

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Oil and Gas Management

Mechanical Integrity Assessment Training

Marcellus Shale Coalition

November 8, 2013

PADEP: Bureau of Oil and Gas Planning and Program Management

Division of Well Plugging and Subsurface Activities

Gene Pine, P.G.

Seth Pelepko, P.G.

Harry Wise, P.G.

Stew Beattie

Presentation Outline

Introduction to MIA Program

- ❑ Overview and History

Module 1: Review of Form A Instructions

- ❑ Definitions
- ❑ Guidance/Best Practices
- ❑ Significant Updates
- ❑ 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

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

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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 →

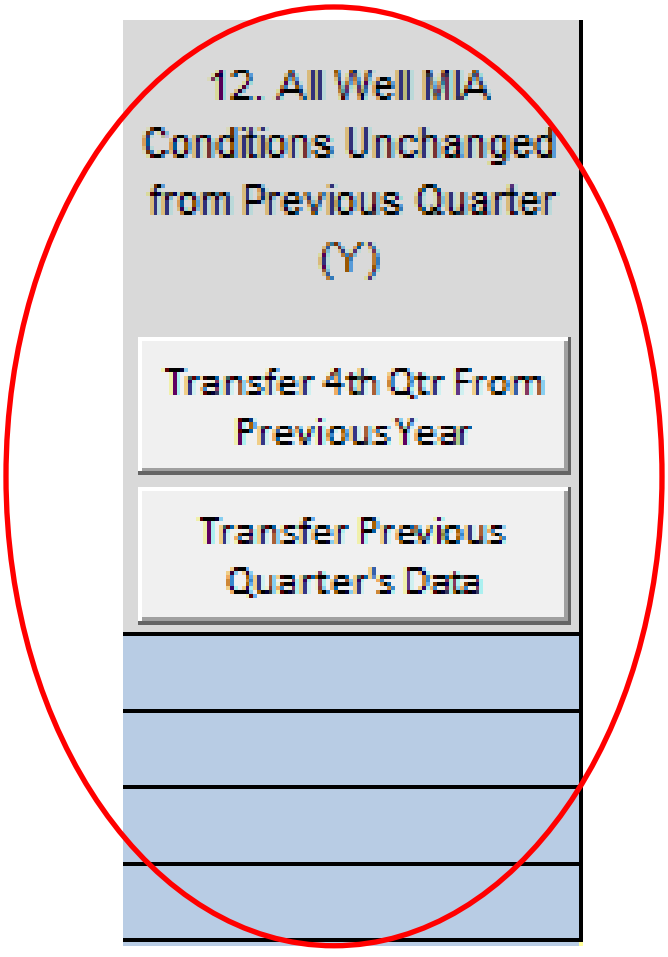
1. Well Operator/Owner	4a. Well Type Oil / Gas / Combo Oil (Freshwater Casing Only) Combo (Freshwater Casing Only) 4b. Well Construction Information Not Readily Available Set Up Well for First Inspection	5. Water Level Accessible (Yes/No)	6. Freshwater Casing Only (Yes/No)	7. Annular Production (Yes/No)	8. Annular Production Inside Surface or Coal Casing String (Yes/No)	9. Number of Casing Strings Excluding Conductor Pipe, Tubing, and Liners Customize Data Tables	10. Surface or Coal Casing Set Depth (ft)
		Yes No	Yes No	Yes No	Yes No		

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Module 2: Form A

Form A Overview

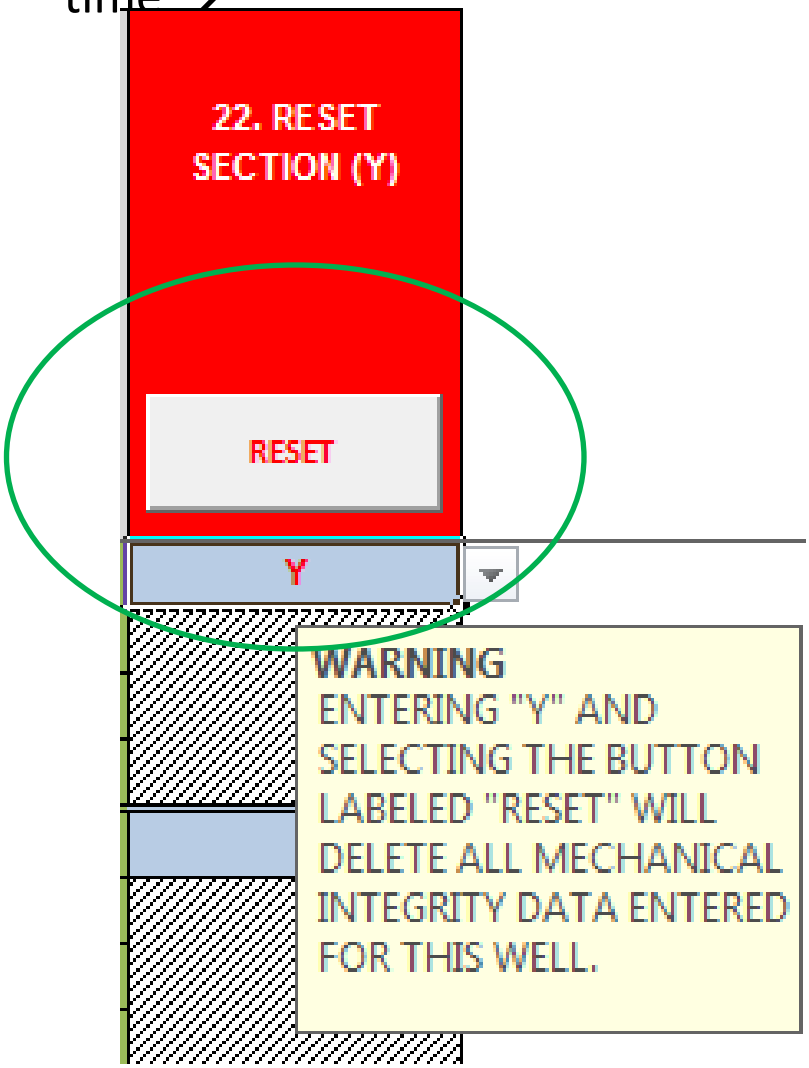
- If conditions at the well remain unchanged between quarters, or are mostly static, data can be automatically transferred to the most recent quarter and manual edits made as needed →



