

E | 2

Pipeliners Club of Atlanta

November 11, 2019

Traceable, Verifiable & Complete
Field Data Collection

E2 M2M[®]

\$26 MILLION IN FINES FOR INCOMPLETE OR MISSING RECORDS



TVC

- **Traceable** records are records that can be clearly linked to the original information.
- **Verifiable** records are records that can be confirmed by some complementary, but separate documentation.
- **Complete** records are those in which the record is finalized as evidenced by a signature, date or other appropriate marking.

A complete record should be accurate and contain all data required by PHMSA and by the Company's Standards.

Case study – SEMPRA Energy

E2 M2M[®]

CHALLENGE

No existing method to collect clean, validated data to populate GIS and other databases to support faster as-built creation to meet CPUC audits

SOLUTION

A cloud-based application accessible by Field & Office personnel allowing real-time electronic data logging and sharing


RESULT

- Automated generation of Inspection Reports
- Reduced Close-out times
- Consistent, Structured data
- Data ready for third-party app consumption



Solution Capable of:

- Sharing information from many **sources to many sources**
- Fully **customizable cloud and web-based** application
- **Streamlines** multitude of data required by complex projects, for increased **transparency** and **efficiency**
- Integrates well into **existing workflow**
- Facilitates **traceable, verifiable and complete, and consistent** data collection
- **Automates** electronic transfer of data with **real-time** updates



Time to complete
project
documentation
reduced significantly

EXAMPLES OF WELDING INSPECTION REPORT

Before E2 M2M[®]

- Issues with paper
- Illegible/smudges
- Difficult traceability
- Incomplete information
- Potential errors in Heat Numbers
- Information is not in electronic format

Southern California Gas - Project Weld Inspection Report

Page 1 of 5

Project Description: [REDACTED] Work Order#: [REDACTED]
 Location: [REDACTED] City: [REDACTED] Contractor / SGC: [REDACTED]

DATE OF INSPECTION	WELD NUMBER	STATION NUMBER OR LOCATION	JOINING INFO		WELDER'S IDENTIFICATION			WELD INSPECTION					COATING		HEAT NUMBER	COMMENTS / OBSERVATIONS
			WELD PROCEDURE NUMBER (187.0000)	WELD TYPE	ROOT	HOT PASS	FILLER & CAP	VISUAL INSPECTION (187.0175)	METHOD (187.0175)	RESULT: AIR	METHOD (187.0175)	RESULT: AIR	REPAIR ACCEPTED/REJECTED	NEW WELD NUMBER (output)		
2-28-17	W-1	TW	SMW 1	X	CM	CM	CM	BN	PT/MT	REUT						2" NEW PIPE 4" NEW PIPE
2-28-17	W-2	TW	SMW 1	X	CM	CM	CM	BN	PT/MT	REUT						4" NEW PIPE 4" NEW PIPE
2-28-17	W-3	TW	SMW 1	X	CM	CM	CM	BN	PT/MT	REUT						4" NEW PIPE 4" NEW PIPE
2-28-17	W-4	TW	SMW 1	X	CM	CM	CM	BN	PT/MT	REUT						4" NEW PIPE 4" NEW PIPE
2-28-17	W-5	TW	SMW 1	X	CM	CM	CM	BN	PT/MT	REUT						4" NEW PIPE 4" NEW PIPE
2-28-17	W-6	CK	SMW 1	X	DA	DA	DA	BN	PT/MT	REUT						4" NEW PIPE 4" NEW PIPE
2-28-17	W-7	CK	SMW 1	X	DA	DA	DA	BN	PT/MT	REUT						4" NEW PIPE 4" NEW PIPE
2-28-17	W-8	CK	SMW 1	X	DA	DA	DA	BN	PT/MT	REUT						4" NEW PIPE 4" NEW PIPE
2-28-17	W-9	CK	SMW 1	X	DA	DA	DA	BN	PT/MT	REUT						4" NEW PIPE 4" NEW PIPE
2-28-17	DP1	TW	SMW 4	X	CM	CM	CM	BN	PT/MT	REUT						4" NEW PIPE 4" NEW PIPE
2-28-17	DP2	TW	SMW 4	X	CM	CM	CM	BN	PT/MT	REUT						4" NEW PIPE 4" NEW PIPE
2-28-17	DP3	TW	SMW 4	X	CM	CM	CM	BN	PT/MT	REUT						4" NEW PIPE 4" NEW PIPE
2-28-17	DP4	TW	SMW 4	X	CM	CM	CM	BN	PT/MT	REUT						4" NEW PIPE 4" NEW PIPE
2-28-17	W-10	CK	SMW 1	X	DA	DA	DA	BN	PT/MT	REUT						4" NEW PIPE 4" NEW PIPE
2-28-17	W-11	CK	SMW 1	X	DA	DA	DA	BN	PT/MT	REUT						4" NEW PIPE 4" NEW PIPE
2-28-17	W-12	CK	SMW 1	X	DA	DA	DA	BN	PT/MT	REUT						4" NEW PIPE 4" NEW PIPE
2-28-17	W-13	CK	SMW 1	X	DA	DA	DA	BN	PT/MT	REUT						4" NEW PIPE 4" NEW PIPE
2-28-17	W-14	CK	SMW 1	X	DA	DA	DA	BN	PT/MT	REUT						4" NEW PIPE 4" NEW PIPE
2-28-17	W-15	TW	SMW 1	X	DA	DA	DA	BN	PT/MT	REUT						4" NEW PIPE 4" NEW PIPE
2-28-17	W-16	TW	SMW 1	X	DA	DA	DA	BN	PT/MT	REUT						4" NEW PIPE 4" NEW PIPE
2-28-17	W-17	TW	SMW 1	X	DA	DA	DA	BN	PT/MT	REUT						4" NEW PIPE 4" NEW PIPE
2-28-17	W-18	TW	SMW 1	X	DA	DA	DA	BN	PT/MT	REUT						4" NEW PIPE 4" NEW PIPE
2-28-17	W-19	CK	SMW 1	X	DA	DA	DA	BN	PT/MT	REUT						4" NEW PIPE 4" NEW PIPE

