

Direct Assessment

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OPS Public Meeting April 25, 2003

Key Points in Docket Submittal

- ◆ DA is an effective method for detecting time dependent defects.
- ◆ Baseline and re-assessment schedules for DA must align with schedules for ILI and pressure testing.
- ◆ NACE RP 0502-2002 (ECDA) must be incorporated by reference.
- ◆ Remediation provisions need to be consistent with existing industry standards (B31.8S, RSTRENG)
- ◆ Industry supports Confirmatory DA.
- ◆ Direct Examination of 100% of the pipe (such as for above ground piping) supports reinspection schedules to be established in the same manner as ILI.
- ◆ RSPA must be involved in DA continuous improvement/best practice efforts planned in 2003.

NYS Direct Assessment Process Validation Project

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OPS PLI Public Meeting April 25, 2003

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NYS DA Process Validation Project Objectives

Demonstrate:

- ◆ ECDA can be used to assess pipeline integrity with respect to locating areas containing external corrosion, coating flaws and third party damage.
- ◆ ECDA is a valid pipeline integrity alternative to in-line inspection and pressure testing.

Key Elements of NYS DA Project

- ◆ DA process consistent with the NACE ECDA TG041 Standard to validate DA
- ◆ DA process applied in a uniform and structured manner across NYS
- ◆ PSC staff as a project partner
- ◆ Industry expert – objective third party

Technical Basis

- ◆ Nine NGA members performed ECDA on ~2-mile segments (total 20 miles)
- ◆ Utilized indirect survey tools and selected locations on pipe predicted to have indications and non-indications (ie, controls)
- ◆ Excavated and assessed ECDA indications and non-indications
- ◆ Compared predictions to excavation results
- ◆ Performed statistical analysis

Results of ~20 Miles of ECDA

66 excavations

◆ 43 indications

- 40 locations with coating flaws
 - ◆ 11 corrosion damage
 - ◆ 2 third party damage
- 3 no damage

◆ 23 controls

- 22 no damage
- 1 coating flaw

Statistical Results

- ◆ Probability of finding an anomaly at an indication is 98%
- ◆ Probability of not finding an anomaly at a control is 88%
- ◆ Odds ratio of finding an anomaly at indication vs. control is 300 to 1
- ◆ Indications statistically different from controls
- ◆ Probability of finding a coating anomaly increases with holiday size $\sim 99\%$ for $>5 \text{ in}^2$

Overall observation

Data collected supports DA in finding:

- ◆ CP inadequacies
- ◆ Coating flaws
- ◆ External corrosion
- ◆ Latent third party damage
- ◆ Subcritical flaws

Conclusions

- ◆ Data collected supports ECDA as a valid integrity management tool
- ◆ DA on par with ILI and pressure testing
- ◆ Technical capability by member companies to perform DA
- ◆ Members/NYS PSC comfortable with project and DA process

Next Steps

- ◆ Continue collecting ECDA data to add to database
- ◆ Test new DA survey tools
- ◆ Perform ICDA
- ◆ Funding approved; work scope being refined

Overview of PG&E Work

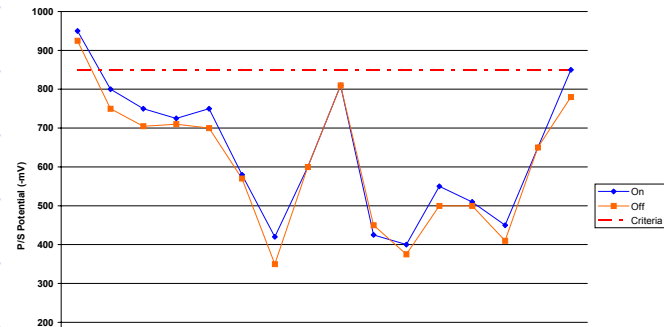
- ◆ Over the last 5 years have been working to formalize ECDA practices
- ◆ Included a Demonstration Project in California where many Operators and Federal and State Regulators participated
- ◆ Development of a comprehensive ECDA Procedure (complies with RP0502)
- ◆ Established necessary protocols
- ◆ Applied to pipelines in all class locations
- ◆ Comparison of 100 miles of ECDA data with same 100 miles of ILI data
- ◆ Continue participation in industry Best Practice efforts

