Section 192.933

~~*This guide material is under review following Amendment 192-132.*~~

1 DISCOVERY OF CONDITION

(a) The operator is expected to define "discovery of condition" in its written integrity management program because that date sets the schedule for evaluation and remediation. Conditions may be discovered as soon as the assessment is completed. Some of these may require immediate action. However, the operator generally has no more than 180 days after completing an assessment to discover a condition that presents a potential threat to the integrity of the pipeline. The operator should document the date each condition was discovered. Notification to PHMSA in accordance with §192.18 is required for conditions that exceed 180 days.

(b) ...

2 SCHEDULE FOR EVALUATION AND REMEDIATION

2.1 Immediate repair conditions.

(a) "Immediate repair conditions" are indications that a defect has failed or may be close to failure. These conditions require action within 5 days of discovery. Although §192.933 uses the term "immediate repair condition," a repair is not always required within the 5-day period. A temporary reduction of pressure (see §192.933(a)) will allow the pipeline to continue to operate.

(b) For immediate repair conditions that result from analysis of ILI data, an evaluation of the indication must be conducted within five days of discovery according to ASME B31.8S.

~~(c) For ILI and DA, immediate repair conditions include any of the following.~~
~~(1) An indicated corrosion defect that yields a predicted failure pressure of less than 1.1 times the MAOP.~~
~~(2) A dent that has any indication of metal loss, cracking, or a stress riser (see Table 192.933ii).~~
~~(3) An indication of stress corrosion cracking.~~
~~(4) A metal loss indication affecting a detected longitudinal seam in low-frequency ERW pipe or pipe produced by electric flash welding.~~
~~(5) Other indications that might be expected to cause immediate failure or, in the judgment of the operator, require immediate action.~~

(~~d~~ c) For ECDA, "immediate indications" only become "immediate repair conditions" when direct examination indicates a defect that meets ~~one of the above~~ criteria in §192.933(d)(1).

(~~e~~ d) For repair information, see guide material under §192.713.

~~*2.2 One-year conditions.*~~
~~Dents requiring repair within one year are listed in Table 192.933ii.~~
~~*2.3 Scheduled conditions.*~~
~~Corrosion indications are required to be analyzed for predicted failure pressure in accordance with ASME B31G, PRCI PR-3-805 (RSTRENG) (see §192.7 for IBR for both), or equivalent method. The failure pressure (P_f) is divided by the MAOP to determine a safety factor. The safety factor and operating percent of SMYS determine the maximum time interval for evaluation and remediation. The maximum time interval for responding to scheduled defects may be obtained from ASME B31.8S-2004, Section 7, Figure 4 (see §192.7 for IBR).~~
~~*2.4 Monitored conditions.]*~~
~~Dents that can be monitored are included in Table 192.933ii.~~

~~REMEDIATION OF DENTS~~			
~~Pipe Size~~	~~Dent Location~~	~~Description~~	~~Schedule~~

~~Any~~	~~Any~~	~~A dent that contains a crack, stress riser, or has metal loss.~~	~~Immediate~~
~~Less than 12"~~	~~Any~~	~~A dent with a depth[1] greater than 0.25 inches that affects a girth weld or longitudinal weld seam, with no engineering analysis.~~	~~One year~~
	~~Any~~	~~A dent with a depth[1] greater than 0.25 inches that affects a girth weld or longitudinal weld seam and engineering analysis demonstrates critical strain levels are not exceeded.~~	~~Monitor~~
	~~Top 2/3 of pipe~~	~~A smooth dent with a depth[1] greater than 0.5 inches, with no engineering analysis.~~	~~One year~~
	~~Top 2/3 of pipe~~	~~A dent with a depth[1] greater than 0.5 inches, and engineering analysis demonstrates critical strain levels are not exceeded.~~	~~Monitor~~
	~~Bottom 1/3 of pipe~~	~~A dent with a depth[1] greater than 0.5 inches.~~	~~Monitor~~
~~Equal to or greater than 12"~~	~~Any~~	~~A dent with a depth[1] greater than 2% of the pipe diameter that affects a girth weld or longitudinal weld seam, with no engineering analysis.~~	~~One year~~
	~~Any~~	~~A dent with a depth[1] greater than 2% of the pipe diameter that affects a girth weld or longitudinal weld seam and engineering analysis demonstrates critical strain levels are not exceeded.~~	~~Monitor~~
	~~Top 2/3 of pipe~~	~~A smooth dent with a depth[1] greater than 6% of the pipe diameter with no engineering analysis.~~	~~One year~~
	~~Top 2/3 of pipe~~	~~A dent with a depth[1] greater than 6% of the pipe diameter and engineering analysis demonstrates critical strain levels are not exceeded.~~	~~Monitor~~
	~~Bottom 1/3 of pipe~~	~~A dent with a depth[1] greater than 6% of the pipe diameter.~~	~~Monitor~~
~~[1] See 2 of the guide material under §192.309 for measuring the depth of a dent.~~			

~~**TABLE 192.933ii**~~

2.2 *Repair schedule criteria.*

The tables below provide guidance of required action scheduling based on anomaly type, class location, predicted failure pressure calculation results, and other criteria mentioned in §192.933(d).

Notes: 1. Remediation requires pressure reduction according to §192.933(a) or shut down pipeline.
2. Remediation requires repair of an anomaly within one year of discovery (§192.933(d)(2)).
3. Action requires recording and monitoring the conditions during subsequent risk assessments and integrity assessments for any change that may require remediation (§192.933(d)(3)).