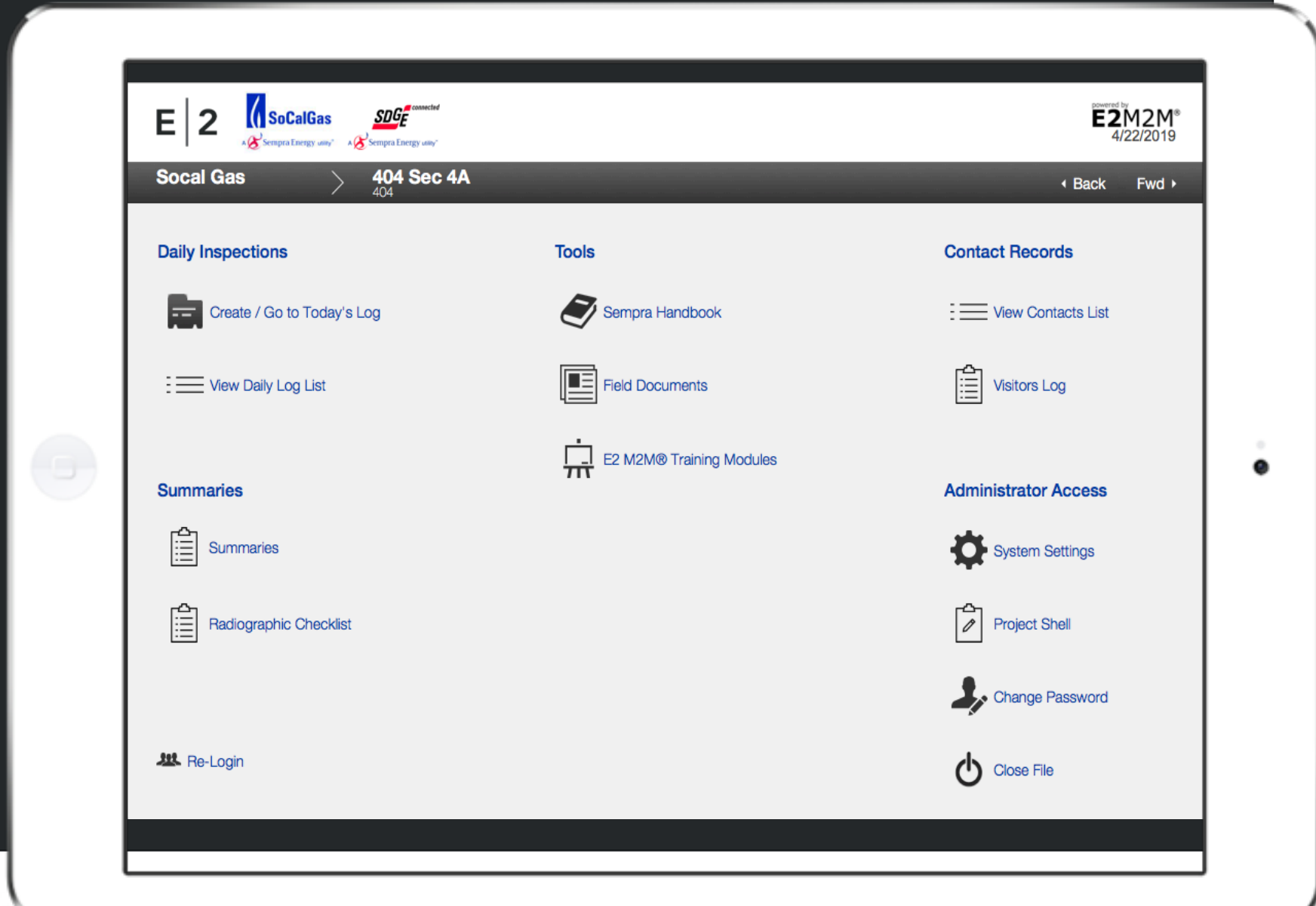
Inspection by: [REDACTED] Date: [REDACTED] Title: [REDACTED]
 Reviewed by: [REDACTED] Date: [REDACTED] Title: Chief Inspector

