



# Mechanical Integrity Assessment Training

Marcellus Shale Coalition

September 11, 2013

PADEP: Bureau of Oil and Gas Planning and  
Program Management

Division of Well Plugging and Subsurface Activities

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# Presentation Outline

## **Introduction to MIA Program**

- Overview and History

## **Module 1: Review of Form A Instructions**

- Definitions
- Guidance/Best Practices
- Naming Conventions for Annular Spaces

## **Module 2: Form A**


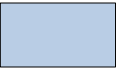


- Form A Overview
- Form A Use with Examples
- Form A 2-Year Example and Data Transfers
- Development of MIA Program “Pocket Reference”

## **Module 3: Form B**

- Form B Overview
- Form B Use with Examples
- Form B Data Transfers

# Module 2: Form A

## Form A Overview

- ❑ Only compatible with Microsoft Excel versions 2007 or later
- ❑ Color Coding of Cells:
  - YELLOW-SHADED boxes  MUST BE COMPLETED
  - BLUE-SHADED boxes  are OPTIONAL INSPECTION COMPONENTS or used to ACTIVATE OTHER FUNCTIONS
  - WHITE-SHADED boxes  are AUTO-POPULATED
  - HATCHED boxes  are NOT RELEVANT FOR THE WELL BEING EVALUATED
- ❑ Allows up to 250 wells to be monitored for four consecutive quarters

# Module 2: Form A

## Form A Overview

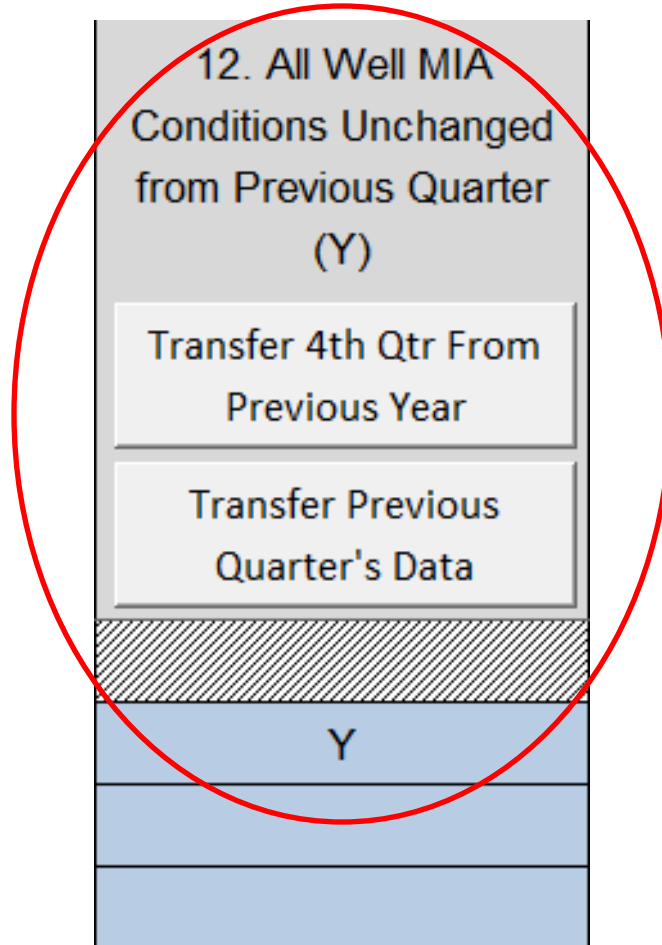
- Well construction details only need to be entered ONCE; information is retained when creating templates for subsequent years →

1. Well Operator/Owner	4. Well Type	5. Water Level Accessible (Yes/No)	6. Freshwater Casing Only (Yes/No)	7. Annular Production (Yes/No)	8. Annular Production Inside Surface or Coal Casing String (Yes/No)	9. Number of Casing Strings Excluding Conductor Pipe, Tubing, and Liners	10. Surface or Coal Casing Set Depth (ft)
	<input type="button" value="Oil"/> <input type="button" value="Gas"/> <input type="button" value="Combo"/>	<input type="button" value="Yes"/>	<input type="button" value="Yes"/>	<input type="button" value="Yes"/>	<input type="button" value="Yes"/>	<input type="button" value="Customize Data Tables"/>	
	<input type="button" value="Oil (Freshwater Casing Only)"/>	<input type="button" value="No"/>	<input type="button" value="No"/>	<input type="button" value="No"/>	<input type="button" value="No"/>	<input type="button" value="RESET"/>	
	<input type="button" value="Combo (Freshwater Casing Only)"/>						

# Module 2: Form A

## Form A Overview

- If conditions at the well remain unchanged between quarters, or are mostly static, data can be automatically transferred to the most recent quarter and manual edits made as needed →



# Module 2: Form A

## Form A Overview

- ❑ If well is set up incorrectly, the RESET SECTION feature allows the user to set up the well a second time →

