ExxonMobil

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GPS Was Here

Tracking Monitoring Events and Path

Energy lives here™

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Optical Gas Imaging Stakeholder Workshop

Preliminary DRAFT

Value of GPS in Leak Detection & Repair (LDAR) Programs

Current Uses in LDAR with Method 21

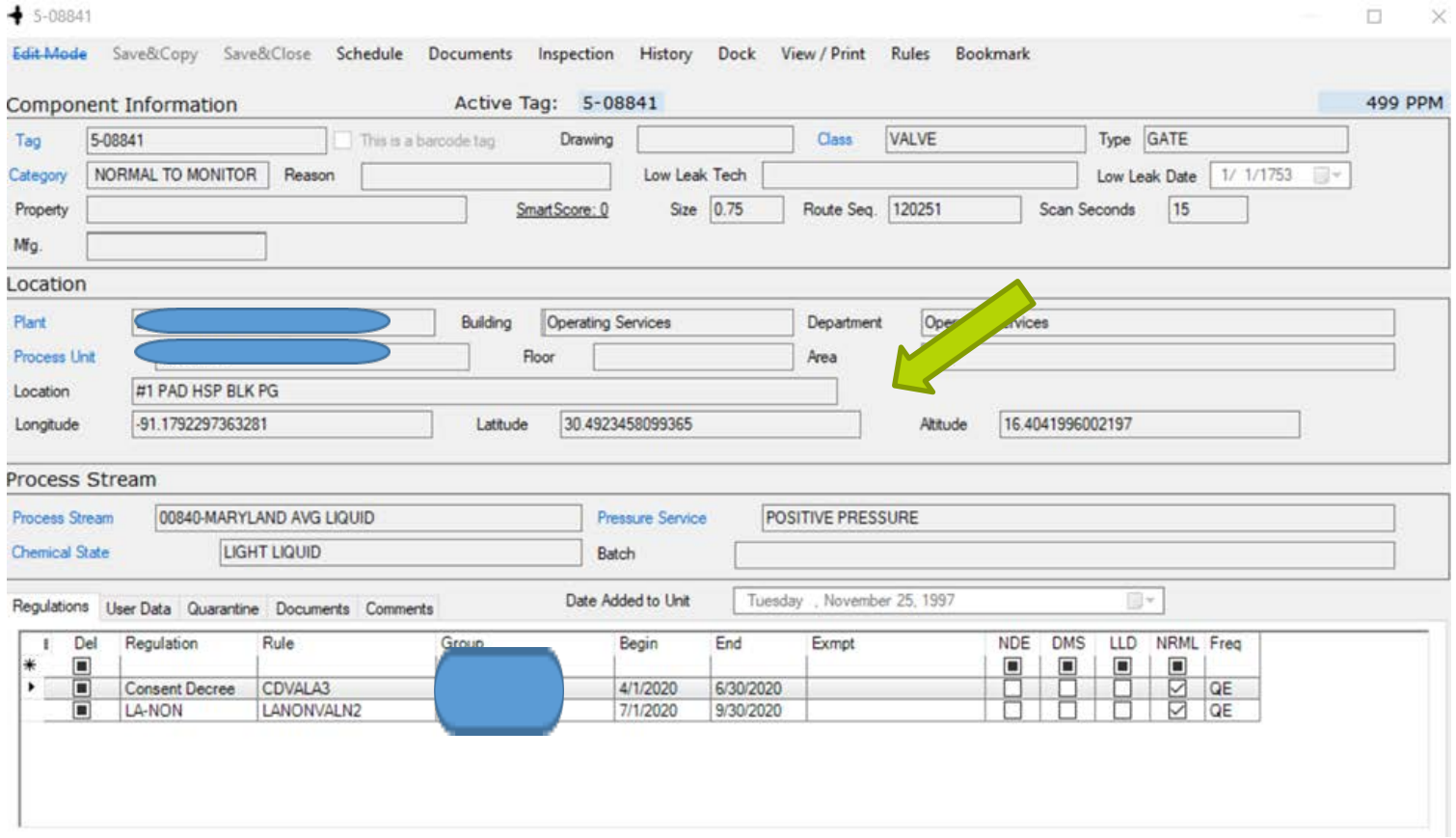
- Location finding for LDAR components
- Validation tool for monitoring activity technicians
- Mapping of emission points