Identification & Classification of Indications

CIS Criteria

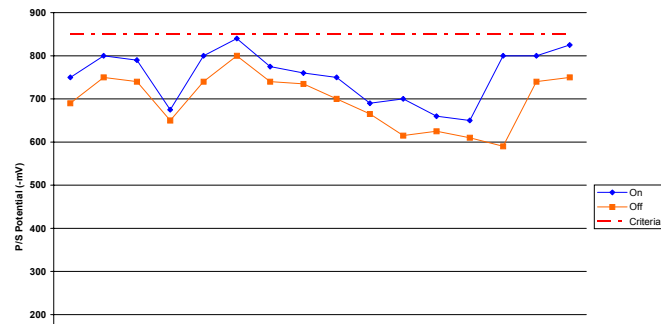
◆ Severe

- CIS < 600 mV off,
- On/Off converge,
- >200 mV Depression



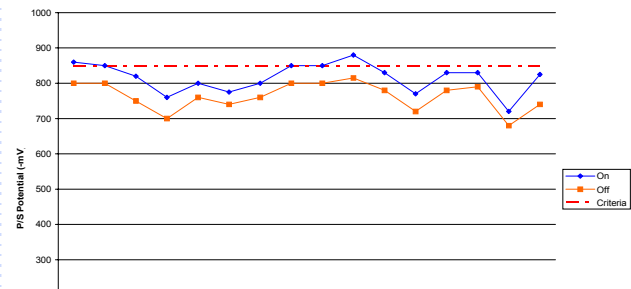
◆ Moderate

- CIS < 600 mV off
- On/Off don't converge
- <200 mV Depression



◆ Minor

- CIS between 600 & 850 mV off



Prioritization Criteria/Integration Protocol

XX		CIS			
		Severe	Moderate	Minor	NI
PCM	Severe	I	S	S	M
	Moderate	I	S	M	NI
	Minor	I	S	M	NI
	NI	I	S	M	NI
DCVG	Severe	I	S	S	M
	Moderate	I	S	M	M
	Minor	I	S	M	NI
	NI	S	M	M	NI

