.
C. The operator shall notify the division 24 hours prior to commencing plugging operations. In the case of a newly drilled dry hole, the operator may obtain verbal approval from the appropriate OCD representative of the plugging method and time operations are to begin. The operator shall file written notice in accordance with 19.15.25.11 NMAC with the division within 10 days after the OCD representative has given verbal approval.

Per 19.15.25.10 NMAC

A. Before an operator abandons a well, the operator shall plug the well in a manner that permanently confines all oil, gas and water in the separate strata in which they are originally found. The operator may accomplish this by using mud-laden fluid, cement and plugs singly or in combination as approved by the division on the notice of intention to plug.
B. The operator shall mark the exact location of plugged and abandoned wells with a steel marker not less than four inches in diameter set in cement and extending at least four feet above mean ground level. The operator's name, lease name and well number and location, including unit letter, section, township and range, shall be welded, stamped or otherwise permanently engraved into the marker's metal. A person shall not build permanent structures preventing access to the wellhead over a plugged and abandoned well without the division's written approval. A person shall not remove a plugged and abandonment marker without the division's written approval.
C. The operator may use below-ground plugged and abandonment markers only with the division's written approval when an above-ground marker would interfere with agricultural endeavors. The below-ground marker shall have a steel plate welded onto the abandoned well's surface or conductor pipe and shall be at least three feet below the ground surface and of sufficient size so that all the information 19.15.16.8 NMAC requires can be stenciled into the steel or welded onto the steel plate's surface. The division may require a re-survey of the well location.
D. As soon as practical, but no later than one year after the completion of plugging operations, the operator shall:
    1. level the location;
    2. remove deadmen and other junk; and
    3. take other measures necessary or required by the division to restore the location to a safe and clean condition.
E. The operator shall close all pits and below-grade tanks pursuant to 19.15.17 NMAC.
F. Upon completion of plugging and clean up restoration operations as required, the operator shall contact the appropriate OCD representative to arrange for an inspection of the well and location.

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Checklist:

1. Site Inspection
2. Well Data
3. WBD (Wellbore Diagram)
    a. Current
    b. Proposed
4. NOI (Notice of Intent)
5. Directional Survey if highly deviated or directional well.

- **Build the Current Wellbore Diagram:**

Note two examples can be seen in Example A and Example A1.

- List the Company Name, well name and number, API number, and ULSTR information.
- List the following information for each casing/liner present in the wellbore:
    - Hole Size
    - Casing Size OD
    - Casing Size ID
    - Grade
    - Weight
    - Depth
    - Annular capacity in cubic feet per foot
        - Must be listed as separate volumes if you have casing/casing annulus and open hole/casing annulus
    - TOC (Top of Cement) for each string/stage and source of determination
        - Verify method used to determine TOC is available in OCD files
    - DV (Diverting Valve) Tools
- List the depths of **all** perforated intervals.
    - Including previous well work and repair
- Depth of well:
    - For Vertical: List the TD (total Depth) and PBTD (Plug back total depth) of the well.
    - For Deviated/Horizontal: List TVD (True Vertical Depth), MD (measured depth), TD, and PBTD for the well.
- List any other information needed in evaluating a Plugging procedure such as:
    - Tubing Details
    - Single/Dual completions
    - Any fish previously left downhole
    - Etc.
- Formation Top Information:
    - For all penetrated formations by the well you must list the formation top and formation name.
        - Note: For highly deviated or directional wells list both MD and TVD
- Site inspection to get pressure details (Not required for submission but recommended)
    - Pressures of tubing, casing, and bradenhead as of the date of inspection.