Potential Uses in LDAR with Optical Gas Imaging (OGI)

- Same value-added functions as M21
- Provides reliable alternative recordkeeping option to continuous/individual video recording requirements in existing Alternative Work Practice (AWP).
- Requires no new technology or work practices – GPS already a mature work process

Exemplar Use of GPS – Assigned GPS Coordinates

Each regulated component can have an assigned GPS coordinate (lat/long)



Exemplar Use of GPS – Captured GPS Coordinates

The GPS coordinates are recorded for each monitoring event which can be used to plot the rouge or time/sequence comparison of monitoring events.

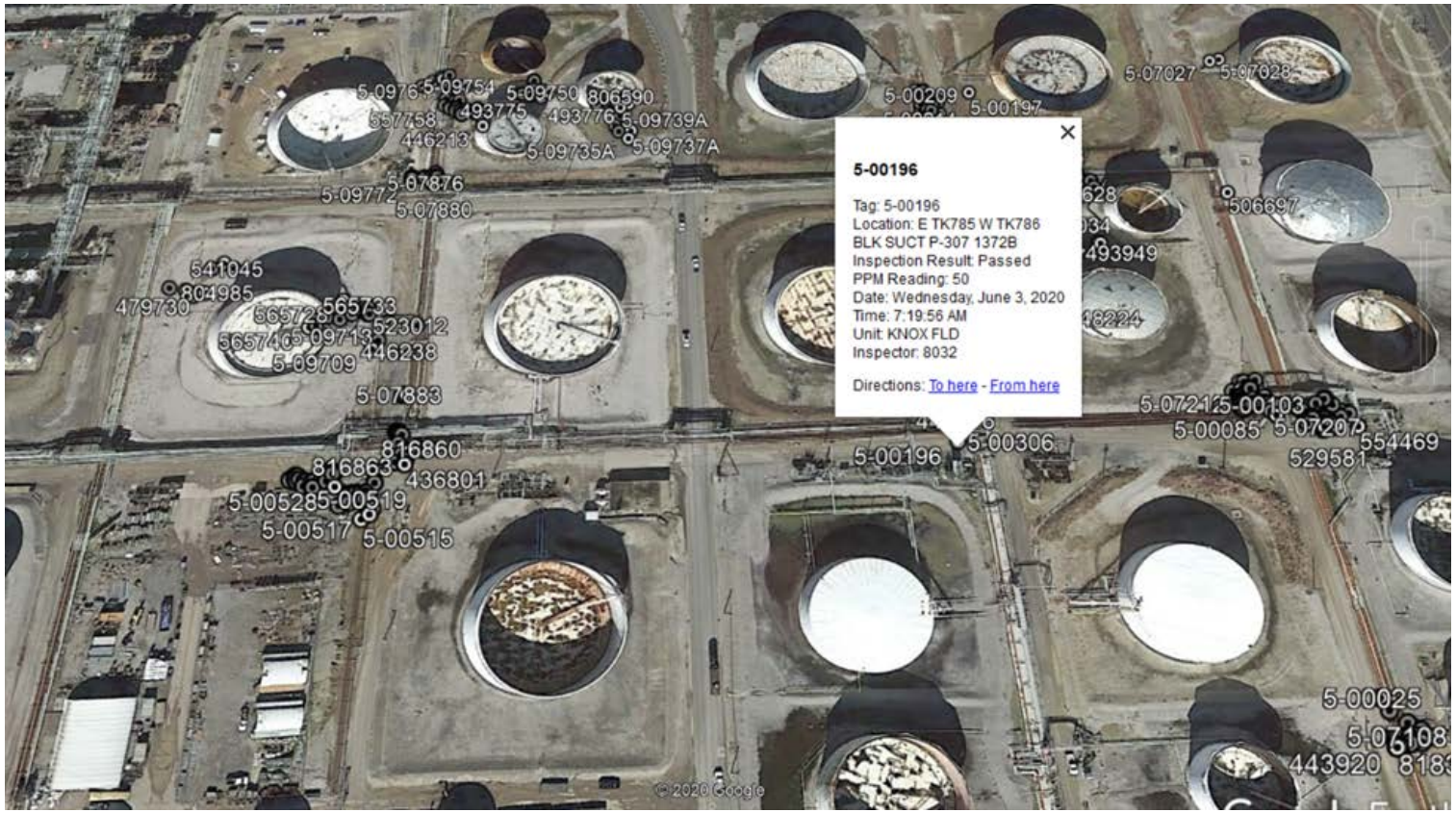
NetReading	Pass_Fail	Inspector	LocationDescript...	ScanStartTime	ScanSeconds	Longitude	Latitude	Altitude	Sate
1	Passed	M2339	#1 PAD HSP BLK...	6/1/2020 7:02:36 AM	15	-91.1792221069336	30.49229431152...	-3.28083992004395	
0	Passed	M2339	#1 PAD HSP BLK	6/1/2020 7:03:14 AM	26	-91.1792297363281	30.49230766296...	6.56167984008789	
0	Passed	M2339	#1 PAD HSP BLK...	6/1/2020 7:05:04 AM	18	-91.1792297363281	30.49234580993...	16.4041996002197	
0	Passed	M2339	#1 PAD HSP BLK...	6/1/2020 7:05:34 AM	17	-91.1792221069336	30.492317199707	-3.28083992004395	
0	Passed	M2339	#1 PAD HSP BLK	6/1/2020 7:06:15 AM	16	-91.17919921875	30.492317199707	6.56167984008789	
59	Passed	M2339	#1 PAD HSP...	6/1/2020 7:07:51 AM	30	-91.1792602539063	30.49235153198...	-9.84251976013184	