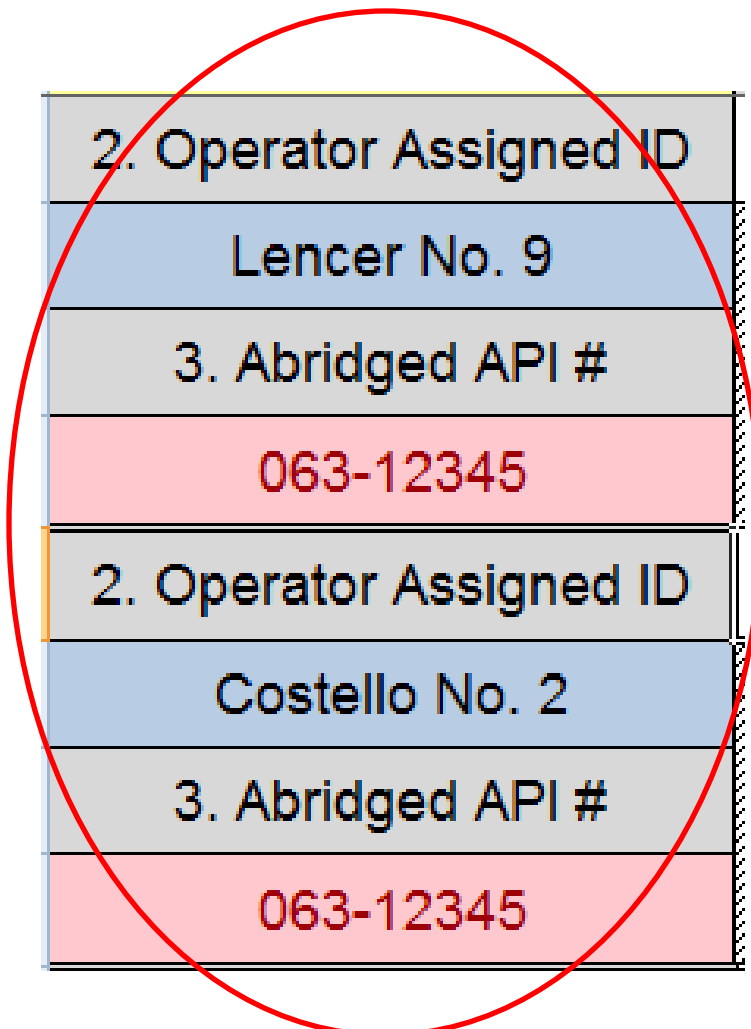
The screenshot shows a portion of Form A. The top section is titled "9. Number of Casing Strings Excluding Conductor Pipe, Tubing, and Liners" and contains a "Customize Data Tables" button and a "RESET" button. To the right, section "10. Surface or Coal Casing Sealing Depth (ft)" is partially visible. Below the "RESET" button, a red box contains the text "22. RESET SECTION (Y)". Below this red box is a blue box containing the letter "Y". A red circle highlights the "RESET" button and the "22. RESET SECTION (Y)" box. A yellow warning box is overlaid on the bottom part of the form, containing the text: "WARNING ENTERING 'Y' AND SELECTING THE BUTTON LABELED 'RESET' WILL DELETE ALL MECHANICAL INTEGRITY DATA ENTERED FOR THIS WELL."

**WARNING:  
THIS FEATURE  
WILL DELETE  
ALL  
INFORMATION  
ENTERED FOR  
THE WELL!**

# Module 2: Form A

## Form A Overview

- ❑ Duplicate API numbers are automatically flagged in Form A and should be corrected →



2. Operator Assigned ID
Lencer No. 9
3. Abridged API #
063-12345
2. Operator Assigned ID
Costello No. 2
3. Abridged API #
063-12345

# Module 2: Form A

## Form A Overview

- When all quarterly inspection data have been entered for the year and any duplicate API numbers are corrected, a data summary sheet should be created for submittal to DEP →

23. Have you finished entering all quarterly inspection data?

24. Have you checked for and corrected any duplicate API #s?

25. Create Data Summary Sheet for Annual Report



# Module 2: Form A

## Form A Overview

- To create a template for receiving the following year's inspection data, answer question 26. "Y" and select button 27. →