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 →

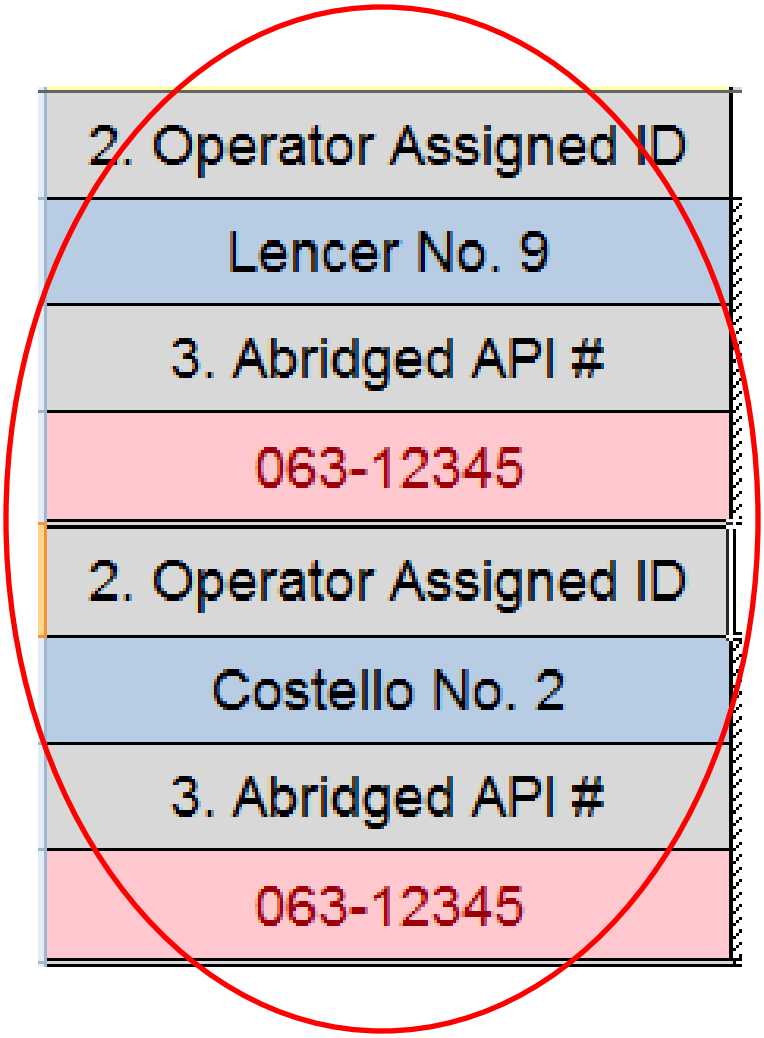


WARNING: THIS FEATURE WILL DELETE ALL INFORMATION ENTERED FOR THE WELL!

Module 2: Form A

Form A Overview

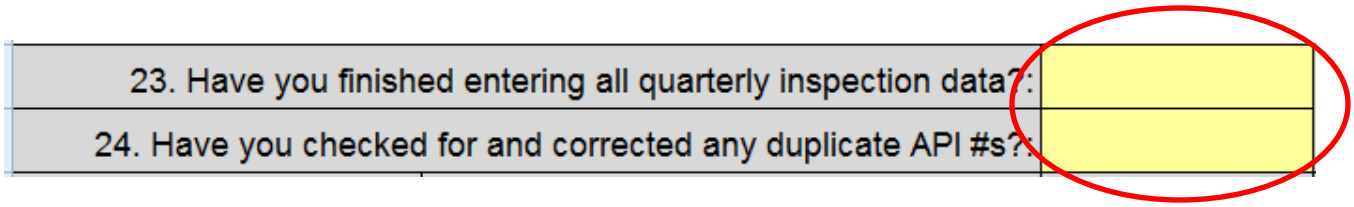
- ❑ Duplicate API numbers are automatically flagged in Form A and should be corrected →

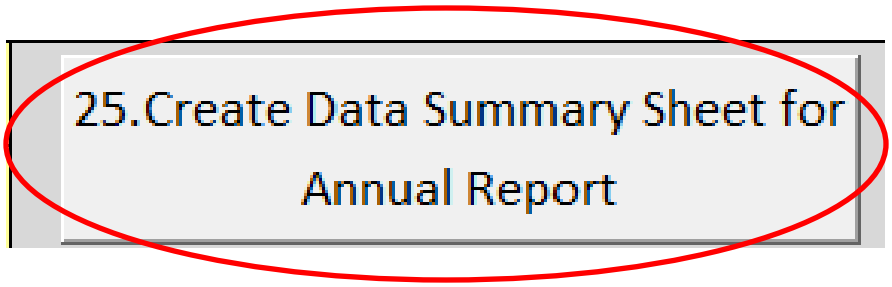


Module 2: Form A

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 →



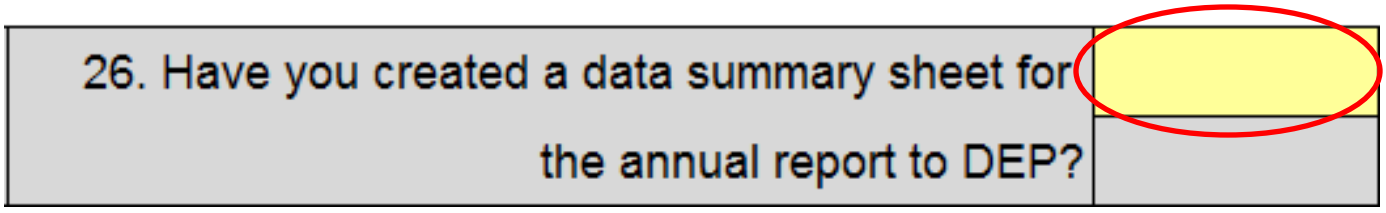


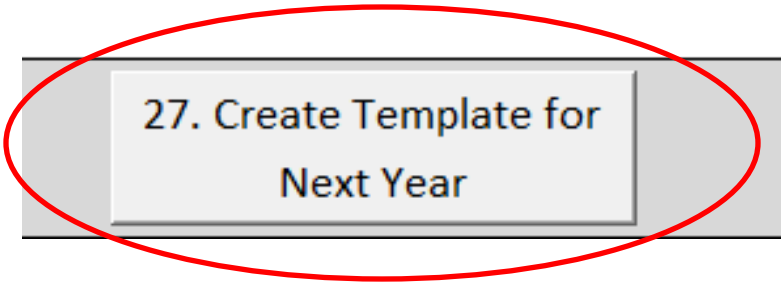
pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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. →





pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Module 2: Form A

Form A Use with Examples

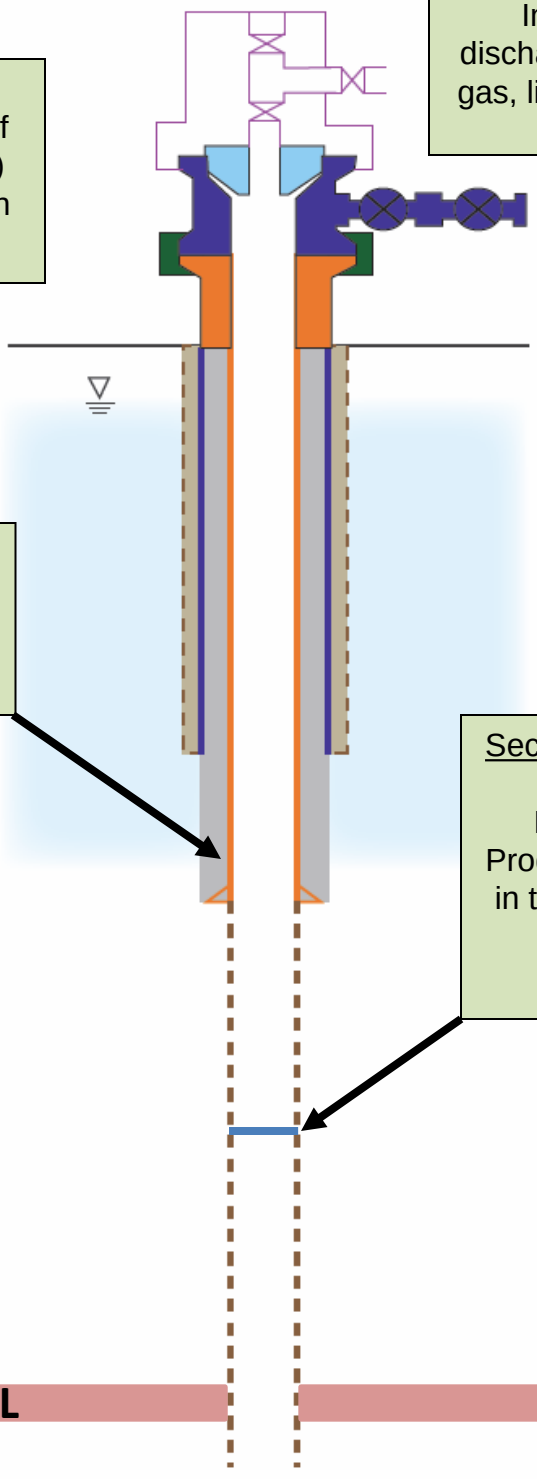
- ❑ LENCER NO. 10: Oil well equipped only with freshwater casing

- ❑ 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

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

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



<u>Section 14:</u> Primary Production Annulus "S/C": Shut-in (pressure) or Venting (flow rate)

<u>Section 13:</u> Water Level or Average Daily Pumping Time or Produced Water Quality in the Field or Average Daily Pumping Time/Volume

Module 2: Form A

Form A Use with Examples

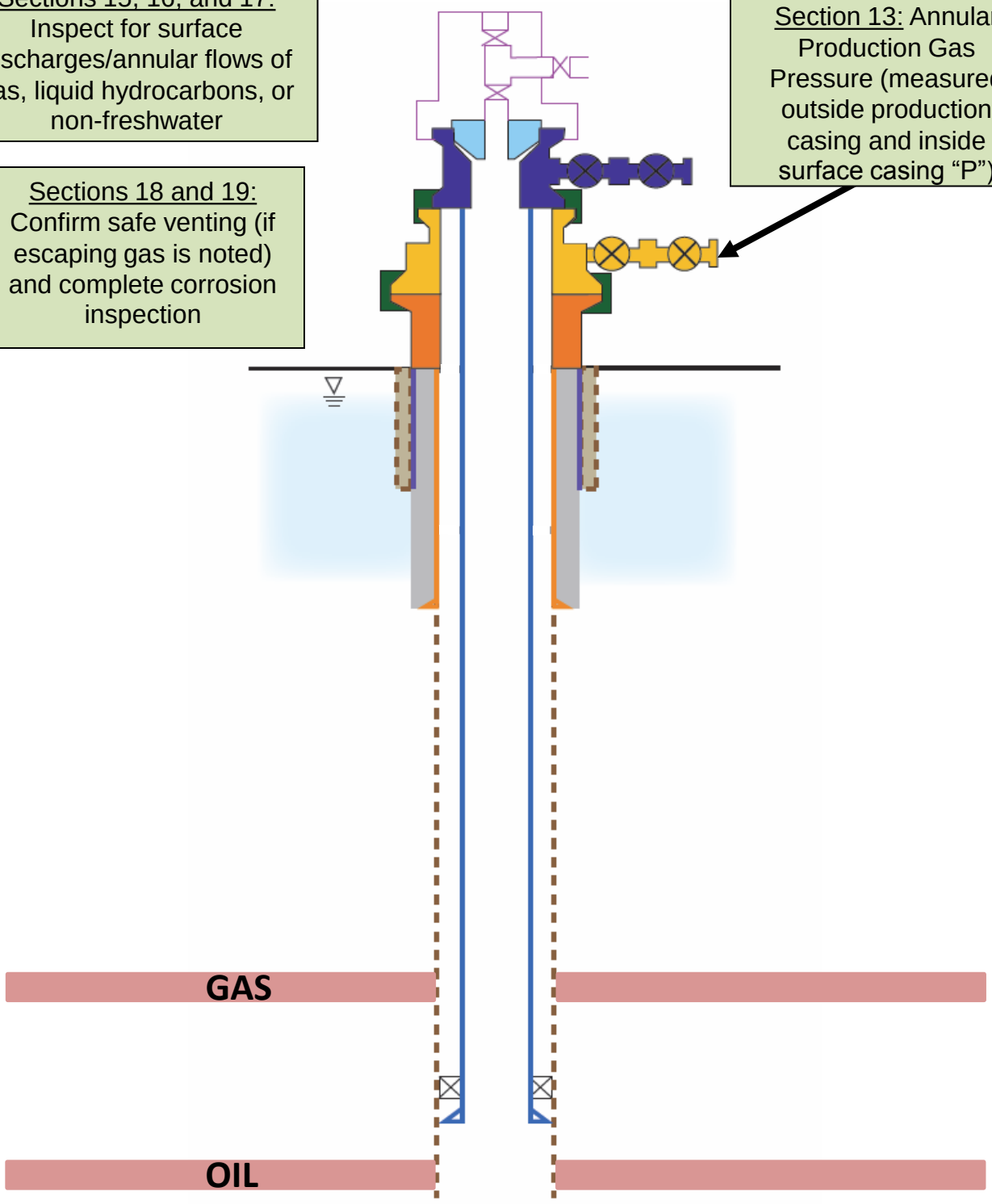
- ❑ WELSH NO. 3: 2-String combo well
- ❑ Oil is produced through rod and tubing assembly and annular gas is produced inside of the surface casing and outside of the production string
- ❑ Open-hole completion and production string is set on a packer

