Field Verifications Summary Table

This table presents a summary of the investigation techniques to be employed as needed. Additional detail is provided in the discussion sections which follow this table, and in the reference documents. Any requirements above these techniques (e.g. special diameter measurements, etc.) should be communicated in a special drawing in the dig job package.

Document Section	Method	Description	Desired Property	Investigation Frequency
1 – DIAMETER				
	Measuring tape	Use a Pi measuring tape to measure the circumference of the pipe, as permitted for new pipe in API 5L.	Diameter	Measure the circumference of the pipe in 2 areas for each excavation and diameter. Both measurements should be documented on the form. This measurement is called for in the H-Form (section 2.0).
2 – WALL THICKNESS				
	Ultrasonic Inspection	Electronic instrument measures the wall thickness of a solid structure such as the pipe wall.	Wall Thickness	Perform 12 measurements around the circumference of the pipe at quarter points, per §192.109. All within a single excavation. This measurement is called for in the H-Form (section 2.5)
3 – MATERIAL STRENGTH / PROPERTIES				
	Laboratory Analysis	Install two pressure control fittings on the pipeline or otherwise remove the pipeline from service, to allow removal of sections of the pipe wall for testing. Perform destructive laboratory testing on the coupon to determine the tensile properties.	Grade / SMYS	Once per excavation if desired. Destructive laboratory testing is referenced in §192.107 and Section II-D of §192 Appendix B. Performed in accordance with tensile testing specified in API 5L. If this test is desired, it will be specifically called for in the dig location job package. Test is rarely used.
	ABI Technique	Electrical/mechanical device that determines the average yield strength without destructive testing. The resulting average yield can be used in the Barlow's equation to calculate the MAOP.	Average Yield Strength	5 individual tests per test location in one excavation. Can be used in place of destructive laboratory testing when confirming material strength. The test should be taken at top-dead-center, at the center of the trench and away from any long seam. If a girth weld is encountered in the trench, 2 tests locations will be selected (one on either side of the girth weld). If this test is desired, it will be specifically called for in the dig location job package.

Document Section	Method	Description	Desired Property	Investigation Frequency
	Alloy Analysis	Analysis of small scrapings of the pipe metal to determine the chemical composition. The weldability of the pipe, and some information regarding manufacturing and vintage can be determined based on the results of this analysis.	Metal composition	If the ABI Technique is performed, the samples for this future test should be acquired and forwarded to ATS. If the ABI Technique is used, scrapings should be collected.
4 – LONGITUDINAL SEAM TYPE				
	Radiography	Radiographic examination of weld.	Long seam weld type	Radiographic inspection of long seam welds (for pipe that is not seamless) to differentiate between SSAW and DSAW. The ATS Data Sheet for RT Characterization of DSAW vs. SSAW should be completed. In addition this form will be revised to include the assessment of weld quality. If this test is desired, it will be specifically called for in the dig location job package.
	Visual	Visual examination of long seam weld.	Long seam weld type	Inspect and photograph external long seams after cleaning. Use PG&E's Gas Standard & Specifications A-11 and other references presented in Section 5 to determine the long seam type by inspection. In accordance with the H-Form, section 2.2 macro-etching will be conducted to discern whether the long seam is ERW or SMLS. This measurement is called for in the H-Form (section 2.2)
	Magnetic Particle Exam	Examination of the weld or material using magnetic particle inspection techniques.	Defects	If the visual examination of the pipe surface in the area ground for testing indicates potential cracks or other problems that are not identified on the radiographic examination, then magnetic particle will be used. Although, the results of this analysis are not used to determine the MAOP, this visual surface examination will be conducted to help ensure the integrity of the pipeline and assess the need for any repairs. This measurement is called for in the H-Form (section 2.6)
5 – GIRTH WELD TYPE				
	Visual	Visual examination of girth weld.	Girth weld type	Guidance for this inspection is still under development.
6 – PIPELINE COATING				
	Sampling	Collection of coating sample to be used for asbestos testing.	Asbestos	This measurement is called for in the H-Form (section 1.1)