26. Have you created a data summary sheet for  
the annual report to DEP?

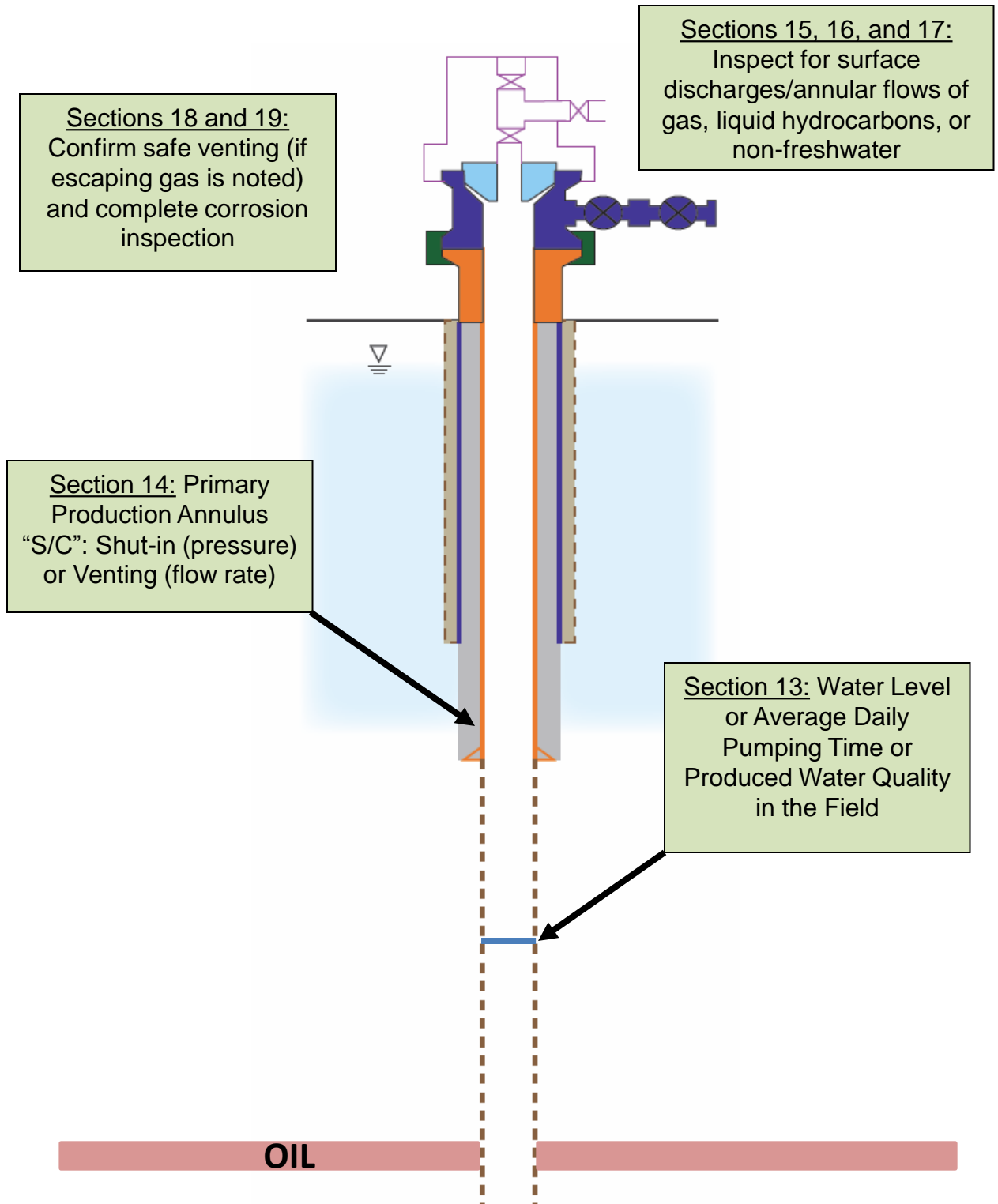
27. Create Template for  
Next Year

# Module 2: Form A

## Form A Use with Examples

- LENCER NO. 10: Oil well equipped only with freshwater casing
- Oil is produced through rod and tubing assembly and surface casing is vented to the atmosphere, but not readily accessible using an echo meter or fluid-level monitoring equipment

# Module 2: Form A



# Module 2: Form A

## Form A Use with Examples

- WELSH NO. 3: 2-String combo well
- Oil is produced through rod and tubing assembly and annular gas is produced inside of the surface casing and outside of the production string
- Open-hole completion and production string is set on a packer



# Module 2: Form A

## Form A Use with Examples

- CATALANO 2H: 4-String gas well in coal area
- Gas is produced through tubing assembly and coal protective casing is shallower than surface casing
- Cased-hole completion and production string is anchored with cement below intermediate casing shoe

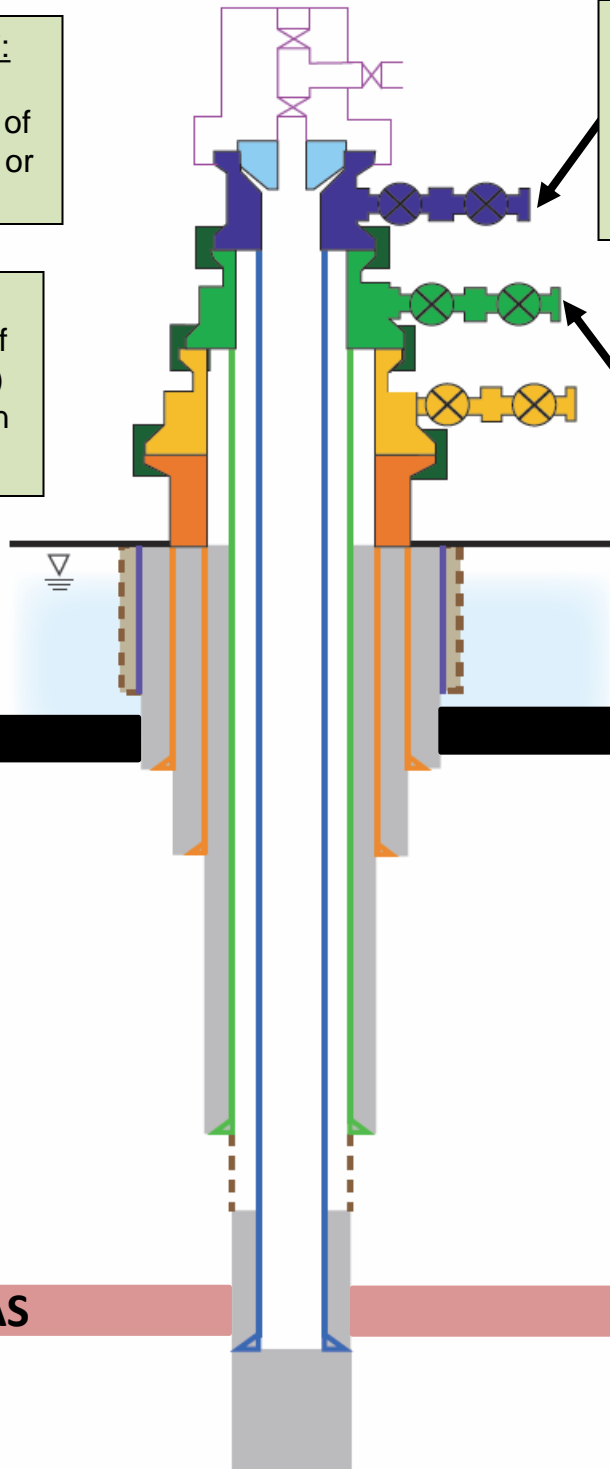
# Module 2: Form A

Sections 15, 16, and 17:  
Inspect for surface discharges/annular flows of gas, liquid hydrocarbons, or non-freshwater