Module 2: Form A

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

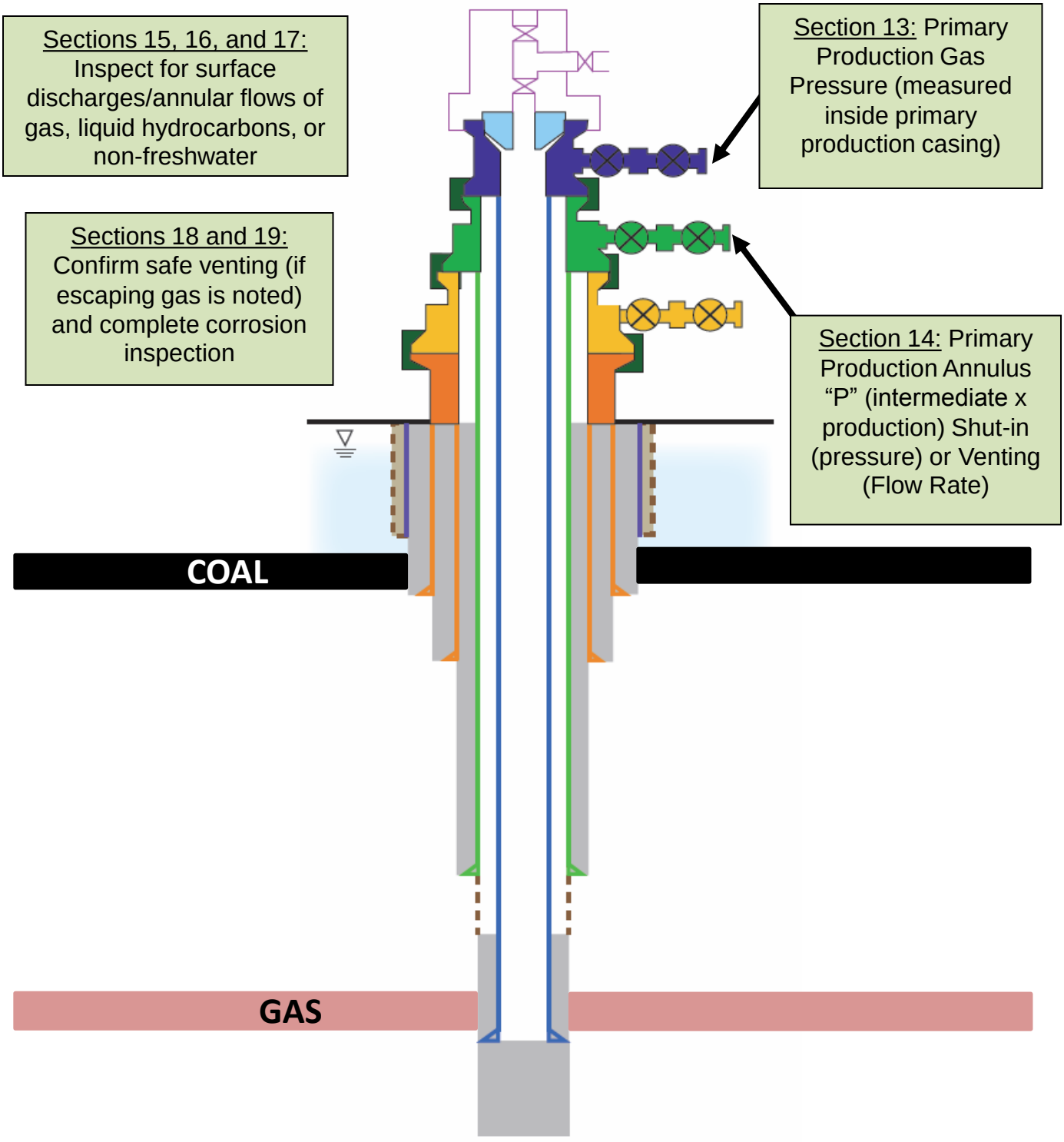
Form A Use with Examples

- ❑ 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)

