Section 192.907

...

3 INCORPORATION BY REFERENCE

3.1 General.

(a) Subpart O requires use of documents that are incorporated by reference (IBR) in §192.7. An operator must meet the requirements of Subpart O and the referenced sections of those documents. In the event of a conflict between ASME B31.8S and NACE SP0502, the more stringent requirement should be followed.

(b) When developing a written program, an operator needs to consider applicable portions of the following documents~~: that are IBR in §192.7 for Subpart O.~~

(1) ASME B31.8S, which is IBR for this section.

(2) Other IBR documents used to develop the elements of an IMP (§192.911):

(i) NACE SP0502.

(ii) ASME~~/ANSI~~ B31G.

(iii) ~~GRI 02/0057~~NACE SP0206.

(iv) AGA, Pipeline Research Committee Project, PR–3–805.

(v) ASME B31.8.

3.2 ASME B31.8S.

(a) This standard contains non-mandatory "should" statements. The operator should evaluate each of these and take appropriate action. The operator may choose alternative practices; however, the operator should document the justification for doing so. Considerations might include the following.

(1) Acceptable levels of safety and integrity.

(2) Appropriateness to conditions.

(3) Technological improvements.

(b) Appendi~~x~~ces A ~~and B2~~ of this standard is ~~are~~ titled as "non-mandatory"; however, the requirements of this ~~these~~ appendi~~x~~ces are mandatory because Subpart O specifically incorporates them.

(c) "Must" and "shall" statements in this standard are mandatory.

(d) References in Subpart O to ASME B31.8S are listed below in Table 192.907i.

SUMMARY OF INCORPORATED REFERENCES TO ASME B31.8S	
ASME B31.8S	**Subpart O References**
General	§§192.907(b); 192.911; 192.913(a), (b)(1), & (c); 192.935(b)(1)(iv)
Section 2	§192.917(a)
Para 3.2	§192.903 - definition of potential impact radius
Section 4	§192.917(b) & (d)
Section 5	§§192.917(c) & (d); 192.921(a)(2); ~~192.935(a);~~ 192.937(c)(2); 192.939(a)(1)(ii) & (a)(3)
Para 6.2	~~§§192.921(a)(1);~~ ~~192.937(c)(1)~~
Para 6.4	§§192.923(b)(1) ~~& (b)(2)~~; 192.925(b), (b)(1), (b)(2), (b)(3), & (b)(4); ~~192.927(b)~~
Section 7	§192.933(c), ~~&~~ (d)(1), (d)(2)(iv)
Section 9	§192.911(i)
Para 9.4	§192.945(a)
~~Section 10~~	~~§192.911(m)~~
~~Section 11~~	~~§192.911(k)~~
Section 12	§192.911(l)
Appendix A	§§~~192.917(b);~~ 192.945(a)
~~Appendix A2~~	~~§192.927(c)(1)(i)~~
~~Appendix A3~~	~~§§192.923(b)(3); 192.929(b)(1) & (b)(2)~~
~~Appendix A3.3~~	~~§192.929(b)(1)~~
~~Appendix A3.4~~	~~§192.929(b)(2)~~
Appendices ~~A4.3 & A4.4~~ A-5.3 & A-5.4	§192.917(e)(4)
Appendix A~~7~~ -8	§192.917(e)(1)
~~Appendix B2~~	~~§§192.923(b)(2); 192.927(b)~~

TABLE 192.907i

[LB note for §192.917: TR 22-68 has also been approved for recirculation in this same LB and also makes modifications to this section, as shown below in green underline.]

Section 192.917

Note: References to ASME B31.8S throughout this section of guide material are specific to the edition of ASME B31.8S as incorporated by reference (IBR) in §192.7. Section 192.917(b) requires that the operator comply with the IBR edition of ASME B31.8S, Appendix A even though Appendix A is titled as "nonmandatory." See 3.2 of the guide material under §192.907.

...