Sections 18 and 19:  
Confirm safe venting (if escaping gas is noted) and complete corrosion inspection

Section 13: Primary Production Gas Pressure (measured inside primary production casing)

Section 14: Primary Production Annulus "P" (intermediate x production) Shut-in (pressure) or Venting (Flow Rate)



**COAL**

**GAS**

# Module 2: Form A

## Form A Use with Examples

- SWANK 4H: 3-String gas well with annular production
- Primary production is through tubing assembly and annular gas is produced inside of intermediate casing
- Cased-hole completion and production string is anchored with cement below intermediate casing shoe



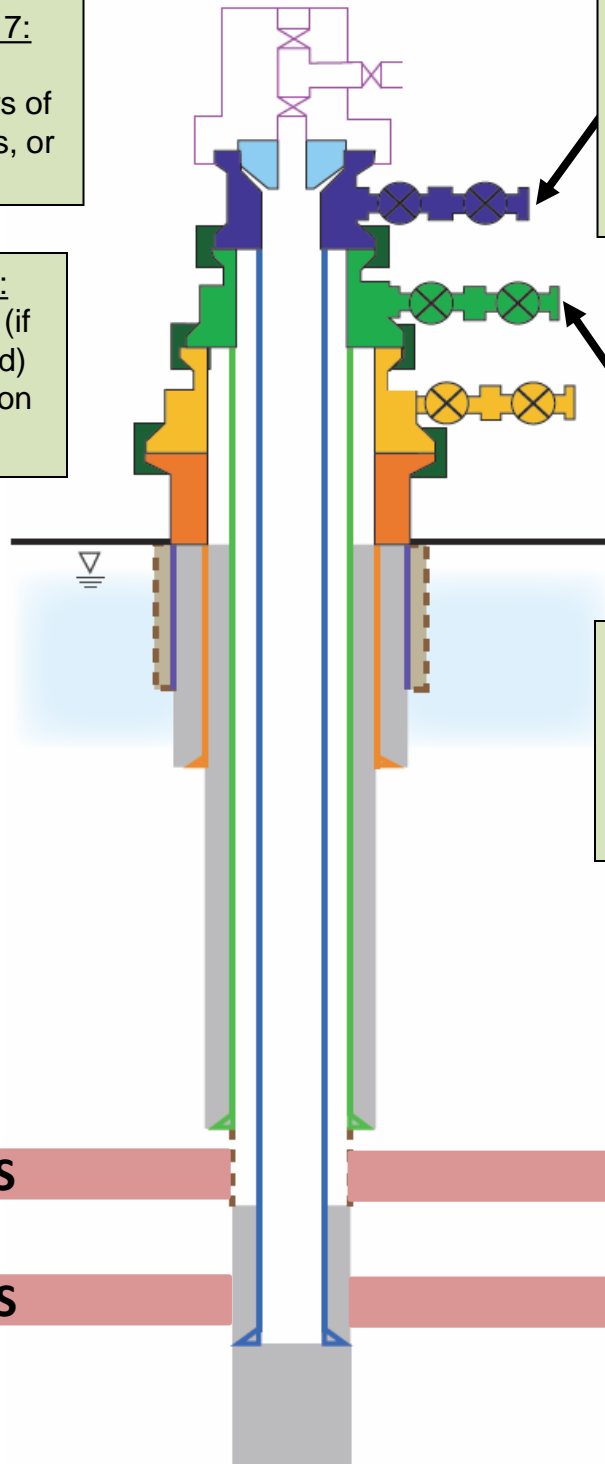
# Module 2: Form A

Sections 15, 16, and 17:  
Inspect for surface discharges/annular flows of gas, liquid hydrocarbons, or non-freshwater

Sections 18 and 19:  
Confirm safe venting (if escaping gas is noted) and complete corrosion inspection

Section 13: Primary Production Gas Pressure (measured inside primary production casing)

Section 13: Annular Production Gas Pressure (measured outside production casing and inside intermediate casing "P")



# Module 2: Form A

## Form A Use with Examples

- COSTELLO NO. 1: Combo well equipped only with freshwater casing
- Oil is produced through rod and tubing assembly and gas is produced outside tubing and inside surface casing
- Fluid levels readily accessible using echo meter



# Module 2: Form A

## Form A Use with Examples

- JANKURA 7H: 3-string oil well
- Cased-hole completion with oil produced using rod and tubing assembly
- Production annulus is under the wellhead
- All other casing strings cut off and cellar filled with gravel