Minimum Percent of Radiographic Inspection Required as per 187.0175 (See Construction Sketch For Location Classes, HWYS, ETC.) Pipelines over 20" SMYS in CLASS 3 & 4: 100% Welds Containing Repairs, HWY, Railroad & River crossings, Tie-Ins, All Full Encirclement Fillet Welds 100%

FORM-35

E2 M2M[®] HOME SCREEN

- Customized access to modules based on role
- User friendly navigation designed for tablets
- Access most modules with just a few clicks



E2 M2M[®] WELDING INSPECTION INTERFACE

Improvements

- Multi-user capability for Firing Line
- Prevents weld number duplication
- Track rejection rate of individual welders
- Tracking of material and information directly from Pipe Tally
- Validate weld procedures

The screenshot displays the E2 M2M Welding Inspection Interface. At the top, it shows the SoCalGas and SDGE logos, along with navigation links for 'Daily Logs' and 'Home'. The main header includes project details: 'Prj: Test Project C', 'Loc: San Diego', and 'By: Ricardo Carmona'. The central focus is the 'Welding Log (1/7/2019)' page, which features a table with columns for 'W-345', '+ Add Weld', and various welding categories like 'Joining & Weld', 'Root Stringer', 'Hot Pass', 'Filler & Cap', and 'NDE Testing'. A modal dialog is open, titled 'Select welder(s) with associated defect type(s):', allowing users to select welders (Alcala, Carlos 92090415 and Boyd, Travis 92090515) and check boxes for various defect types such as EU - External Undercut, IU - Internal Undercut, P - Porosity, CP - Cluster Porosity, C - Crack, UF - Underfill, ER - Excessive Reinforcement, IPD - Incomplete Penetration w/ Hi-Low, IP - Incomplete Penetration No Hi-Low, CV - Root Concavity, CX - Root Convexity, and BT - Burn Through. A 'Visual Inspection Date' field is set to 3/18/2019, and a 'Cancel' button is visible at the bottom right of the dialog.

