



KEEP CALM AND MEASURE ON

14TH ANNUAL CANADIAN SCHOOL OF HYDROCARBON MEASUREMENT

MARCH 15-16, 2016

TELUS CONVENTION CENTRE
CALGARY, ALBERTA





Quickly Investigate EPAP CAI Report Items



Driving Concepts to Completion 2

Yogi Schulz Biography

- ❑ Partner in Corvelle Consulting
- ❑ Information technology consulting
- ❑ EPAP implementation and operation
- ❑ Relevant development work:
 - Led EPAP at AER
 - Led PSAP at AER
 - Led measurement at ECON
 - Leading EPAP at ECON



Driving Concepts to Completion 3


Jennifer Pham Biography

- ❑ CAPP A Instructor
- ❑ Fifteen years' experience in Production/Revenue accounting in Alberta, Saskatchewan and NWT
- ❑ EPAP CAI Report, evaluation of controls
- ❑ Six years of leadership
- ❑ Oil & gas application experience:
 - PRISM, PAS, PANexus
 - PVR, Fieldview
 - QBYTE FM, Envision Financial Accounting
 - Powervision, CS Explorer




Driving Concepts to Completion


Source of Metering Difference



Transporting natural gas

Presentation Outline

- ❑ Learning objectives
- ❑ Monthly CAI Process
- ❑ CAI investigation and remediation
- ❑ Conclusions
- ❑ Recommendations
- ❑ Questions & Answers



Driving Concepts to Completion 6



Learning Objectives

- ❑ Understand how to better organize CAI investigation and remediation
- ❑ Understand how to cost-contain CAI investigation and remediation



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Avoid Assigning Blame

"And see that you assign the blame where it will do the most good."

Review
handout

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Ignoring the CAI Report Bad Idea

- ❑ Not downloading the CAI Report
- ❑ Claiming false positives make CAI Report useless



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Investigating the CAI Report Best practice approach

- ❑ Prioritize your CAI investigation work
- ❑ Set modest monthly CAI remediation goal



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Filter Raw CAI Report

CA Facility Subty	CA Name	Data triggering this Indicator
Crude Oil Proration	Missing Gas Volume - Well-Level	Gas production not reported at well level for 1 wells.
Crude Oil Proration	Invalid Gas or Water Metering Difference - Battery	GAS Metering Difference
Crude Oil Group	Invalid Proration Factor - Non-Prorated Battery	WATER Proration Factor reported for non-prorated battery
Gas Group	Invalid Gas or Water Metering Difference - Battery	WATER Metering Difference
Crude Oil Single	Invalid Gas or Water Metering Difference - Battery	WATER Metering Difference
Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference
Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference
Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference
Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference
Crude Oil Group	Invalid Gas or Water Metering Difference - Battery	WATER Metering Difference
Crude Oil Group	Invalid Proration Factor - Non-Prorated Battery	GAS Proration Factor reported for non-prorated battery

Unfiltered Raw CAI Report

1. False positive CAI Report items
2. CAI Report items with Regulator Acceptable Date or Industry Reviewed Date
3. Prior period CAI Report items
4. CAI Report items for in-process workflow items

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Sort Filtered CAI Report

1. Sort by CAI category
2. Sort by CAI weight
3. Sort by operator priorities
4. Color by CAI name
5. Assign to responsible PA



CA Facility	CA Facility Subty	CA Name	Data Triggering this Indicator	Category
ABST000	Crude Oil Proration	Invalid Gas or Water Metering Difference - Battery	GAS Metering Difference	Error
ABST001	Gas proratn not SEA	Invalid Gas or Water Metering Difference - Battery	GAS Metering Difference	Error
ABST002	Gas Single	Invalid Gas or Water Metering Difference - Battery	GAS Metering Difference	Error
ABST003	Gas Group	Invalid Gas, Oil or Water Metering Difference - Bath	WATER Metering Difference	Error
ABST004	Crude Oil Proration	Invalid Gas or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST005	Gas proratn not SEA	Invalid Gas or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST006	Gas Proration - S.E.	Invalid Gas or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST007	Crude Oil Proration	Missing Gas Volume - Well-Level	Gas production not reported at well level for 1	Error
ABST008	Gas Proration - S.E.	Unacceptable Gas Proration Factor - Proration Bath	Gas Proration Factor: 1.00000	Error
ABST009	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST010	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST011	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST012	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST013	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST014	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST015	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST016	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST017	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST018	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST019	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST020	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
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ABST030	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
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ABST038	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST039	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST040	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST041	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST042	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST043	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST044	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST045	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST046	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST047	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST048	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST049	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error
ABST050	Gas Proration - S.E.	Invalid Gas, Oil or Water Metering Difference - Battery	WATER Metering Difference	Error

Sorted by operator priorities

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CAI Investigation Tools

- ❑ Enhanced Production Audit Program on PETRINEX: Compliance Assessment Indicators (CAI)
 - aer.ca/documents/projects/epap/EPAP_ComplianceAssessmentIndicators.xlsx
 - Scroll down to link on EPAP References & Resources page
- ❑ Property schematic
- ❑ FDC data
- ❑ PA data