# Module 2: Form A

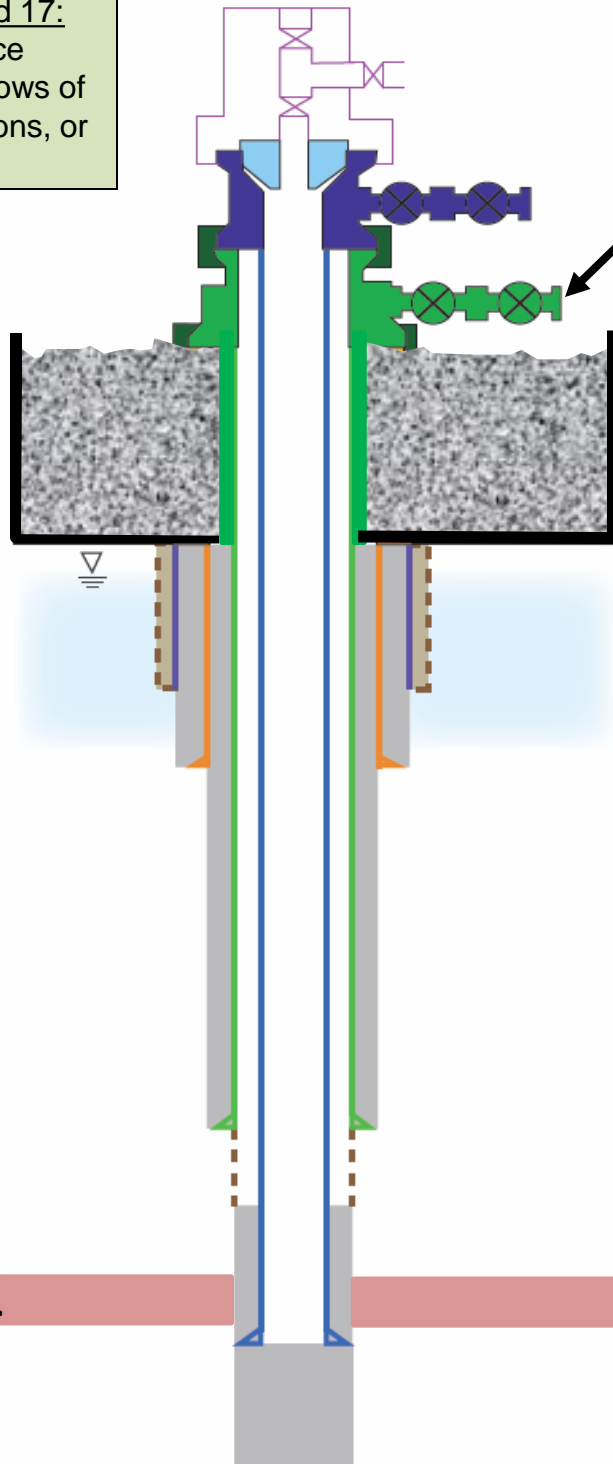
## Sections 15, 16, and 17:

Inspect for surface discharges/annular flows of gas, liquid hydrocarbons, or non-freshwater

## Sections 18 and 19:

Confirm safe venting (if escaping gas is noted) and complete corrosion inspection

Section 14: Primary Production Annulus "P" (intermediate x production) Shut-in (pressure) or Venting (Flow Rate)



# Module 2: Form A

## Form A Use with Examples

- RITZER 5H: 3-String gas well with primary production through tubing assembly and annular gas is produced inside of intermediate casing
  
- Cased-hole completion and production string is anchored with cement below intermediate casing shoe
  
- Production annulus is under the wellhead
  
- All other casing strings cut off and cellar filled with gravel

# Module 2: Form A

Sections 15, 16, and 17:

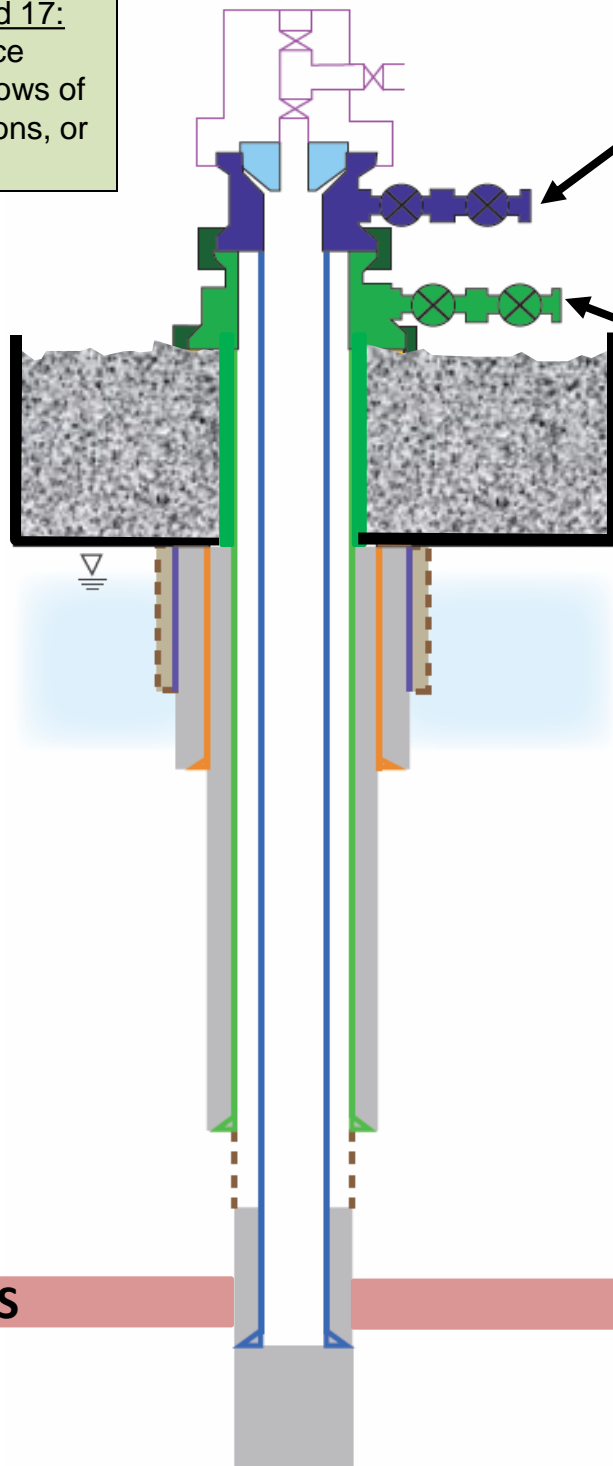
Inspect for surface discharges/annular flows of gas, liquid hydrocarbons, or non-freshwater