EXAMPLES OF WELDING INSPECTION REPORT

After E2 M2M[®]

- Data in electronic format
- Complete and validated information in final reports
- Facilitates internal and external compliance
- Exportability to integrate data into other processes (As-builts, GIS)

Southern California Gas - Project Weld Inspection Report																								
CG - Cesar Guerrero; CH - Caleb Hardy; DJS - Donald Jr. Stewart; RR - Ryan Reeves															Work Order#: 26157			Page 1 of 1						
Project Description: 2001VFD Whitewater Hydrotest										Location: Whitewater, CA					City: Whitewater, CA			Contractor / SCG: ARB/FSC						
DATE OF VISUAL INSPECTION	WELD NUMBER	STATION NUMBER OR LOCATION	JOINING INFO					WPS NUMBER (187.0055)	WELD DESIGN TYPE		WELDERS IDENTIFICATION			VISUAL INSPECTION & INSPECTOR ID (187.0175)	WELD INSPECTION				REPAIR ACCEPTED / REJECTED	'NEW WELD NUMBER (cutout)	PO Number	COMMENTS / OBSERVATIONS		
			JOINT / FITTING NUMBER	PUP / PIPE LENGTH	HEAT NUMBER	PIPE DIAMETER	PIPE WALL THICKNESS & GRADE		BUTT WELD (x)	FILLET / BRANCH WELD (x)	ROOT STRINGER & HOT PASS	FILLER & CAP	BACK WELD		NDE REQUIRED		REPAIR ACCEPTED / REJECTED							
															METHOD & DATE PERFORMED (MT or PT)	RESULT AIR		METHOD & DATE PERFORMED (UT or RT)					RESULT AIR	
2/27/2019	TW2		JT-15B	2.7	RS2035	30	.375 X65	SMAW13	X		DIS	RR	CH	Accepted dourits	NA	NA	RT	3/6/2019	Accepted	NA	NA			
			C-1	NA	J14TCC	30	.375 Y65				CH													
2/27/2019	TW3		JT-15C	2.65	RS2035	30	.375 X65	SMAW13	X		RR	RR	RR	Accepted dourits	NA	NA	RT	3/6/2019	Accepted	NA	NA			
			C-2	NA	J14TCC	30	.375 Y65				CH													
2/27/2019	TW4		JT-15B	2.7	RS2035	30	.375 X65	SMAW16		X	CH	CH	NA	Accepted dourits	PT	Accepted	NA	3/6/2019	NA	NA	NA			
			AB-2	NA	1440	2	218 B																	
2/27/2019	TW5		JT-15A	2.8	RS2035	30	.375 X65	SMAW16		X	CH	CH	NA	Accepted dourits	PT	Accepted	NA	3/6/2019	NA	NA	NA			
			AB-3	NA	1440	2	218 B																	
2/27/2019	TW6		JT-15C	2.65	RS2035	30	.375 X65	SMAW16		X	RR	RR	NA	Accepted dourits	PT	Accepted	NA	3/6/2019	NA	NA	NA			
			AB-1	NA	1440	2	218 B																	
2/27/2019	TW7		JT-15B	2.7	RS2035	30	.375 X65	SMAW16		X	CH	CH	NA	Accepted dourits	PT	Accepted	NA	3/6/2019	NA	NA	NA			
			AB-6	NA	1440	2	218 B																	
2/27/2019	TW8		JT-15C	2.65	RS2035	30	.375 X65	SMAW16		X	RR	RR	NA	Accepted dourits	PT	Accepted	NA	3/6/2019	NA	NA	NA			
			AB-5	NA	1440	2	218 B																	
2/27/2019	TW9		JT-15A	2.8	RS2035	30	.375 X65	SMAW16		X	CH	RR	RR	NA	Accepted dourits	PT	Accepted	NA	3/6/2019	NA	NA	NA		
			AB-4	NA	1440	2	218 B																	

Inspection By: Daniel Curtis	Date: 2/27/2019	Title: Welding Inspector
Reviewed By: Edward Merlo	Date: 3/4/2019	Title: Chief Inspector
Minimum Percent of Radiographic Inspection Required as per 187.0175 (See Construction Sketch For Location Classes, HWYS, ETC.)		
Pipelines over 20% SMYS in CLASS 3 & 4: 100%		Welds containing repairs; HWY, Railroad & River crossings; Tie-ins; All full encirclement fillet welds: 100% FORM-3917