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

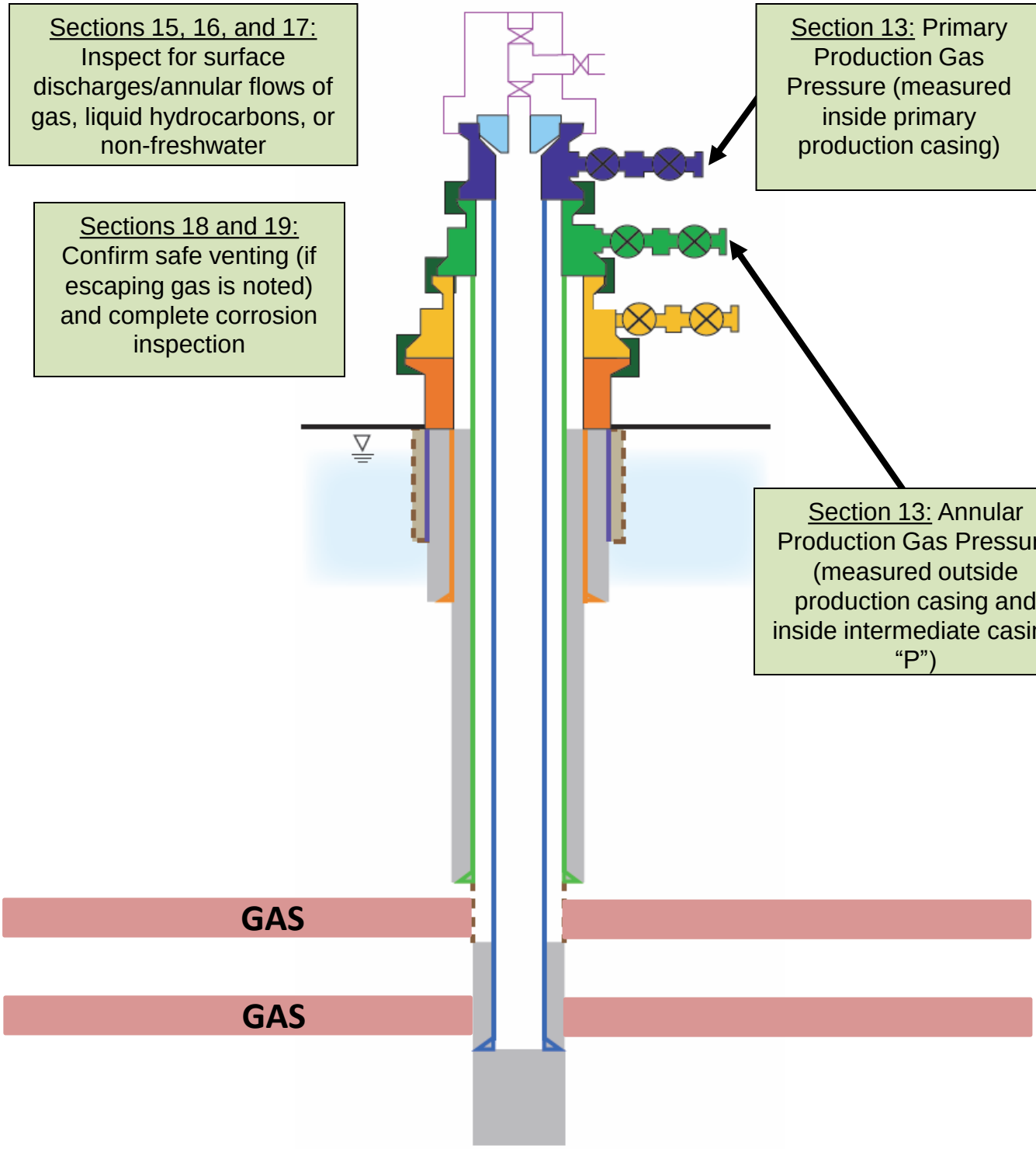
Module 2: Form A

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

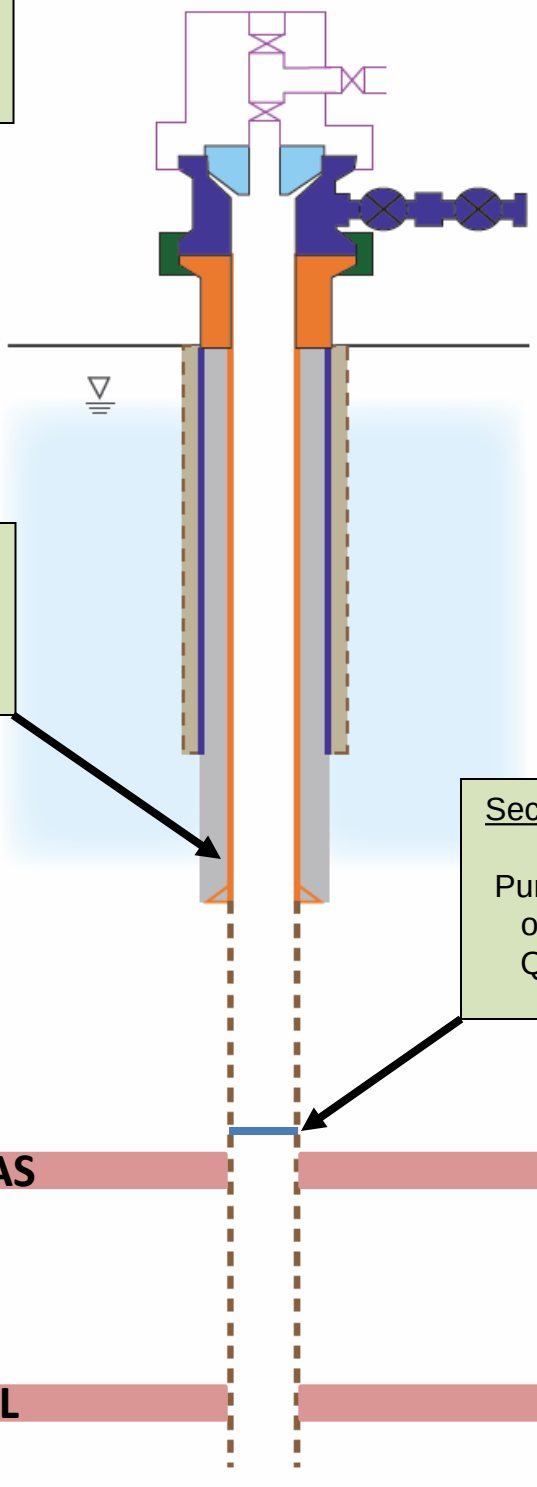
- ❑ COSTELLO NO. 1: Combo well equipped only with freshwater casing
- ❑ Oil is produced through rod and tubing assembly and gas is produced outside tubing and inside surface casing
- ❑ Fluid levels readily accessible using echo meter

Module 2: Form A

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

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

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



Section 14: Primary Production Annulus "S/C": Shut-in (pressure) or Venting (flow rate)

Section 13: Water Level or Average Daily Pumping Time/Volume or Produced Water Quality Using Field Meter

Module 2: Form A

Form A Use with Examples

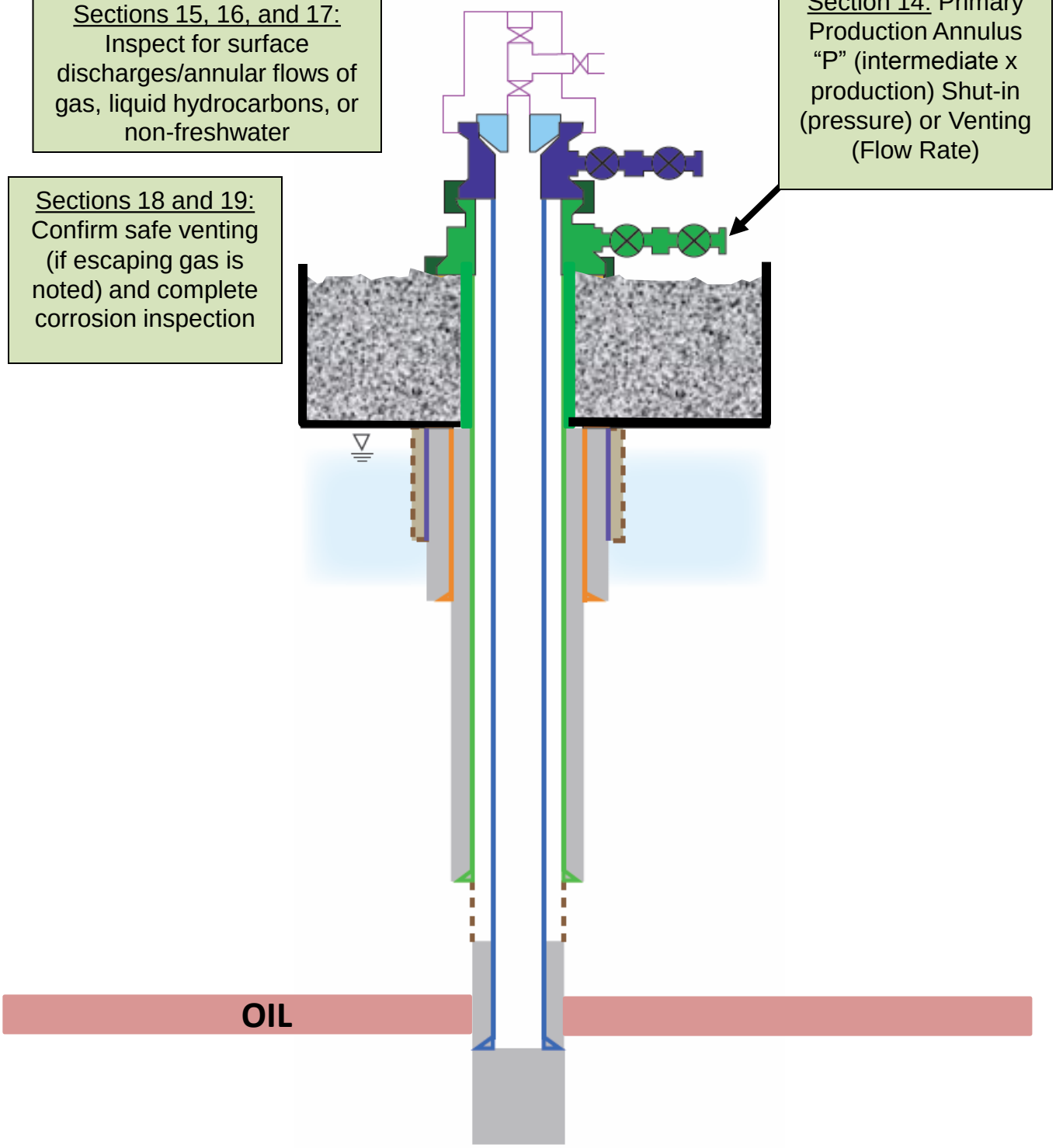
- ❑ JANKURA 7H: 3-string oil well
- ❑ Cased-hole completion with oil produced using rod and tubing assembly
- ❑ Production annulus is under the wellhead
- ❑ All other casing strings cut off and cellar filled with gravel