Sections 18 and 19:

Confirm safe venting (if escaping gas is noted) and complete corrosion inspection

Section 13: Primary Production Gas Pressure (measured inside primary production casing)

Section 14: Primary Production Annulus "P" (intermediate x production) Shut-in (pressure) or Venting (Flow Rate)



GAS

# Module 2: Form A

## Form A Two-Year Example and Data Transfers

- Operator B has two wells in their inventory. The first well, the Swank 4H, was brought on-line during the third quarter of 2013.
- The second well, the Welsh No. 3, has been in production for several years



# Module 2: Form A

## Form A Two-Year Example and Data Transfers

- Operator A has two wells in their inventory
- The first well, the Welsh No. 3, has been in production for several years
- The second well, the Swank 4H, was brought on-line during the third quarter of 2013

# Module 2: Form A

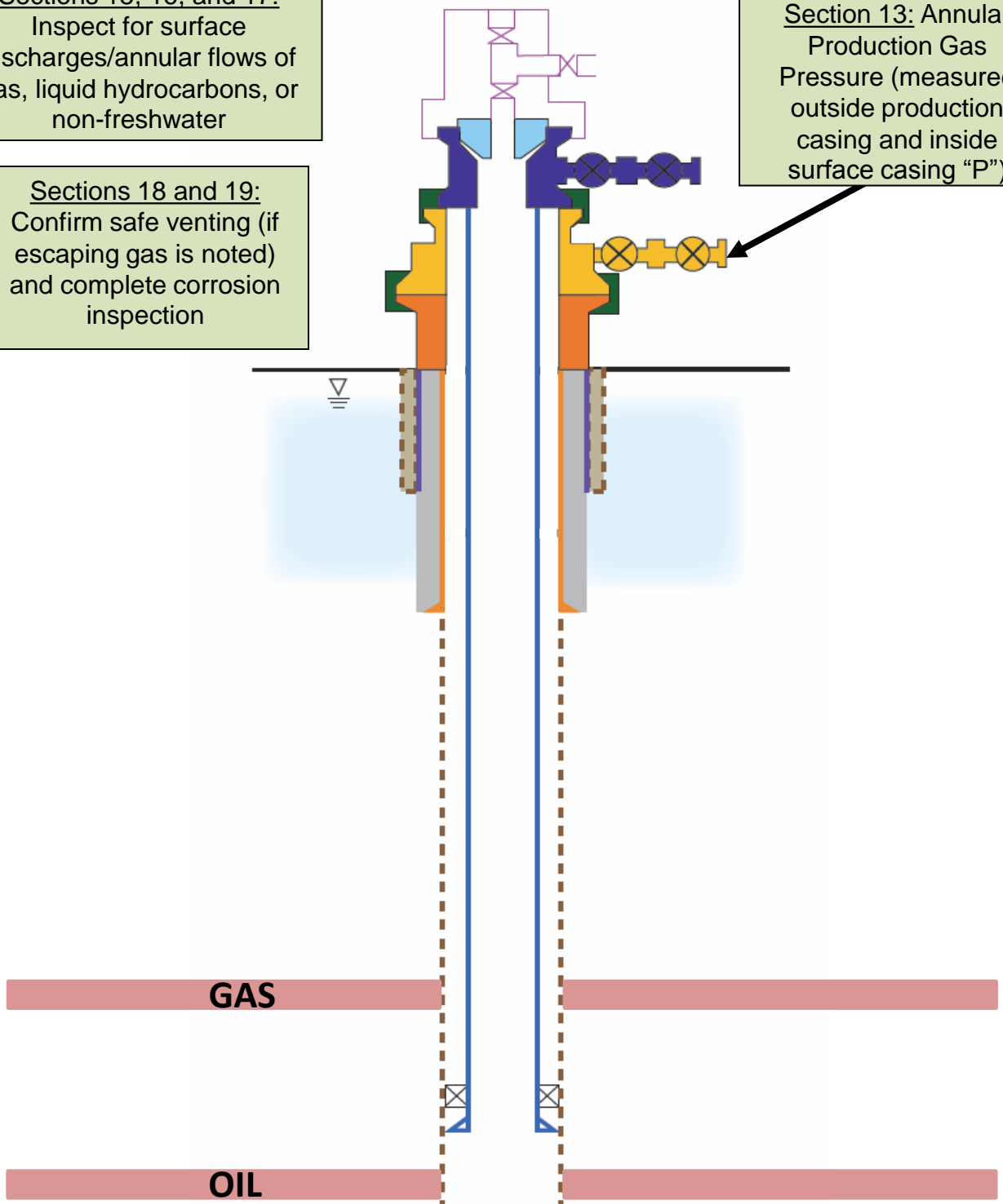
## Sections 15, 16, and 17:

Inspect for surface discharges/annular flows of gas, liquid hydrocarbons, or non-freshwater

## Sections 18 and 19:

Confirm safe venting (if escaping gas is noted) and complete corrosion inspection

Section 13: Annular Production Gas Pressure (measured outside production casing and inside surface casing "P")



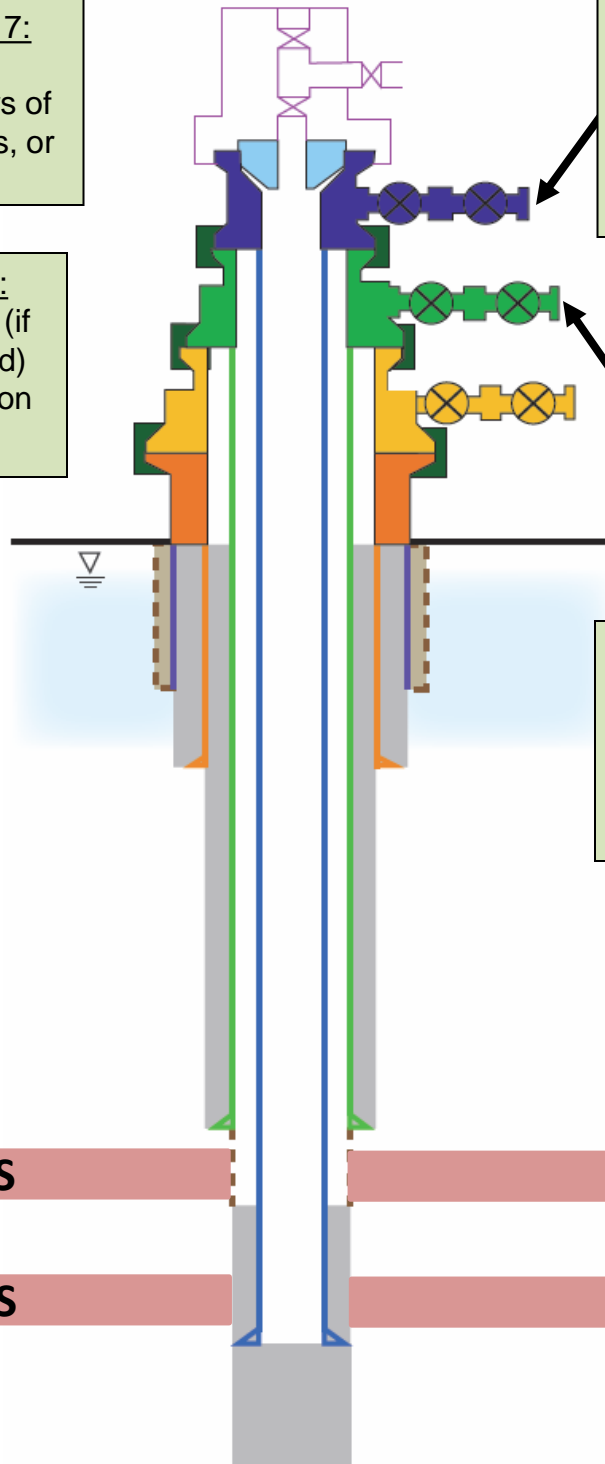
# Module 2: Form A

Sections 15, 16, and 17:  
Inspect for surface discharges/annular flows of gas, liquid hydrocarbons, or non-freshwater

Sections 18 and 19:  
Confirm safe venting (if escaping gas is noted) and complete corrosion inspection

Section 13: Primary Production Gas Pressure (measured inside primary production casing)

Section 13: Annular Production Gas Pressure (measured outside production casing and inside intermediate casing "P")



# Module 2: Form A

## Form A Two-Year Example and Data Transfers

- Now that the well integrity data are entered, Operator A would like to create a data summary sheet, create a template for next year, and enter the quarterly data for the first quarter of 2014



# Module 2: Form A

## Form A Two-Year Example and Data Transfers

- Now that the well integrity data are entered, Operator A would like to create a data summary sheet, create a template for next year, and enter the quarterly data for the first quarter of 2014

27. Create Template for Next Year		13. Wellhead Pressure or Water Level §78.88(b)(1)								
11. Quarterly Inspection Information		12. All Well MIA Conditions Unchanged from Previous Quarter (Y)			a. Primary Production Gas Pressure (psig)	b. Produced Annular Gas Pressure (psig)	c. Shoe Test Pressure (psig) (OPTIONAL)	d. Annulus	e. Water Level (ft)	f. Average Daily Pumping (hours) (If no production indicate "NPW")
Date	Quarter	Transfer 4th Qtr From Previous Year		ENTER ONE FROM CHOICE						
10. Surface or Coal Casing Set Depth (ft)			Transfer Previous Quarter's Data							
610	1/10/14	Q1				100		P		
		Q2						P		
		Q3						P		
		Q4						P		
	2/12/14	Q1			65	32		P		
		Q2						P		
		Q3						P		
		Q4						P		
		Q1								
		Q2								
		Q3								