E2 M2M[®] Environmental Disturbed Area

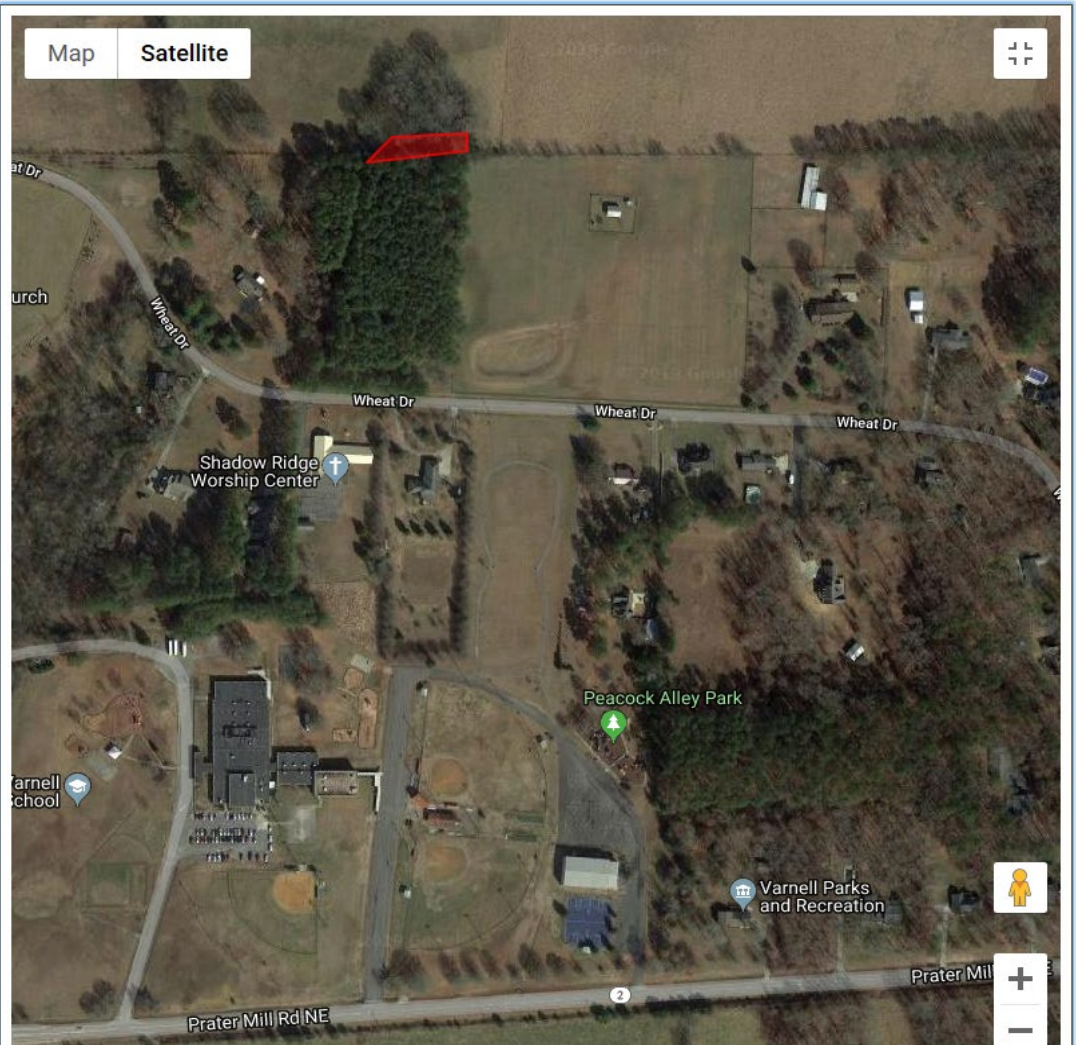
Disturbed Area Coordinates

```
{lat: 34.90057, lng: -84.9419},  
{lat: 34.90065, lng: -84.9411},  
{lat: 34.90078, lng: -84.9411},  
{lat: 34.90075, lng: -84.9417}
```

*GPS device connected via Bluetooth
can automate the capture of
coordinates in the field.