Module 2: Form A

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

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

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



Module 2: Form A

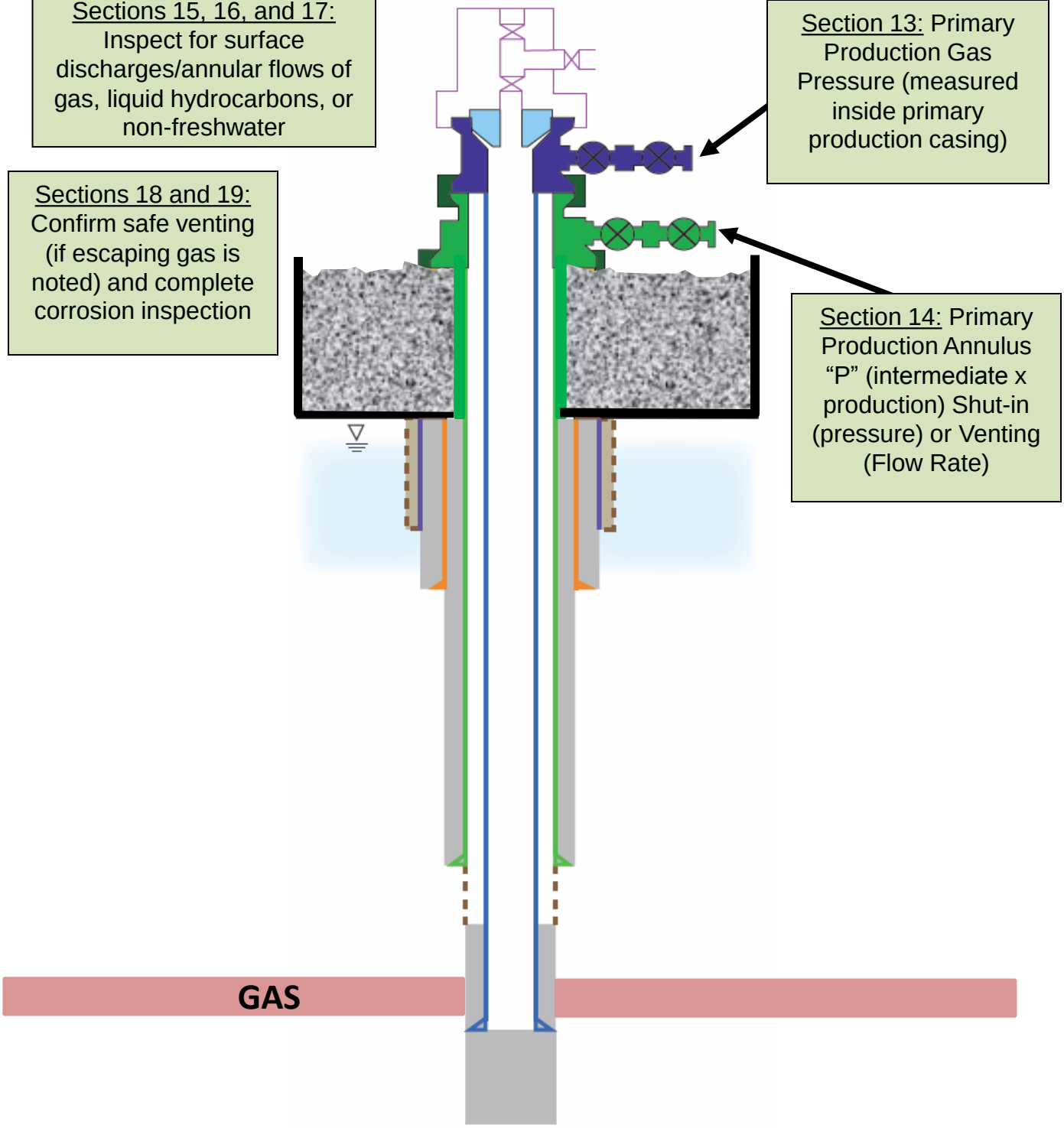
Form A Use with Examples

- ❑ 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)

Module 2: Form A

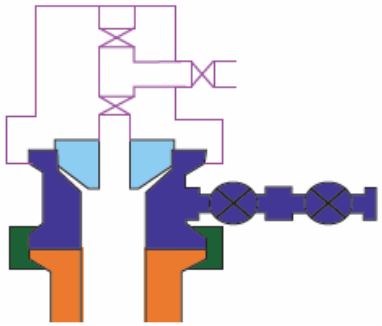
Form A Use with Examples

- ❑ Beattie No. 99: Turn-of-the-20th century gas well with no well record available

- ❑ Only production casing accessible above grade; any other casing, if present outside wellhead and buried below grade

Module 2: Form A

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



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

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

?

GAS

DID I MENTION?