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CAI Investigation Questions

Fuel

- ❑ Pump jack fuel volumes
- ❑ Winter vs. summer fuel volumes
- ❑ Recycle gas volumes
- ❑ Buy-back fuel volumes
- ❑ Purchase fuel volumes
- ❑ Fuel type: gas, electricity, propane
- ❑ Temperature & pressure corrections
- ❑ Fuel volumes for other components

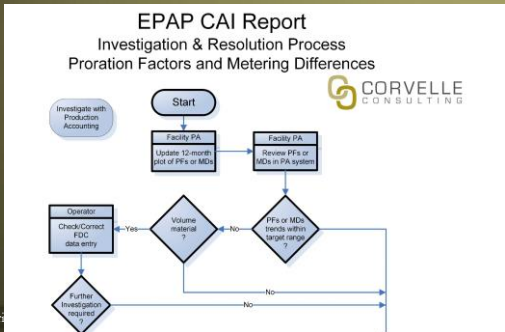


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CAI Investigation & Remediation

Flowcharts

EPAP CAI Report
Investigation & Resolution Process
Proration Factors and Metering Differences



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CAI Investigation Questions

Proration Factors

- ❑ Accuracy of production hours recording
- ❑ Accuracy of receipt volumes recording
- ❑ Water cut procedures for well tests
- ❑ Trends in well test volumes
- ❑ Meter reading issues
- ❑ Proration factor at measured facility


.95
to
1.05

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CAI Investigation Questions

Flare & Vent

- ❑ Flare log
- ❑ Flaring vs. fuel confusion
- ❑ Estimating flare and vent
- ❑ Facility shut-down



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CAI Investigation Questions

Production Records


- ❑ Production volumes
- ❑ Inventory volumes
- ❑ Hours on production
- ❑ Test volumes
- ❑ Fuel, flare, vent volumes
- ❑ Analysis factors
- ❑ Meter factors



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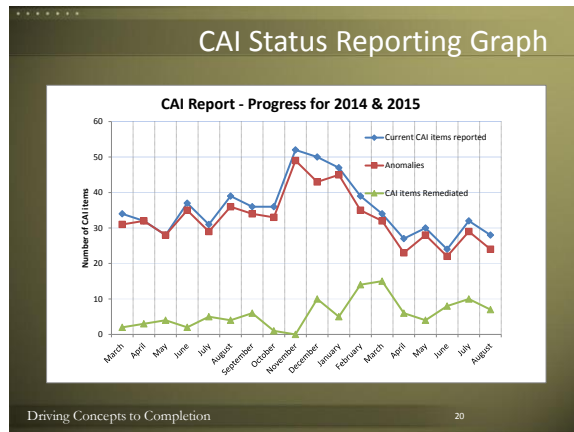
Question Period

CAI-Specific Questions?



Compliance Assessment Indicators (CAI) March 2015
https://www.auc.ca/documents/projects/epap/EPAP_ComplianceAssessmentIndicators.sba

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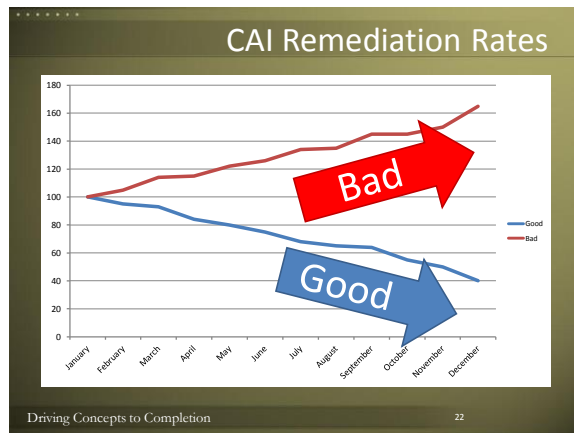


Recommendations

- View CAI as a trigger for business process improvement
- Focus on high-benefit CAI items
- Incorporate best practices into your CAI investigation & remediation work
- Enhance collaboration among stakeholders



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Questions & Discussion



PLEASE DON'T ASK ANY QUESTIONS.

QUESTION!

JUST DO EVERYTHING SOON AND PERFECTLY!!!


Can you help us investigate the CAI items?

Please fill out evaluation form

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Quickly Investigate EPAP CAI Report Items

Jennifer Pham Yogi Schulz



Please complete CSHM course evaluation online:
www.cshmsurvey.com

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EPAP Producers Forum

- ❑ If you want to be notified of the next EPAP Producers Forum and have not received invitations previously, please complete the form at:
- ❑ www.epapsolutions.com
- ❑ Event is intended for producers only

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Immediate Actions to Consider Quick Self-Assessments

- ❑ Measurement & Reporting Compliance Quick Self-Assessment Questionnaire
 - to quickly assess your current state of compliance with regulator measurement and reporting requirements
- ❑ EPAP Project Quick Self-Assessment Questionnaire
 - to quickly assess if your EPAP implementation project is likely to succeed
- ❑ www.epapsolutions.com/more-information/operator-2/

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Bibliography

- ❑ Compliance Assessment Categories
 - https://www.aer.ca/documents/projects/epap/EPAP_ComplianceAssessmentCategories.pdf
- ❑ AER Enhanced Production Audit Program on PETRINEX: Compliance Assessment Indicators (CAI) March 2015
 - https://www.aer.ca/documents/projects/epap/EPAP_ComplianceAssessmentIndicators.xlsx

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