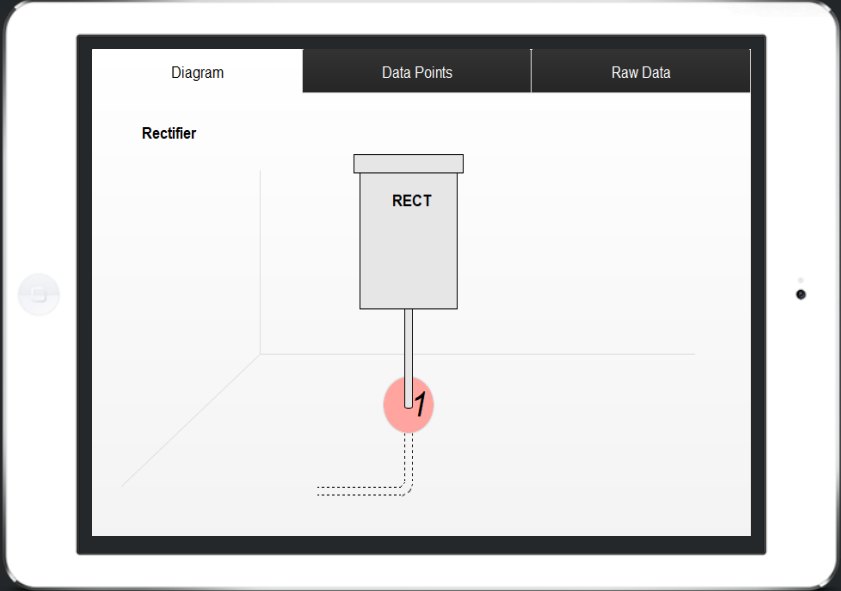
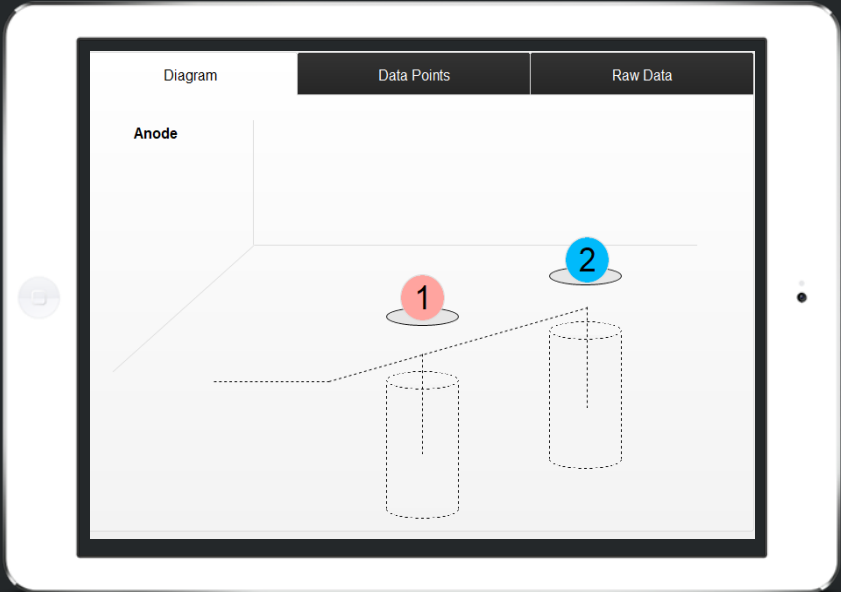
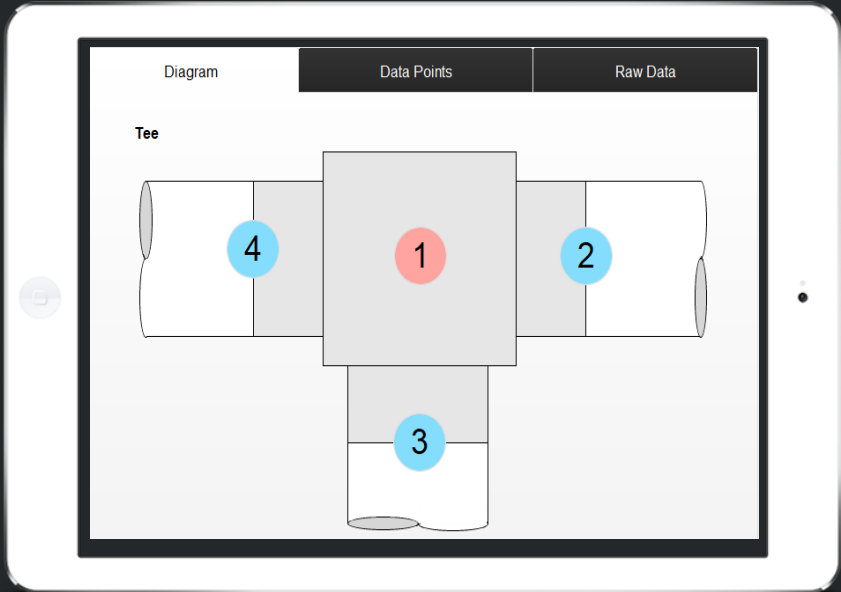
Percent Restored