0	Passed	M2339	#1 PAD HSP...	6/1/2020 7:09:54 AM	21	-91.1792907714844	30.49236106872...	-9.84251976013184	
0	Passed	M2339	1 PAD HSP BLK...	6/1/2020 7:10:26 AM	21	-91.1792907714844	30.492359161377	-6.56167984008789	
43	Passed	M2339	1 PAD MOTOR...	6/1/2020 7:11:34 AM	30	-91.1793212890625	30.49230957031...	-16.4041996002197	
1	Passed	M2339	1 PAD MOTOR...	6/1/2020 7:12:37 AM	18	-91.179313659668	30.492317199707	6.56167984008789	
0	Passed	M2339	1 PAD MOTOR...	6/1/2020 7:13:25 AM	19	-91.1792984008789	30.49233627319...	19.6850395202637	
0	Passed	M2339	1 PAD MOTOR...	6/1/2020 7:14:26 AM	17	-91.1792755126953	30.49231147766...	3.28083992004395	
0	Passed	M2339	1 PAD MOTOR...	6/1/2020 7:14:58 AM	17	-91.1792373657227	30.49237060546...	6.56167984008789	
2	Passed	M2339	1 PAD PFFD BLK	6/1/2020 7:16:28 AM	20	-91.1792297363281	30.49241065979	13.1233596801758	
0	Passed	M2339	1 PAD PFFD	6/1/2020 7:16:55 AM	18	-91.1792221069336	30.49243354797...	16.4041996002197	
16	Passed	M2339	1 PAD PFFD	6/1/2020 7:17:24 AM	18	-91.1792144775391	30.49245834350...	19.6850395202637	
0	Passed	M2339	1 PAD PFFD	6/1/2020 7:17:52 AM	16	-91.1792068481445	30.49248123168...	22.9658794403076	
0	Passed	M2339	1 PAD MOTOR...	6/1/2020 7:19:05 AM	15	-91.1791839599609	30.49254417419...	32.8083992004395	
6	Passed	M2339	1 PAD MOTOR...	6/1/2020 7:19:41 AM	23	-91.1791610717773	30.49255180358...	42.6509170532227	
1	Passed	M2339	1 PAD MOTOR...	6/1/2020 7:20:34 AM	19	-91.1791610717773	30.492582321167	36.0892372131348	