- Any communication between strings is required to be reported in accordance with 19.15.16.11 NMAC

- **Build the Proposed Wellbore diagram.**

  Note two examples can be seen in Example B and Example B1.
  - List the Company Name, well name and number, API number, and ULSTR information.
  - Indicate elevation datum to be used throughout proposed P&A
  - List the following information for each casing/liner present in the wellbore:
    - Hole Size
    - Casing Size OD
    - Casing Size ID
    - Grade
    - Weight
    - Depth
    - Annular capacity in cubic feet per foot
      - Must be listed as separate volumes if you have casing/casing annuls and open hole/casing annuls
    - TOC for each string/stage and source of determination
    - DV tool
  - List the depths of all perforated intervals.
  - Depth of well:
    - For Vertical: List the TD and PBTD of the well.
    - For Deviated/Horizontal: List TVD, MD, TD, and PBTD for the well.
  - Formation Top Information:
    - For all penetrated formations by the well you must list the formation top and formation name.
      - Note: For highly deviated or directional wells list both MD and TVD
  - Details for each proposed plug:
    - Information for each proposed plug:
      - Specify Cement Class/Type
        - Specify ppg
        - Specify yield
        - Specify mix water volume
        - Calculated sacks needed
      - List and show if the plug is going to be either:
        - Inside balance plug
        - Perf Sqz such as Inside/outside
        - Isolation device being used
          - List type i.e. CIBP (Cast Iron Bridge Plug), CR (Cement Retainer)
          - List depth set (Measured and True Vertical Depth)
      - Top and Bottom of plug height to meet required plug height requirements
        - Notate any planned excess volume (per the NMCOAs for PA).

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- Fluid spacer details

- **Build the Sundry and description of work:**
  - Utilizing all the previous information, and the OCD well files, build and list the PA procedure that is expected to occur.
    - The Sundry header should show:
      - Operator of Record OGRID and Name
      - Well name and API number
      - SHL (surface hole location) (should match most current C-102as drilled) which includes the unit, section, township, and range
      - BHL (bottom hole location) if highly deviated or directional.
      - Ground Elevation
    - The procedure should include:
      - Running a CBL and submitting to the correct staff and OCD permitting per OCD PA COAs.
      - Any planned pressure testing
      - Any removal of tools as needed
      - Any proposed drill/mill out
      - Description of each plug as seen in the "Proposed Wellbore Diagram".

      Note: The procedure may be submitted as a separate page as long as attached with the sundry as the cover page.

During plugging operations, it is recommended that the operator takes note of the following information to help submit the [C-103] Sub. Plugging (C-103P) report:

- Name and agency of regulatory representative on site.
- Record P&A data as plugged, (Daily Reports)
  - Daily pressures, T, C, BH (Tubing, Casing, Braden Head)
  - Details on CR/CIBP such as type and depths
  - Casing PT (Pressure Test), did it pass?
  - CBL (Cement Bond Log) to surface results for TOC (Top of Cement)
  - CBL sent to appropriate regulatory staff?
- Plugs pumped details
  - Type of plug pumped
    - Inside balanced
    - Perforate and Squeeze inside/outside
  - Est plug top, if not tagged
  - Tag top for tagged plugs
  - Spacer pumped between plug details

Example A "Current Wellbore Diagram"

Current Wellbore Diagram
ABC Production, LLC
Upper Crust # 1
API # 30-000-01111
NW/NW, Unit D, Sec 1, T20N, R10W
Some County, NM

GL 5500'
KB 5513'
Spud Date 1/1/1963

SURF CSG	
Hole size	11"
Csg Size:	8.625"
Wt:	24#
Grade:	N/A
ID:	8.097"
Depth	297'
cap cf/ft:	0.3575
TOC:	Surf