100



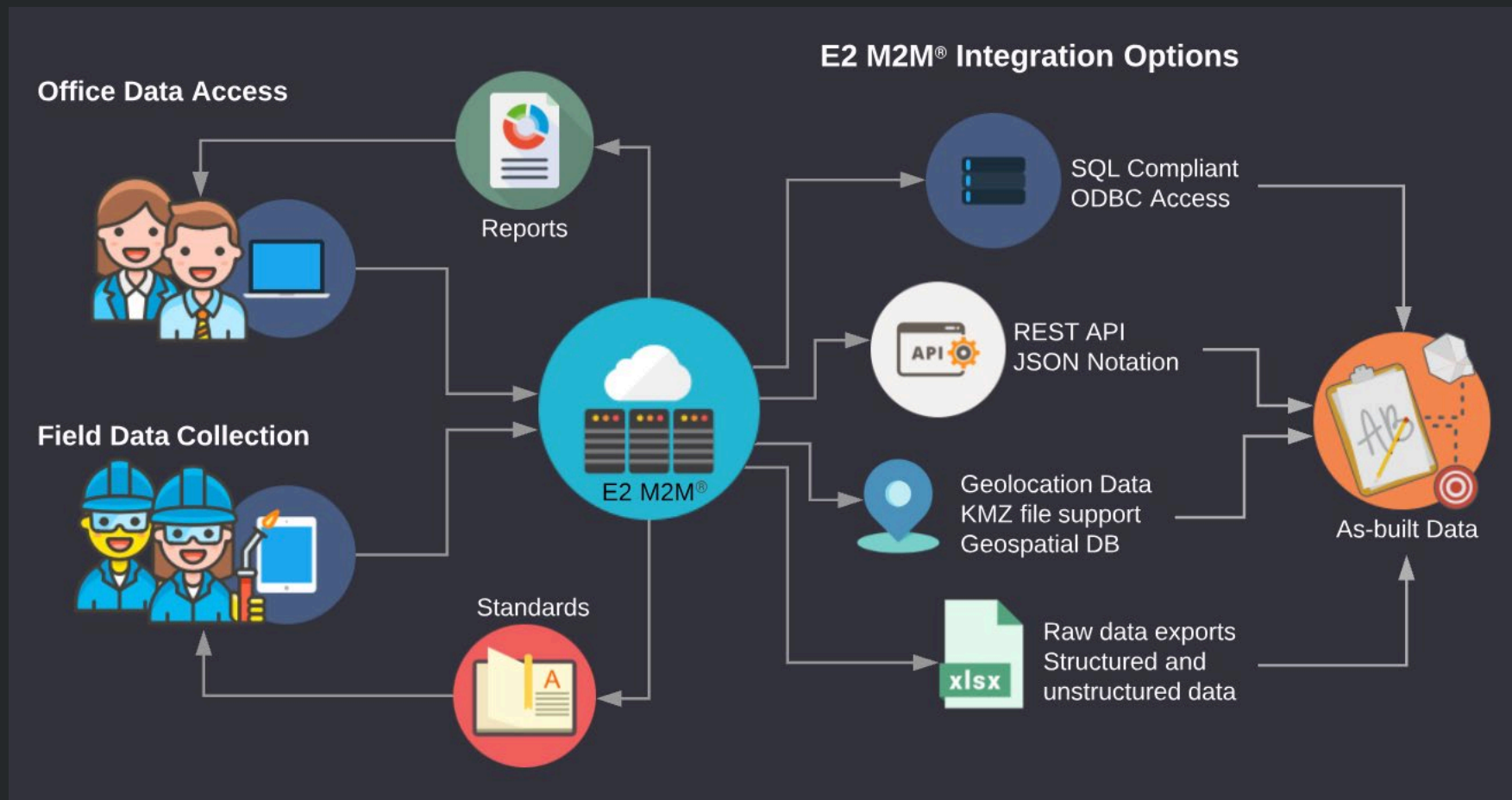
E2 M2M[®] Data Request Module

The screenshot displays the 'Responses' tab of a data request module. At the top, there are tabs for 'Overview' and 'Responses'. A red header bar contains 'Question 28.2.1.' on the left and 'Lead Review' on the right. The main content area shows the question text: 'Question 8.2: The Applicants "extended the project scope by approximately 600 feet downstream to a MLV location, to address Phase 1A criteria mileage." 8.2.1. Please identify the MLV location referred to in this statement.' Below the question is a response input area with three tabs: 'Champion Response', 'Lead Response' (which is active), and 'Final Response'. The 'Lead Response' contains the text: 'The scope was extended 595ft to MLV 1004-20.83-0 at the Parson's property.' To the right of the response area is a 'Champions' section with a large empty box. Below the response area are two buttons: 'Save Response' (blue) and 'Submit to Manager for Final Review' (red). At the bottom, there is a 'Collaboration Board' section with 'Attached Documents' selected. It features a comment input field with a 'Post Comment' button and a 'Ping user (optional)' dropdown. Below the input is a section for '1 Comments' showing a comment from Bianca Rivera: 'Should we update the schematic in the workpaper to point out the MLV?' with a timestamp of '5/15/2019 1:13:57 PM'. The comment includes a user avatar 'BR', a star icon '★ KC', and a trash icon.



E2 M2M[®] GPS-GIS
Capture Module

INTEGRATE E2 M2M[®] TO YOUR WORKFLOWS



MORE AVAILABLE ON E2 M2M[®]

- Non-Destructive Examination
- Direct Assessment / Bell-hole Inspection
- Dig Tracker Program Management
- Environmental Inspection Modules
- Enhanced GIS Data Collection Module
- RFIs and Change Orders