I = Immediate

S = Scheduled

M = Monitored

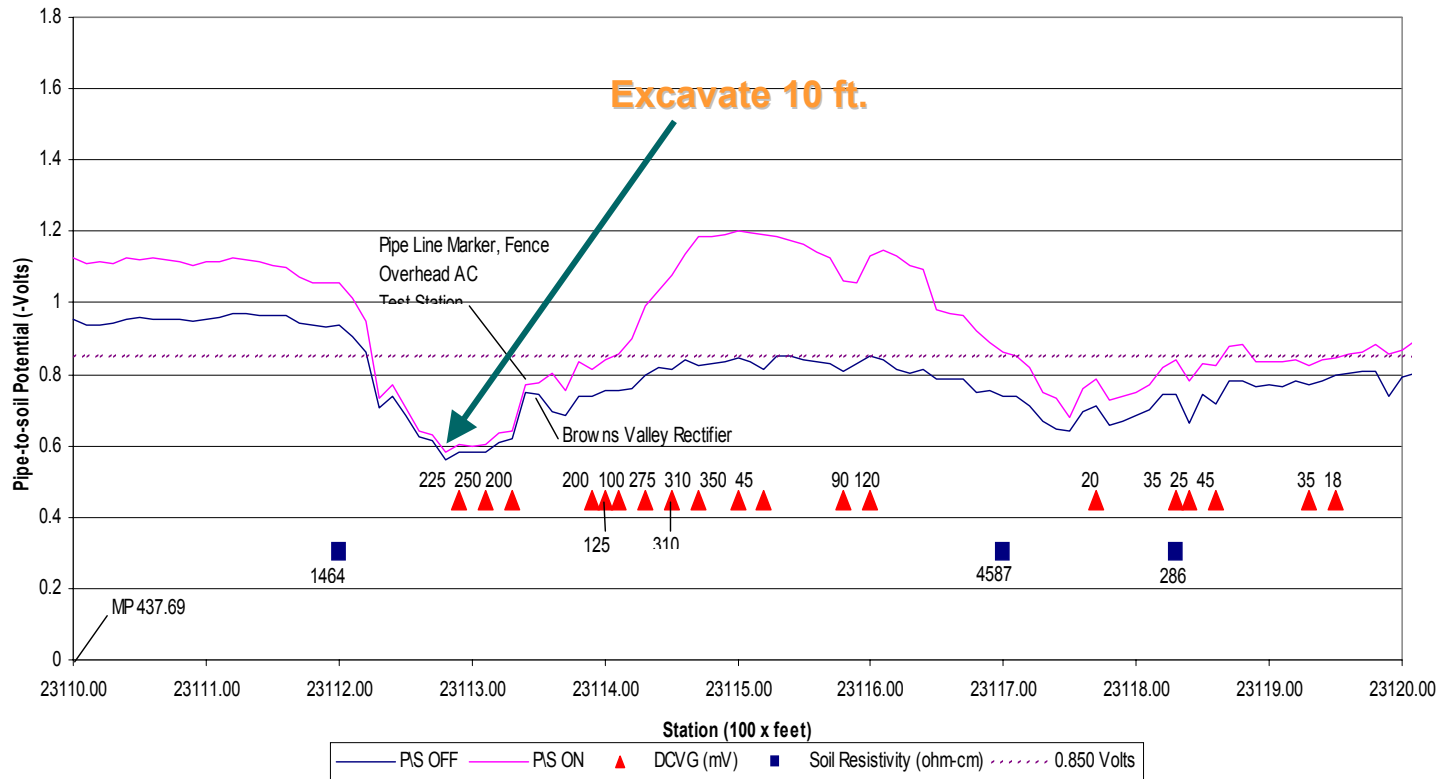
NI = No Indication

Line 300A Site Three... Demonstration Project

Poor Condition

Direct Assessment Survey
 Pacific Gas & Electric
 Line 300A - Section 1 - MP 428.56 to 446.96