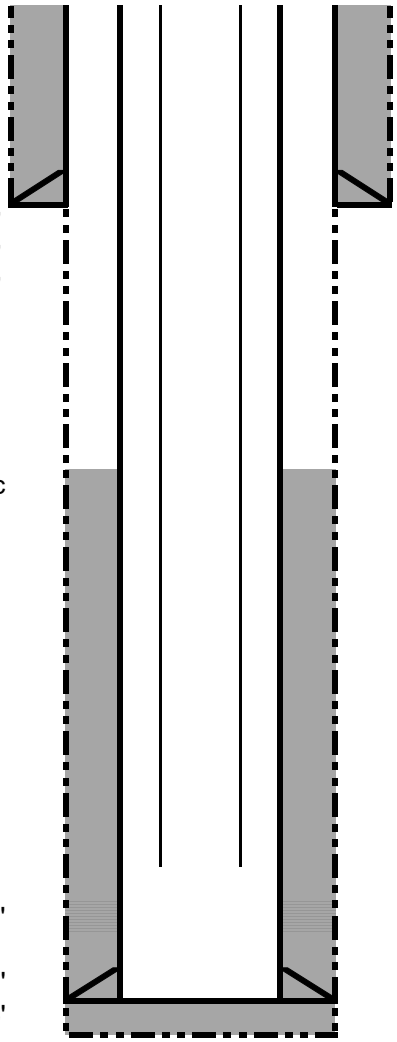
PROD CSG	
Hole size	6.75"
Csg Size:	4.5"
Wt:	9.5#
Grade:	J-55
ID:	4.090"
Depth	2175'
cap cf/ft:	0.0912
Csg/Csg Ann, cf/ft:	0.2318
Csg/OH Ann, cf/ft:	0.1381
TOC:	1325' (calc)

FORMATION TOPS	
San Jose	Surf
Nacimiento	430'
Ojo Alamo	1512'
Kirtland	1680'
Fruitland	1924'
Pictured Cliffs	2063'

TOC 1325', Calc

Perfs 2067-2113'

PBTD 2132'
TD 2175'



PROD TBG DETAIL:
20' TJ, SN, 66 jts. 2-3/8
55 EOT 2050'

Example A1 "Current Wellbore Diagram"

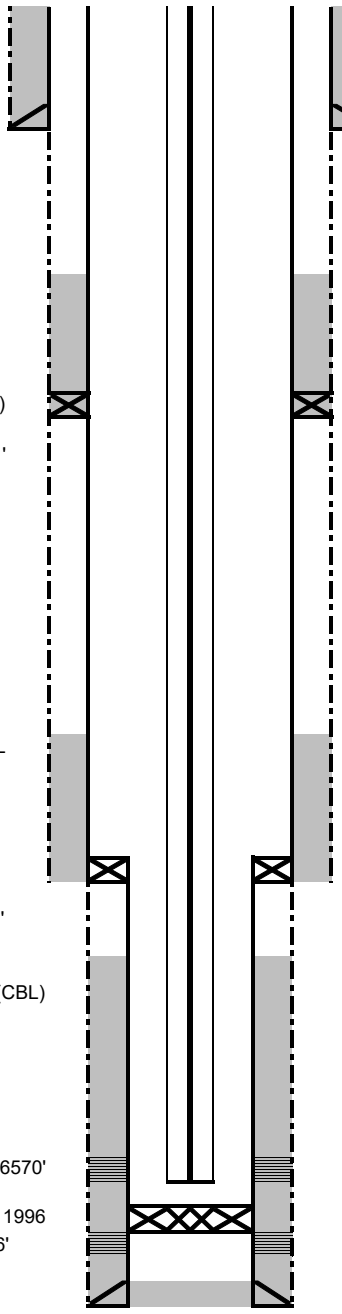
Current Wellbore Diagram

ABC Production, LLC

Old Salt # 44

API # 30-044-20735
NW/NW, Unit D, Sec 33 T23N, R2W
Some County, NM

GL 7029'
KB 7042'
Spud Date 9/30/1984



Tubing Detail:
2-3/8": NC, MA, PS, SN, 15 jts. TAC, 192 jts. 2-3/8" tbg.

Rod Detail:
1-1/4"x2"x10'x14' RHAC pump, 260x3/4" rods, 2' sub, and 22' polished rod.