- ❑SAVE/CREATE BACKUPS
- ❑SAVE/CREATE BACKUPS
- ❑SAVE/CREATE BACKUPS
- ❑SAVE/CREATE BACKUPS
- ❑SAVE/CREATE BACKUPS
- ❑SAVE/CREATE BACKUPS
- ❑SAVE/CREATE BACKUPS
- ❑SAVE/CREATE BACKUPS
- ❑SAVE/CREATE BACKUPS
- ❑SAVE/CREATE BACKUPS

Module 2: Form A

Form A Two-Year Example and Data Transfers

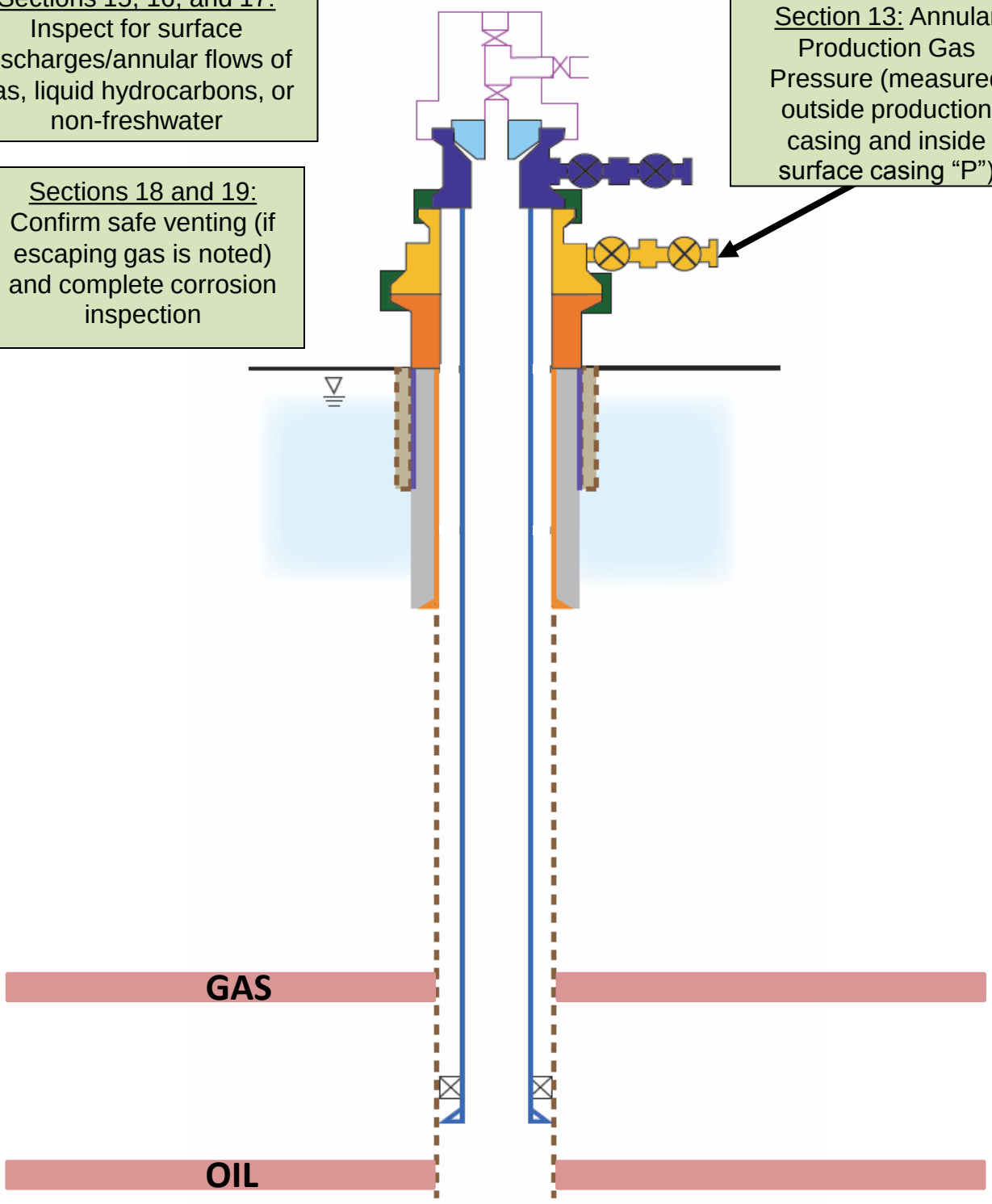
- ❑ Operator A has two wells in their inventory
- ❑ The first well, the Welsh No. 3, has been in production for several years
- ❑ The second well, the Swank 4H, was brought on-line during the third quarter of 2013

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”)