- Pipeline Condition and Maintenance Report
- Material Transfer Tracking
- And many more...

The screenshot displays the E2 M2M software interface. At the top, there are logos for SoCalGas and SDGE connected, along with navigation links for 'Daily Logs' and 'Home'. The main header shows 'PROJ. 404 Sec 4A', 'SECTION 4A', and 'BY Fred Hadley'. The date 'Feb 27, 2019' is prominently displayed, with a 'Log Summary' section below it. A 'Delete DIR' button and a 'Preview DIR' button are visible. A 'DIR Only' checkbox is checked. The interface is divided into several sections: 'Weather' (Cloudy), 'Temperature (F)' (61), 'Spec Number' (223.0003), 'Contractor' (ARB/PSC), and 'Accidents Reported' (0). A 'Review Steps' table shows 'Daily Log Submitted' and 'Field Inspection' by Fred Hadley on 2/27/2019. The 'Field Notes' section includes 'Weld Inspection' and 'Coating Inspection' with various checklist items and radio button options for 'Yes', 'No', and 'NA'.

Field Notes	DIR Checklist	Timecard	Totals
Weld Inspection			
Was the Radiography Checklist initialized?			
<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA			
Coating Inspection			
A. Coating inspected with Holiday detector (Jeep) for damage and subsequently reported with all discrepancies corrected.			
<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA			
B. All above ground pipe visually inspected, rust remove and painted with proper paint.			
<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA			
C. All insulation and metal jacketing installed and visually inspected.			
<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA			
D. All sandblasting and metal repairs complete, and re-coating inspected ready for bolt up.			
<input type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA			

E | 2

QUESTIONS?