SURF CSG

Hole size	12.25"
Csg Size:	9.625"
Wt:	32#
Grade:	J-55
ID:	9.001
Depth	260'
Csg cap ft^3:	0.4418
TOC:	Surf

FORMATION TOPS

San Jose	Surface
Nacimiento	650'
Ojo Alamo	1956'
Kirtland	2101'
Fruitland	2230'
Pictured Cliffs	2395'
Chacra	2808'
Mesa Verde	3868'
Mancos	4722'
Gallup	5341'
Dakota	6598'

INT CSG

Hole size	8.75"
Csg Size:	7"
Wt:	23#
Grade:	J-55
ID:	6.366"
Depth	4901'
Csg cap ft^3:	0.2210
Csg/Csg Ann ft^3:	0.1668
Csg/OH cap ft^3:	0.1503
DV Tool:	2391'
TOC: Stg 1: (CBL)	4150'
TOC: Stg 2: (TS)	1000'

LINER

Hole size	6.25"
Csg Size:	4.5"
Wt:	11.6#
Grade:	K-55
ID:	4.000
Depth	4720-6845'
Csg cap ft^3:	0.0872
Csg/OH cap ft^3:	0.1026
TOC (CBL)	5150'

Example B "Proposed Wellbore Diagram"

Proposed P&A Wellbore Diagram
ABC Production, LLC
Upper Crust # 1
API # 30-000-01111
NW/NW, Unit D, Sec 1, T20N, R10W
Some County, NM

GL 5500'
KB 5513'
Spud Date 1/1/1963

SURF CSG	
Hole size	11"
Csg Size:	8.625"
Wt:	24#
Grade:	N/A
ID:	8.097"
Depth	297'
cap cf/ft:	0.3575
TOC:	Surf

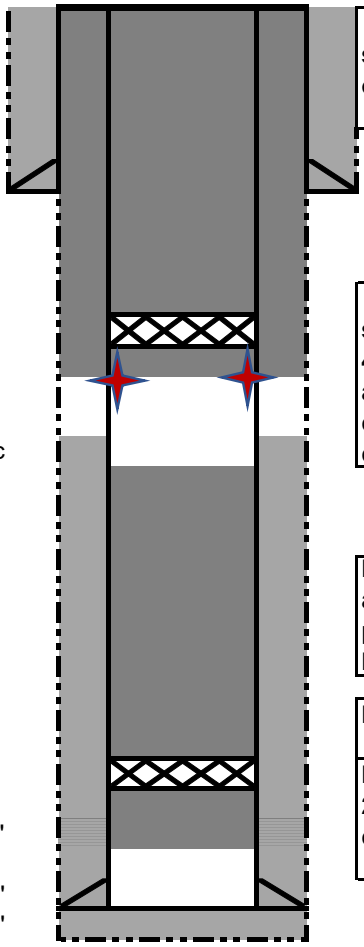
PROD CSG	
Hole size	6.75"
Csg Size:	4.5"
Wt:	9.5#
Grade:	J-55
ID:	4.090"
Depth	2175'
cap cf/ft:	0.0912
Csg/Csg Ann	0.2318
Csg/OH Ann, cf/ft:	0.1381
TOC:	1325' (Calc.)

FORMATION TOPS	
San Jose	Surf
Nacimiento	430'
Ojo Alamo	1512'
Kirtland	1680'
Fruitland	1924'
Pictured Cliffs	2063'

TOC 1325', Calc

Perfs 2067-2113'

PBTD 2132'
TD 2175'



Cut off WH, check TOC in 4.5" casing and surface casing. Install P&A marker, top off annulus and cellar.

Plug 3: Nacimiento formation top to surface: Perforate at +/- 480'. Set CR at +/- 430'. Establish circulation down casing and out BH. Mix and pump cement down casing and out of BH. Est 120 cu ft cement.

Plug 2: Pictured Cliffs, Fruitland, Kirtland and Ojo Alamo formation tops: Mix and place a balanced plug from 2020' to 1462'. Est 45 cu ft cement.

Run CBL from 2020' to surface.

Plug 1: Pictured Cliffs perfs: Set CR at +/- 2020'. PT casing. Mix and pump 12 cu ft cement through CR into perforations.