Exemplar Use of GPS – Plotting Monitoring Events

Plotting monitoring event locations for components

Exemplar Use of GPS – Detailed Information for Monitoring

Plot at closer resolution – each point has the ability to pull up the regulated components monitoring event data including tag #, location, date/time, and monitoring results from the database system

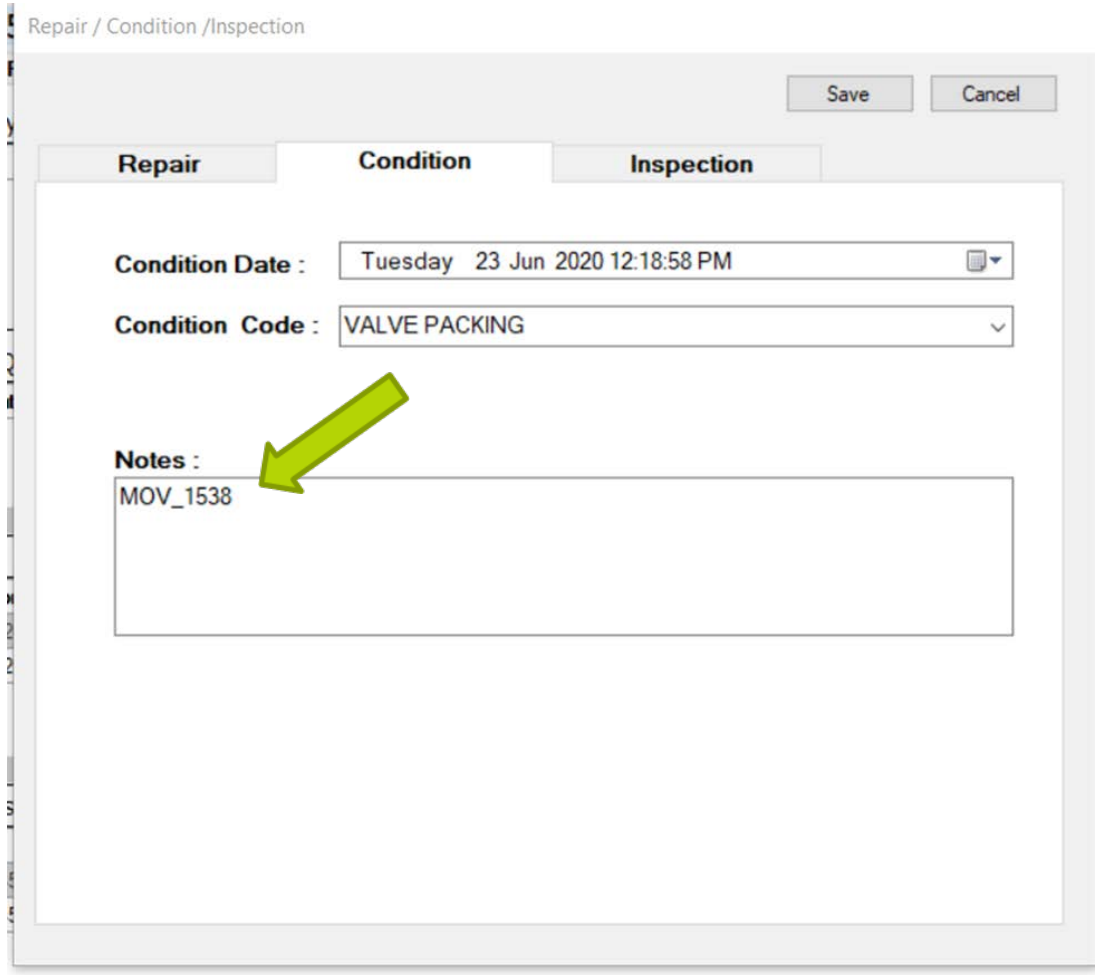


Exemplar Use of GPS – Plot Monitoring Routes/Movement

Plot of actual route (in time sequence order) of monitoring events

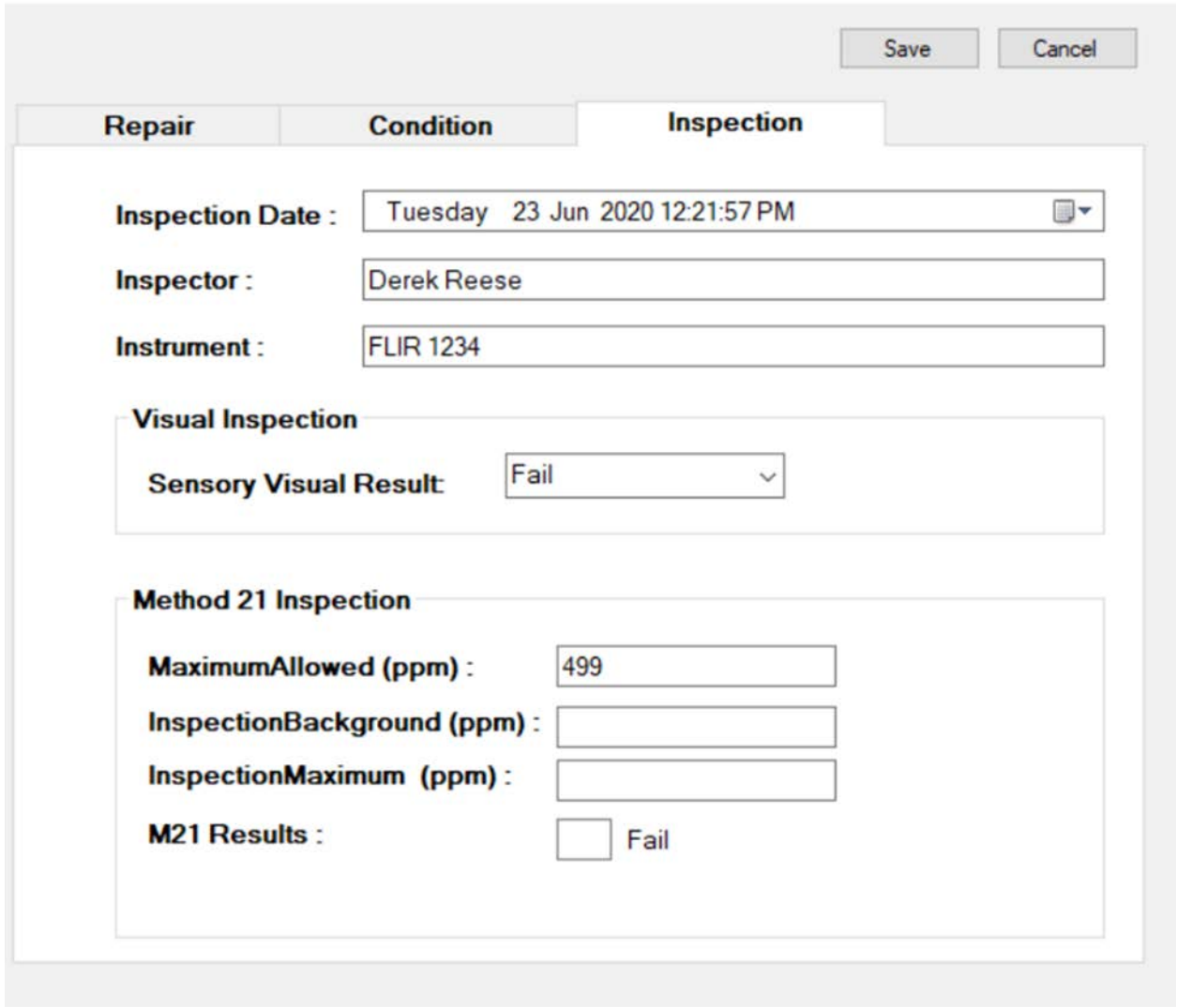
Exemplar Use of GPS – Capture Leaks and Video Record

If leak is found, technician can record condition of component and list the file name of the recorded video for the leak record.



Exemplar Use of GPS – Detailed Leak Information

If a leak is found, the failed condition (can see leak via camera) is documented.



Path Forward for GPS

GPS functionality exists and is actively in use today

On-going work to streamline video recording transfer capabilities

Straightforward solution to recordkeeping and tracking of monitoring events

GPS is here and ready for use in OGI alternatives