3 EXTERNAL CORROSION

In evaluating the threat of external corrosion, §192.917(b)(1) and ASME B31.8S, Appendix A~~1~~ -2 provide a list of data that the operator is required to gather and evaluate. This threat applies to both belowground and aboveground installations.

...

4 INTERNAL CORROSION

...

4.10 Other considerations.

In addition to the data elements listed in §192.917(b)(1) and ASME B31.8S, Appendix A~~2~~ -3, the following data may be useful in evaluating corrosion.

(a) The factors listed in guide material under §192.476 regarding internal corrosion include the following.

...

5 STRESS CORROSION CRACKING

(a) In evaluating the threat of stress corrosion cracking (SCC), ASME B31.8S, Appendix A-

4 ~~A3~~ provides a list of data that the operator is required to gather and evaluate. Additional information can also be found in guide material under §192.613, and the reference listed in 17.1.8 below. Pipeline segments may be susceptible to two types of SCC; high pH and near-neutral pH.

(b) SCC requires three conditions to be satisfied simultaneously:
  (1) a tensile stress above the threshold stress,
  (2) an appropriate environment at the steel surface, and
  (3) a susceptible material.

(c) In accordance with ASME B31.8S, Appendix A-4.3~~A3.3~~, the operator must consider the threat of high pH SCC if all of the following operating conditions apply to the pipeline.
  (1) Segment is less than 20 miles downstream of a compressor.
  (2) Operates above a hoop stress of 60% SMYS. *{green font is from TR 21-40 in Addendum 1}*
  (3) Is not coated with plant-applied or field-applied fusion bonded epoxy (FBE), liquid epoxy, or field joint coating systems.
  (4) Operating temperatures historically above 100 °F.
  (5) Has been in service more than 10 years. Operators may use age of pipe coating if the pipeline segment has been assessed for SCC.

(d) Operators with historical SCC failures in locations that are outside of the above screening criteria should adjust their screening criteria to reflect operating history when performing threat identification, risk analysis, and assessment plans.

(e) ASME B31.8S, Appendix A-4.3 ~~A3.3~~ also requires that each segment that has experienced a failure, leak, or hydrostatic test break caused by SCC must be evaluated, unless the conditions that led to SCC have been corrected (e.g., coating replaced with FBE).

(f) SCC is primarily a result of exposure of the pipe to specific soil conditions. Pipeline coatings help protect the pipe, but the coating can be damaged by high temperatures. High temperatures are primarily associated with proximity to a compressor. Pipelines with coal tar, asphalt, and tape coatings that have been exposed to higher temperatures for prolonged periods of time have an increased potential for SCC. Key factors in the determination of the SCC threat are the coating, the pipe materials, and the conditions under which the pipeline is operated.

(g) NACE SP0204, Section 3 (see listing in §192.7, not IBR for §192.917) details data elements that may be used for prioritization of segments; these same data elements might be useful for threat identification purposes. NACE SP0204 is to be followed when using SCCDA as an assessment method (§192.929).

5.1 Age of pipe.

Since SCC threat is time-dependent, the threat may increase the longer the pipe is in service provided all of the operating conditions required to support SCC have been met. ASME B31.8S, Appendix A-4 ~~A3~~ states that a segment does not need to be assessed for SCC if the age of the pipe is less than 10 years.

5.2 Operating stress level (percent SMYS).

...

5.3 Operating temperature.

Higher pipeline temperatures can increase the probability of SCC. ASME B31.8S, Appendix A-4 ~~A3~~ states that high pH SCC needs to be assessed only if the pipeline temperature is greater than 100 ºF. Higher pipeline temperature may be due to compressor discharge, gas from deep wells with higher down-hole temperatures, and long-term underground fires. Temperature may accelerate high pH SCC. However, "near-neutral pH" SCC can occur at temperatures less than 100 ºF. Elevated temperatures can also contribute to coating disbondment and deterioration. Both current and historical temperature records need to be examined.

...