All cement to be used: Class G mixed at 15.8 ppg, yield 1.15 cuft/sx, mix water 5.0 gal/sx
Spacer fluid= fresh water

Example B1 "Proposed Wellbore Diagram"

Proposed P&A

ABC Production, LLC

Old Salt # 44

API # 30-044-20735
NW/NW, Unit D, Sec 33 T23N, R2W
Some County, NM

GL	**7029'**
KB	**7042'**
Spud Date	**9/30/1984**

SURF CSG

Hole size	12.25"
Csg Size:	9.625"
Wt:	32#
Grade:	J-55
ID:	9.001
Depth	260'
Csg cap ft^3:	0.4418
TOC:	Surf

INT CSG

Hole size	8.75"
Csg Size:	7"
Wt:	23#
Grade:	J-55
ID:	6.366"
Depth	4901'
Csg cap ft^3:	0.2210
Csg/Csg Ann ft^3:	0.1668
Csg/OH cap ft^3:	0.1503
DV Tool:	2391'
TOC: Stg 1: (CBL)	4150'
TOC: Stg 2: (TS)	1000'

LINER

Hole size	6.25"
Csg Size:	4.5"
Wt:	11.6#
Grade:	K-55
ID:	4.000
Depth	4720-6845'
Csg cap ft^3:	0.0872
Csg/OH cap ft^3:	0.1026
TOC (CBL)	5150'

FORMATION TOPS

San Jose	Surface
Nacimiento	650'
Ojo Alamo	1956'
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Pictured Cliffs	2395'
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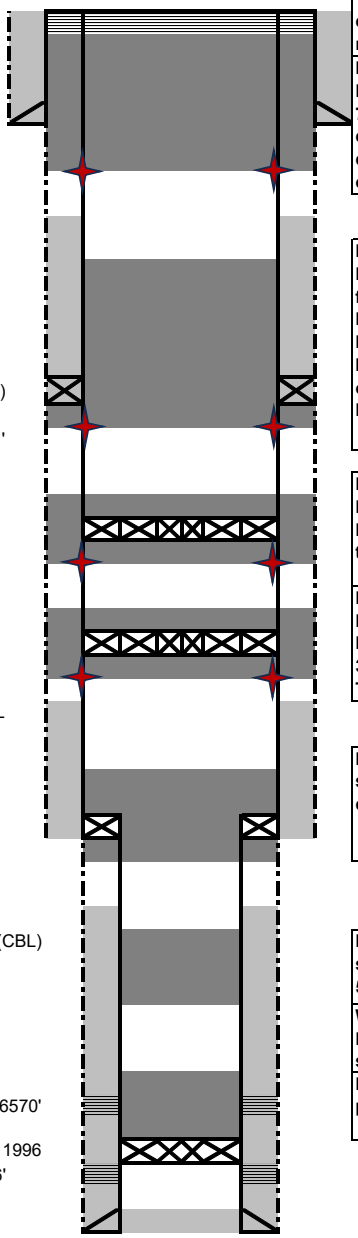

Plug 8: Top off: Cut off WH, check TOC. Install P&A marker. Top off cellar and casings with cement as needed.

Plug 7: Surface casing shoe and Nacimiento formation top: Perforate at 700'. Establish circulation down casing and out BH. Mix and pump cement as needed down casing and out BH. WOC.

Plug 6: DV tool and Pictured Cliffs, Fruitland, Kirtland and Ojo Alamo formation tops: Perforate at 2445'. Establish injection. Set CR at 2390'. Mix and pump cement into open hole below CR, place cement inside / outside to cover formation tops to at least to 1906'. WOC and tag.

Plug 5: Chacra formation top: Perforate at 2858', set CR at 2808'. Place cement iside/outside from 2858' to at least 2758' or above. WOC. Tag.

Plug 4: Mesa Verde formation top: Perforate at 3918', set CR at 3868'. Place cement inside/outside from 3918' to at least 3818' or above. WOC. Tag.

Plug 3: Mancos formation top, 7" csg shoe and liner top: Spot a balanced cement plug from 4951' to 4670'

Plug 2: Gallup formation top: Mix and spot a balanced plug from 5391' to 5291'. Tag if needed.

WOC, tag Plug 1. Load and roll hole. PT casing. Run CBL from TOC to surface.

Plug 1: Dakota perfs: Spot balanced plug from 6690' to 6548'. WOC. Tag.

All cement is to be Class G mixed at 15.8 ppg, yeld 1.15 cu ft/sx and 5.0 gal/sx mix water.
Spacer fluid will be fresh water