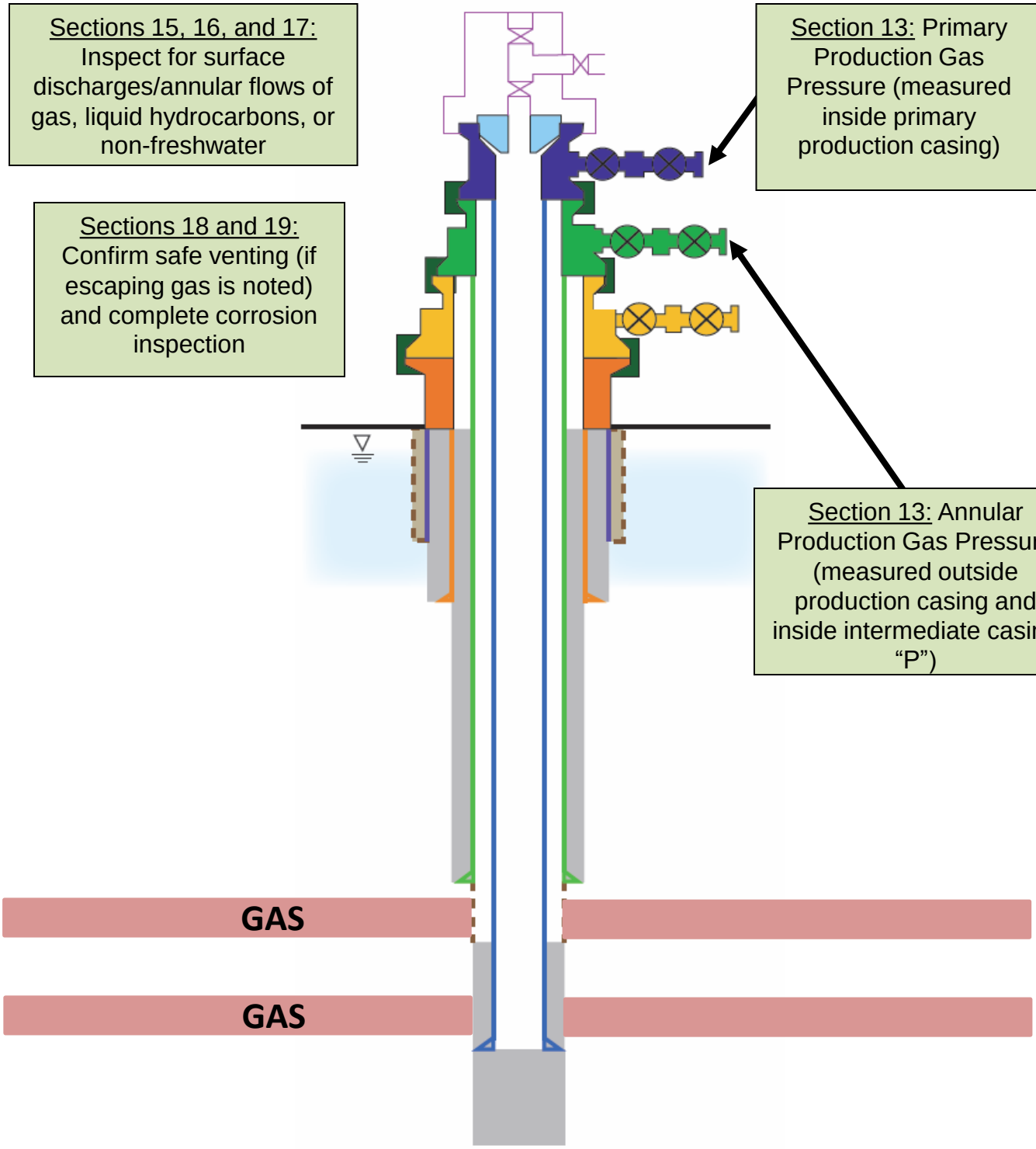
Module 2: Form A

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

- Creating a data summary sheet and a report template for next year can be done in 4 easy steps

			1	2				3	4	
23. Have you finished entering all quarterly inspection data?:			Y	25.Create Data Summary Sheet for Annual Report		26. Have you created a data summary sheet for the annual report to DEP?		Y	27. Create Template for Next Year	
24. Have you checked for and corrected any duplicate API #s?:			Y							
1. Well Operator/Owner	4a. Well Type Oil / Gas / Combo Oil (Freshwater Casing Only) Combo (Freshwater Casing Only)		5. Water Level Accessible (Yes/No) Yes	6. Freshwater Casing Only (Yes/No) Yes	7. Annular Production (Yes/No) Yes	8. Annular Production Inside Surface or Coal Casing String (Yes/No) Yes	9. Number of Casing Strings Excluding Conductor Pipe, Tubing, and Liners Customize Data Tables	10. Surface or Coal Casing Set Depth (ft)	11. Quarterly Inspection Information	
Operator A	4b. Well Construction Information Not Readily Available Set Up Well for First Inspection		No	No	No	No			Date	Quarter
2. Operator Assigned ID	Combo				Y	Y	2	610	1/13/13	Q1
Welsh No. 3									5/10/13	Q2
3. Abridged API #									9/2/13	Q3
063-15897									12/3/13	Q4
2. Operator Assigned ID	Gas			N	Y	N	3			Q1
Swank 4H										Q2
3. Abridged API #									8/1/13	Q3
063-25256									12/15/13	Q4

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Module 2: Form A

Form A Two-Year Example and Data Transfers

- ❑ Begin next year's inspections

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)
Date	Quarter	Transfer 4th Qtr From Previous Year / Transfer Previous Quarter's Data		
1/10/14	Q1	Y		100
	Q2			
	Q3			
	Q4			
2/12/14	Q1	Y	65	32
	Q2			
	Q3			
	Q4			

Module 2: Form A

Form A Two-Year Example and Data Transfers

- Steps for transferring fourth quarter from the previous inspection year to first quarter of the current inspection year

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)
1 Date	Quarter	Transfer 4th Qtr From Previous Year / Transfer Previous Quarter's Data		
1/10/14	Q1	Y		100
	Q2			
	Q3			
	Q4			
2/12/14	Q1	Y	65	32
	Q2			
	Q3			
	Q4			

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Module 2: Form A

Form A Two-Year Example and Data Transfers

- Steps for transferring fourth quarter from the previous inspection year to first quarter of the current inspection year

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)
Date	Quarter	Transfer 4th Qtr From Previous Year / Transfer Previous Quarter's Data		
1/10/14	Q1	Y		100
	Q2			
	Q3			
	Q4			
2/12/14	Q1	Y	65	32
	Q2			
	Q3			
	Q4			

2

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Module 2: Form A

Form A Two-Year Example and Data Transfers

- Steps for transferring fourth quarter from the previous inspection year to first quarter of the current inspection year

11. Quarterly Inspection Information		12. All Well MIA Conditions Unchanged from Previous Quarter (Y) 3	a. Primary Production Gas Pressure (psig)	b. Produced Annular Gas Pressure (psig)
Date	Quarter	Transfer 4th Qtr From Previous Year / Transfer Previous Quarter's Data		
1/10/14	Q1	Y		100
	Q2			
	Q3			
	Q4			
2/12/14	Q1	Y	65	32
	Q2			
	Q3			
	Q4			

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Module 2: Form A

Form A Two-Year Example and Data Transfers

- Steps for transferring fourth quarter from the previous inspection year to first quarter of the current inspection year

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)
Date	Quarter	Transfer 4th Qtr From Previous Year / Transfer Previous Quarter's Data		
1/10/14	Q1	Y		100
	Q2			
4	Q3			
	Q4			
2/12/14	Q1	Y	65	32
	Q2			
	Q3			
	Q4			

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Module 2: Form A

Form A Two-Year Example and Data Transfers

- Steps for transferring fourth quarter from the previous inspection year to first quarter of the current inspection year

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)
Date	Quarter	Transfer 4th Qtr From Previous Year / Transfer Previous Quarter's Data		
1/10/14	Q1	Y		100
	Q2			
	Q3	5		
	Q4			
2/12/14	Q1	Y	65	32
	Q2			
	Q3			
	Q4			

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

Module 2: Form A

Form A Two-Year Example and Data Transfers

- Steps for transferring fourth quarter from the previous inspection year to first quarter of the current inspection year

11. Quarterly Inspection Information		12. All Well MIA Conditions Unchanged from Previous Quarter (Y) 6	a. Primary Production Gas Pressure (psig)	b. Produced Annular Gas Pressure (psig)
Date	Quarter	Transfer 4th Qtr From Previous Year / Transfer Previous Quarter's Data		
1/10/14	Q1	Y		100
	Q2			
	Q3			
	Q4			
2/12/14	Q1	Y	65	32
	Q2			
	Q3			
	Q4			

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION



Thank You – Questions?

Seth Pelepko, P.G., Section Chief
Subsurface Activities Section
717.772.2199
(mipelepko@pa.gov)