Sheet 50 of 97
 Profile A1



Excavated, removed coating, sandblasted





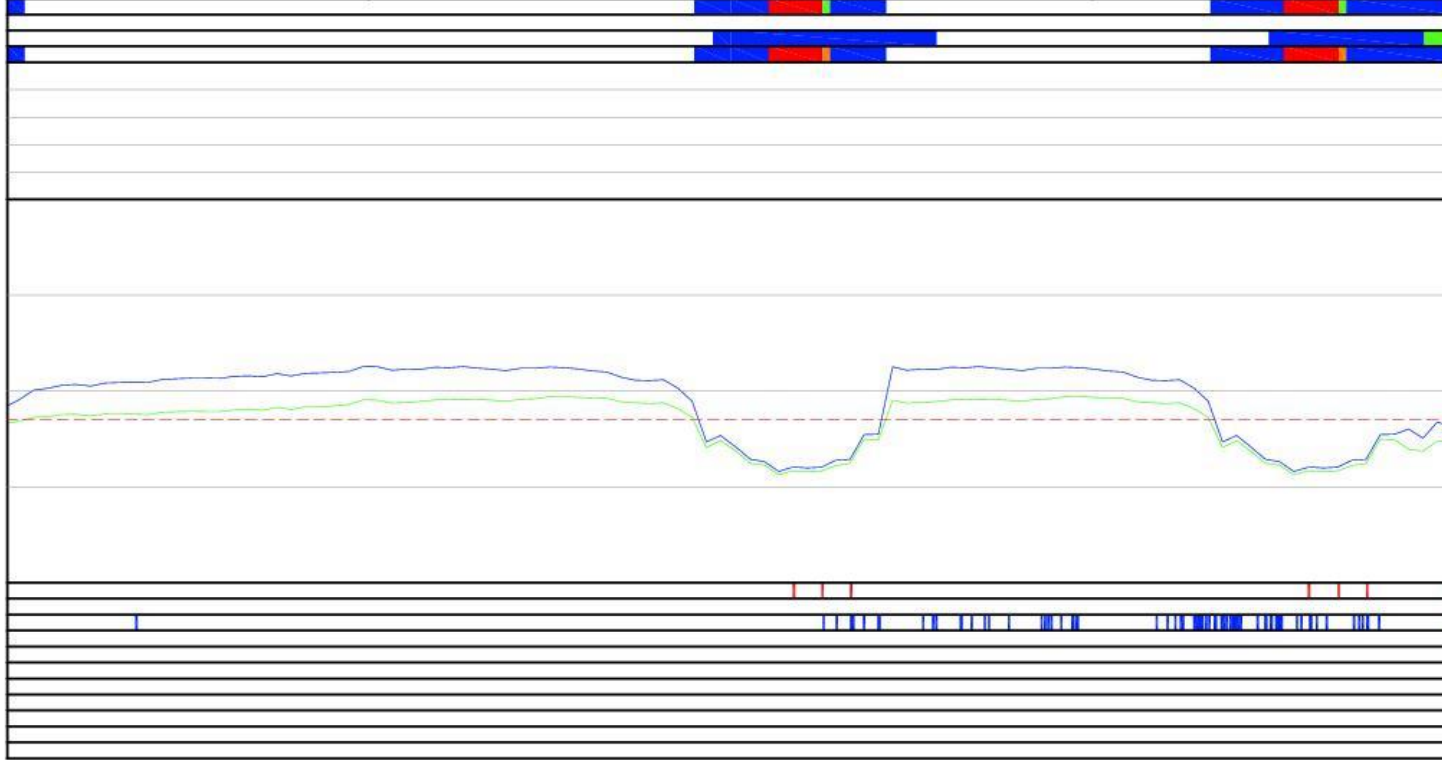
442.125

442.1875

442.25

442.3125

442.375



OS CATEGORY
SOIL RESISTIVITY
DCV% CATEGORY
PC&E Q.A. PRIORITIZATION
SOIL RESISTIVITY SURVEY
DCV%
PERCENT WALL LOSS
PERCENT REPAIR FACTOR
PERCENT MECHANICAL DAMAGE
PERCENT STYMS
COATING TYPE
CLASS LOCATION
LIKELIHOOD OF EXTERNAL CORROSION
IWA
SURFACE
REMEDICATION

LEGEND	
SEVERE	SEVERE
Moderate	Moderate
GOOD	GOOD
PC&E Q.A. PRIORITIZATION	
SEVERE	URGENT
Moderate	SCHEDULED
GOOD	OK
SOIL RESISTIVITY SURVEY	
DEF > 1000	DEF > 1000
DEF 500 - 1000	DEF 500 - 1000
DEF 250 - 500	DEF 250 - 500
DEF 100 - 250	DEF 100 - 250
DEF 50 - 100	DEF 50 - 100
DEF 25 - 50	DEF 25 - 50
DEF 10 - 25	DEF 10 - 25
DEF 5 - 10	DEF 5 - 10
DEF < 5	DEF < 5
COATING TYPE	
ASPHALT	ASPHALT
CONCRETE	CONCRETE
STEEL	STEEL
OTHER	OTHER
CLASSIFICATION	
CLASS 1	CLASS 1
CLASS 2	CLASS 2
CLASS 3	CLASS 3
CORROSION	
RECOVER	RECOVER
WATERTIGHT	WATERTIGHT
IWA	IWA
DEF	DEF
RECONNECT	RECONNECT

DRAWN: RES: DATE: 11-15-03
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SCALE: 1"=100'
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LINE 300A