# Module 2: Form A

## Form A Two-Year Example and Data Transfers

- Now that the well integrity data are entered, Operator A would like to create a data summary sheet, create a template for next year, and enter the quarterly data for the first quarter of 2014

27. Create Template for Next Year		13. Wellhead Pressure or Water Level §78.88(b)(1)							
11. Quarterly Inspection Information		12. All Well MIA Conditions Unchanged from Previous Quarter (Y)		a. Primary Production Gas Pressure (psig)	b. Produced Annular Gas Pressure (psig)	c. Shoe Test Pressure (psig) (OPTIONAL)	d. Annulus	e. Water Level (ft)	f. Average Daily Pumping (hours) (If no production indicate "NPW")
10. Surface or Coal Casing Set Depth (ft)	1. Date	Quarter	Transfer 4th Qtr From Previous Year						
610	1/10/14	Q1			100		P		
		Q2					P		
		Q3					P		
		Q4					P		
	2/12/14	Q1		65	32		P		
		Q2					P		
		Q3					P		
		Q4					P		
		Q1							
		Q2							
		Q3							

# Module 2: Form A

## Form A Two-Year Example and Data Transfers

- Now that the well integrity data are entered, Operator A would like to create a data summary sheet, create a template for next year, and enter the quarterly data for the first quarter of 2014

27. Create Template for Next Year		13. Wellhead Pressure or Water Level §78.88(b)(1)							
11. Quarterly Inspection Information		12. All Well MIA Conditions Unchanged from Previous Quarter (Y/N)						ENTER ONE FROM CHOICE	
10. Surface or Coal Casing Set Depth (ft)	Date	Quarter	Transfer 4th Qtr From Previous Year	a. Primary Production Gas Pressure (psig)	b. Produced Annular Gas Pressure (psig)	c. Shoe Test Pressure (psig) (OPTIONAL)	d. Annulus	e. Water Level (ft)	f. Average Daily Pumping (hours) (If no production indicate "NPW")
610	1/10/14	Q1	Transfer Previous Quarter's Data		100		P		
		Q2					P		
		Q3					P		
		Q4					P		
	2/12/14	Q1		65	32		P		
		Q2					P		
		Q3					P		
		Q4					P		
		Q1							
		Q2							
		Q3							



# Module 2: Form A

## Form A Two-Year Example and Data Transfers

- Now that the well integrity data are entered, Operator A would like to create a data summary sheet, create a template for next year, and enter the quarterly data for the first quarter of 2014

27. Create Template for Next Year		13. Wellhead Pressure or Water Level §78.88(b)(1)								
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610	1/10/14	Q1				100		P		
		Q2						P		
		Q3						P		
		Q4						P		
	2/12/14	Q1			65	32		P		
		Q2						P		
		Q3						P		
		Q4						P		
		Q1								
		Q2								
		Q3								

# Module 2: Form A

## Form A Two-Year Example and Data Transfers

- Now that the well integrity data are entered, Operator A would like to create a data summary sheet, create a template for next year, and enter the quarterly data for the first quarter of 2014

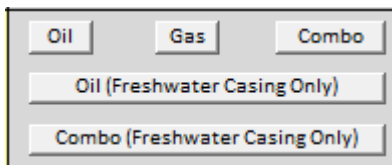
27. Create Template for Next Year		11. Quarterly Inspection Information		12. All Well MIA Conditions Unchanged from Previous Quarter (Y)						13. Wellhead Pressure or Water Level §78.88(b)(1)					
		Date	Quarter	Transfer 4th Qtr From Previous Year		a. Primary Production Gas Pressure (psig)	b. Produced Annular Gas Pressure (psig)	c. Shoe Test Pressure (psig) (OPTIONAL)	d. Annulus	e. Water Level (ft)	f. Average Daily Pumping (hours) (If no producer indicate "NPW")				
610	1/10/14	Q1	Transfer 4th Qtr From Previous Year			100		P		ENTER ONE FROM CHOICE					
		Q2						P							
		Q3						P							
		Q4						P							
	2/12/14	Q1			65	32		P							
		Q2						P							
		Q3						P							
		Q4						P							
		Q1													
		Q2													
		Q3													

# Module 2: Form A

## Development of MIA Program Pocket Reference

- Instructions are 18 pages long and somewhat detailed
- Pocket reference/checklist will serve as succinct guide to accompany Form A

1.  Well Owner/Operator (ENTER ONE TIME ONLY) →
2.  Operator Assigned ID (OPTIONAL) →
3.  Abridged API # (CCC-XXXXX) →
4.  Well Type (CHOOSE ONE) →



The image shows a screenshot of a form for selecting a well type. It features a grid of buttons. The top row contains three buttons labeled 'Oil', 'Gas', and 'Combo'. Below these are two more buttons: 'Oil (Freshwater Casing Only)' and 'Combo (Freshwater Casing Only)'. The buttons are arranged in a 2x3 grid, with the bottom-right cell empty.

5. Etc., etc.



**pennsylvania**

DEPARTMENT OF ENVIRONMENTAL PROTECTION



Oil and Gas Management

# Thank You – Questions?

**Seth Pelepko, P.G., Section Chief  
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**([mlpelepko@pa.gov](mailto:mlpelepko@pa.gov))**