6 MANUFACTURING THREATS

(a) This threat refers to defects of the pipe seam or pipe body that are associated

with the manufacturing process.

(b) Some examples of manufacturing defects include the following.

...

(c) In evaluating manufacturing threats, §192.917(b)(1) and ASME B31.8S, Appendix A-5 ~~A4~~ provides a list of data the operator is required to gather and evaluate as outlined below.

...

...

6.4 Seam type.

(a) ...

...

(e) Pipe must be prioritized as a high-risk segment if it meets the conditions as outlined in ASME B31.8S Appendix ~~A4.3~~ A-5.3 and ~~A4.4~~ A-5.4 and:

...

...

7 CONSTRUCTION THREATS

Construction threats are related to the fabrication process used in the construction of a facility. Construction threats include the following.

...

In evaluating construction threats, §192.917(b)(1) and ASME B31.8S, Appendix A-6 ~~A5~~ provides a list of data that the operator is required to gather and evaluate.

...

7.14 Other considerations.

In addition to the data elements listed in ASME B31.8S, Appendix A-6~~A5~~, the following data may be useful in evaluating for construction threats.

...

Construction defects are much more susceptible to longitudinal stresses than to hoop stresses. See 17.1.15 below.

...

[Editorial note: Added 8 that was missing in TR 25-29 as provided to Editorial Section.]

8 EQUIPMENT THREATS

Equipment can be defined as pipeline facilities other than pipe and pipe fittings and includes the following.

...

In evaluating equipment threats, §192.917(b)(1) and ASME B31.8S, Appendix A-7 ~~A6~~ provides a list of data that the operator is required to gather and evaluate.

...

9 THIRD-PARTY DAMAGE

In the context of Subpart O, third-party damage includes the following.

...

In evaluating the threat of third-party damage, §192.917(b)(1) and ASME B31.8S, Appendix A-8 ~~A7~~ provides a list of data that the operator is required to gather and evaluate. All facilities are subject to the threat of third-party damage.

...

10 HUMAN ERROR (FORMERLY INCORRECT OPERATIONS)

This threat is time-independent and may occur at any time. Human error often results in incorrect operations such as operational or maintenance mishaps. Human errors include the following.

...

In evaluating the threat of incorrect operations, §192.917(b)(1) and ASME B31.8S, Appendix A-9 ~~A8~~ provides a list of data that the operator is required to gather and evaluate. All facilities are subject to the threat of incorrect operations.

...

11 WEATHER AND OUTSIDE FORCES

Weather-related and outside force threats have the capability to create extreme loading conditions on pipelines. Section 192.917(a)(3) and ASME B31.8S, Appendix A-10 ~~A9~~ require operators to consider seismicity, geology, and the soil stability of the area surrounding pipelines, and provides a list of data that the operator is required to gather and evaluate to determine whether pipelines are being subjected to extreme loading conditions caused by weather or outside forces. Aboveground facilities are also prone to weather-related events.

...

11.5 Pipe parameters.

The following pipe parameters are factors in determining operating hoop stress.

...

ASME B31.8S, Appendix ~~A9~~A-10.2(g) states that the sum of all pipe stresses (e.g., longitudinal, hoop stress, bending, overburden) is not to exceed 100% SMYS. If any of the pipe parameters are not known, conservative estimates of the missing data should be used.

...

12 PLASTIC TRANSMISSION PIPELINES

...

12.3 Manufacturing threats.

...

(b) Data collection.
ASME B31.8S, Appendix A-5 ~~A4~~ relates to metallic pipelines, but may be useful as a format for data that should be collected to evaluate a plastic pipeline for manufacturing threats. The following list may be applicable to plastic pipelines and should be considered by the operator.

...

12.4 Construction threats.

For additional installation considerations, see guide material under §192.321.

(a) Potential construction threats.
Construction threats are related to the methods used in the construction and installation of a pipeline and include the following.

...