Pacific Gas and Electric Company

PG&E

RAPSheet
 Pipeline Rehabilitation Analysis Profile Sheet
 Copyright © 2000, 2001

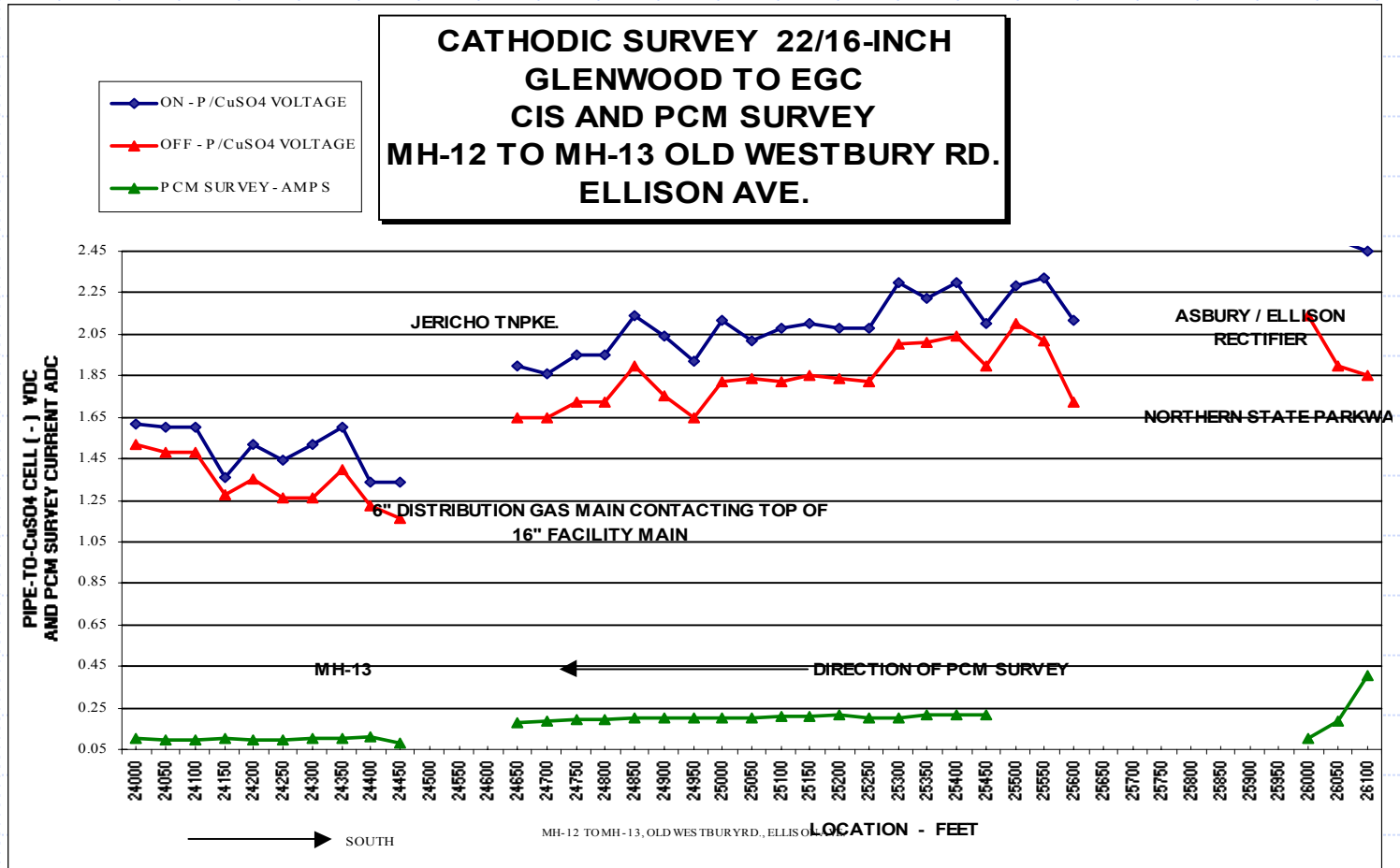
meats

MATCHLINE 23344+20

23352+18 ETS

23356+87 ETS

A Contact Found During an ECDA



Direct Examination of ECDA Contact



Offset for 1948 Distribution Main



Opportunities to Participate in ECDA Efforts

GTI/AGA, 5-10 case studies

GTI/PRCI/OPS project

NGA DA project in NY (~10 companies)

PG&E DA work in CA

Indirect Exams:

May – Jun. 2003

July – Aug. 2003?

Jun. – Aug. 2003

July – Aug. 2003

Direct Exams:

Jun. – Aug. 2003

Aug. – Sep. 2003?

Aug. – Oct. 2003

Jan. – Mar. 2004

Opportunities to Participate in ICDA Efforts

	ICDA (Dry) GTI/PRCI/OPS/SoCal Validation	ICDA (Wet) GTI/PRCI/OPS/SoCal Development	ICDA (Dry) NGA Demonstration
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Assemble integrity data:

**Feb. – Jul.
2003**

**Feb. – Jul.
2003**

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Prioritize corrosion likelihood/model development:

**May – Sep.
2003**

**May – Dec.
2003**

**May – Aug.
2003**

Data analysis:

**Sep. – Dec.
2003**

**Dec. – Mar.
2004**

**Aug. – Dec.
2003**

Summary

- Past DA validation results support DA is a valid Integrity Management Process, and supports schedules being the same as those for ILI and Hydrotesting
- Past DA results also support that DA provides additional value to the ongoing integrity of the pipe over and above ILI and Hydrotesting
- The NPRM should reference the NACE RP0502
- Remediation provisions need to be consistent with existing standards
- Additional data will be available before August to further improve confidence and support DA
- Lots of opportunity to participate and continue improving the process