Remediation of Dents		
Anomaly Type	**Description and Action**	**Remediation Schedule**
Dent with metal loss, cracking, or stress riser	If dent location is on upper 2/3 of pipe, with either metal loss, cracking or a stress riser, then take remedial action.[4]	Immediate[1]
	Dent with metal loss, cracking or stress riser, then monitor condition.[4]	Monitored Condition[3]
Dent or smooth dent on upper portion of pipe	If dent is a smooth dent on upper 2/3 of pipe with depth >6% pipe diameter, then take remedial action.[4]	One Year[2]
	If dent depth >6% of pipe diameter, and is located on upper 2/3 of pipe, then monitor condition.[4]	Monitored Condition[3]
Dent at weld or seam	If dent depth >2% of pipe diameter, and is located at girth weld, longitudinal or helical (spiral) seam weld, then take remedial action.[4]	One Year[2]
	If dent with depth >2% of pipe diameter and is located at girth weld, longitudinal or helical (spiral) seam weld, and ECA meets conditions of Note 4, then monitor condition.	Monitored Condition[3]
Dent on lower portion of pipe	If dent location is on lower 1/3 of pipe, with either metal loss, cracking, or stress riser, then take remedial action.[4]	One Year[2]
	If dent depth >6% of pipe diameter, and is located on lower 1/3 of pipe, then monitor condition.[4]	Monitored Condition[3]
Dent with metal loss, cracking, or stress riser	Dent with metal loss, cracking or stress riser, then monitor condition.[4]	Monitored Condition[3]

4. If ECA performed in accordance with §192.712(c) demonstrate critical strain levels are not exceeded, then monitor condition (See Note 3).

TABLE 192.933ii

Remediation of Cracks and Crack-like Anomalies

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Anomaly Type	Class Location	Description and Action	P_f Compared to MAOP[5]	Remediation Schedule
Crack depth greater than 50% pipe wall thickness	Any	If crack or crack-like anomaly with crack depth plus any metal loss greater than 50% of pipe wall thickness, then take remedial action.	N/A	Immediate[1]
Crack depth greater than tool depth	Any	If crack or crack-like anomaly with crack depth plus any metal loss greater than the inspection tool's maximum measurable depth, then take remedial action	N/A	Immediate[1]
Crack or crack-like anomaly at any location	Class 1[4]	If crack or crack-like anomaly is found, then conduct P_f for pipe segment at location of anomaly.[5]	P_f <1.39 MAOP	One Year[2]
	Class 2, 3 & 4		P_f <1.5 MAOP	One Year[2]
	Class 1[4]		P_f >= 1.39 MAOP	Monitored Condition[3]
	Class 2, 3 & 4		P_f >= 1.5 MAOP	Monitored Condition[3]

Notes:
1. Remediation requires pressure reduction per §192.933(a) or shut down pipeline.
2. Remediation requires repair of an anomaly within one year of discovery (§192.933(d)(2)).
3. Action requires recording and monitoring the conditions during subsequent risk and integrity assessments for any change that may require remediation (§192.933(d)(3)).
4. Includes Class 2 locations that contain Class 1 pipe that has been uprated in accordance with §192.611.
5. P_f = predicted failure pressure determined in accordance with §192.712(d).

TABLE 192.933iii

Remediation of Metal Loss				
Anomaly Type	**Class Location**	**Criteria Description and Action**	**P_f compared to MAOP[5]**	**Remediation Schedule**
Metal loss any location on pipeline	Any	If metal loss greater than 80% of nominal wall regardless of dimensions, then take remedial action.	N/A	Immediate[1]
	Any	If metal loss anomaly is found, then conduct P_f for pipeline at location of anamoly.[5]	<= 1.1	Immediate[1]
	Class 1		> 1.10	See ASME/ANSI B31.8S, section 7, Figure 4
	Class 2		< 1.39	One Year[2]
	Class 3 & 4		<= 1.50	One Year[2]
Metal loss at crossing, circumferential corrosion or girth weld	Class 1[4]	If metal loss located at a crossing of another pipeline, or in an area with widespread circumferential corrosion, or affecting a girth weld, then conduct P_f at location of anamoly.[5]	<1.39	One Year[2]
	Class 2, 3 & 4		<1.50	One Year[2]
Metal loss at longitudinal seam	Any	If metal loss at a longitudinal seam, if the seam was formed by direct current, low-frequency ERW, electric flash welding, or pipe with a longitudinal joint factor less than 1.0, then conduct P_f calculation.[5]	<1.25	Immediate[1]
	Class 1[4]	If metal loss occurs at location affecting a detected longitudinal seam formed by either direct current, low-frequency ERW, electric flash welding, or with a longitudinal joint factor less than 1.0, then conduct P_f at location of anamoly.[5]	<1.39	One Year[2]
	Class 2, 3 & 4		<1.50	One Year[2]
	Class 1[4]		>=1.39	Monitored Condition[3]
	Class 2, 3 & 4		>=1.50	Monitored Condition[3]

Notes:
1. Remediation requires pressure reduction per §192.933(a) or shut down pipeline.
2. Remediation requires repair of an anomaly within one year of discovery (§192.933(d)(2)).
3. Action requires recording and monitoring the conditions during subsequent risk and integrity assessments for any change that may require remediation (§192.933(d)(3)).
4. Includes Class 2 locations that contain Class 1 pipe that has been uprated in accordance with §192.611.
5. P_f = predicted failure pressure determined in accordance with §192.712(d).

TABLE 192.933iv

3 PRESSURE REDUCTION

...

4 REQUIRED INSPECTIONS OF CRACKS AT TIME OF REPAIR

For locations on a pipeline that require repair and contain a known crack, or crack-like anomaly, the operator must conduct a direct examination meeting the requirements of §192.933(e).