(b) Data collection.
ASME B31.8S, Appendix A-6 ~~A5~~ generally relates to metallic pipelines, but may be useful as a format for data that should be collected to evaluate a plastic pipeline for construction threats. Of the specific data sets in ASME B31.8S, Appendix A~~5~~ -6, the following list may be applicable to plastic pipelines and should be considered by the operator.

...

12.5 Equipment threats.

Equipment can be defined as pipeline facilities other than pipe and pipe fittings.

(a) For plastic pipelines, equipment-related threats may include failure of the following.

...

(b) Data collection.
ASME B31.8S, Appendix A-7 ~~A6~~ relates to metallic pipelines, but may be useful as a format for data that should be collected to evaluate a plastic pipeline for equipment threats. The following list may be applicable to plastic pipelines and should be considered by the operator.

...

12.6 Third-party damage.

(a) Potential third-party damage threats.

In the context of Subpart O, third-party damage includes the following.

...

(b) Data collection.
ASME B31.8S, Appendix A~~7~~ 8 relates to metallic pipelines, but may be useful as a format for data that should be collected to evaluate a plastic pipeline for third-party damage threat. The following list may be applicable to plastic pipelines and should be considered by the operator.

...

12.7 Incorrect operations (includes human error).

(a) All facilities are subject to the threat of incorrect operations. This threat is time-independent and may occur at any time. Potential incorrect operation threats include the following.

...

(b) Data collection.
ASME B31.8S Appendix A~~8~~ 9 relates to metallic pipelines, but offers a useful format for data that should be collected to evaluate a plastic pipeline for incorrect operations. The following list may
be applicable to plastic pipelines and should be considered by the operator.

...

...

14 DATA INTEGRATION

14.1 General.

(a) Operators must gather and integrate relevant attributes of pipelines containing covered segments (§192.917(b)(1)). This pipeline data might already be collected for other regulatory and operational purposes or gathered through the review of existing documentation such as those listed in Table ~~2~~ 4.3-1 of ASME B31.8S. Collecting and understanding this information is critical to an integrity management program. Data integration might identify situations or conditions that support an operator's safe operation of the pipeline.

(b) Data integration involves merging individual data elements (aggregation) and analyzing them in their combined context (integration) to identify and evaluate potential threats to the pipeline segment. Data integration may allow an operator to discover threats and risks to a pipeline that might not be evident from a review of the various individual data elements on their own.

(c) The operator is required by §192.917(b) to consider data from both covered and similar non-covered segments. The operator's integration procedure should encompass the ability to merge and use the multiple data elements gathered as described in 3 through 12 above, the information listed in §192.917(b)(1), the elements listed in Table ~~1~~ 4.2.1-1 of ASME B31.8S and other information deemed to be relevant by the operator.

(d) Section 192.947 requires an operator to maintain records that demonstrate data relevant to a particular covered segment was considered in making decisions.

(e) A periodic review should be conducted to determine if data integration and analysis accurately reflect the pipeline conditions. This activity should be an element of the quality assurance program (see §192.911(l)).

...

Section 192.919

3 SELECTING ASSESSMENT METHOD

(a) The method(s) selected must be appropriate to address all the identified threats applicable to the covered segment being assessed.

(b) It may be necessary to consider a combination of tools or techniques of integrity assessment to directly address the primary threats. Table 192.919i may be used as a guide

to identify appropriate assessment methods for the various primary threats. Additional information can be found in ASME B31.8S–2004, Section 6 (see listing in §192.7, not IBR for §192.919).

(c) ...

...

ASSESSMENT APPLICABILITY (Based on ASME B31.8S–2004, Section 6 — see §192.7 for IBR)
Threat abbreviations: ... *{LB note: the rest of Table 192.919i is not shown here.}*

TABLE 192.919i

...

{LB note for 192.921: TR 19-60 in Addendum 1 will make the changes to GM 1.2 as shown in green font.}

Section 192.921

Note: References to ASME B31.8S throughout this section of guide material are specific to the edition of ASME B31.8S as incorporated by reference (IBR) in §192.7. See 3.2 of the guide material under §192.907.

1 ASSESSMENT METHOD

...

1.2 Pressure testing.

...

(c) Test pressure.
In addition to considering the requirements of Subpart J, the operator may consider the reassessment interval indicated in ASME B31.8S, Section 5, Table 3 5.6.1-1 when choosing a test pressure. Choosing a test pressure higher than the pressure required by Subpart J might allow for a longer reassessment interval.

(d) Conducting pressure tests.
See guide material under §§192.503, 192.505, 192.919, and Guide Material Appendices G-192-9 and G-192-9A.

...

6 NEWLY INSTALLED PIPE

The post-installation pressure test may serve as the baseline assessment. In addition to considering the requirements of Subpart J, the operator may consider the reassessment interval indicated in ASME B31.8S, Section 5, Table 3 5.6.1-1 when choosing a test pressure.

7 PLASTIC TRANSMISSION PIPELINES

...

Section 192.925

...

2 GENERAL REQUIREMENTS

(a) A written ECDA plan is required to be based on the following.
(1) Section 192.925.
(2) ASME B31.8S–2004, Paragraph 6.4 (see §192.7 for IBR).
(3) NACE SP0502.

...

Section 192.927

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

Note: References to ASME B31.8S throughout this section of guide material are specific to the edition of ASME B31.8S as incorporated by reference (IBR) in §192.7. See 3.2 of the guide material under §192.907.

1 PURPOSE ...

2 GENERAL REQUIREMENTS

(a) A written ICDA plan should include its purpose, objectives, and instructions to personnel and must be based on the requirements of the following.
  (1) Section 192.927.
  (2) ASME B31.8S ~~2004,~~ Paragraph 6.4 ~~and Appendix B2~~.
  (3) GRI-02/0057 (see §192.7 for IBR), or its equivalent.

(b) ...

...

[LB notes for §192.933: TR 22-69 was also approved by IMP/Corr TG for Public Review in March 2026 and Public Review is pending. Among other GM actions, TR 22-69 will delete the GM note as shown in green strikeout below, and will add a different sentence at the end of GM 1(a) than is shown in this TR proposal approved for LB. Since IMP/Corr TG approved both TRs in March 2026 and neither references the other TR and the different sentence at the end of GM 1(a), it is not clear what should be the final version in the Guide. The sentence approved for public review is in green font below. If the GM should not include both sentences as shown, then LB comments on this TR proposal and TG action are needed.]

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. If the 180-day discovery window is impracticable, the operator must notify PHMSA (see §192.18) and provide an expected date when the information will be available. (§192.933(b))

(b) Assessment is considered complete after fully executing any one of the following.
  (1) Hydrostatic test.
  (2) Last in-line inspection (ILI) tool run of a scheduled series of tool runs.
  (3) Last direct examination associated with direct assessment.
  (4) Completion of field activities associated with "other technology" for which an operator has provided timely notification as required by §192.921(a)(4).

(c) "Discovery of condition" is dependent on the integrity assessment technique that is used as shown in Table 192.933i.

(d) "Discovery of condition" under §192.933(b) is not necessarily the same as "Discovery" under §191.25. See 3(a) below.

...

Section 192.937

2 EVALUATION FOR COVERED SEGMENTS

One of the goals of periodic evaluation is to determine what is changing and what actions are

needed to maintain safe operations. Periodic evaluations are based on integrating information, identifying changes to pipeline threats, and updating risk analyses. This evaluation is intended to support the identification of changes needed to assessment frequencies, assessment types, and preventive and mitigative (P&M) measures.

2.1 Frequency.

When determining the frequency, the operator should consider the following.

(a) The number and types of changes that are occurring. For example, if there are no changes to HCAs, MAOPs, or personnel, a longer interval may be appropriate.

(b) For pipe subject to low stress reassessment, the requirement to evaluate external corrosion data for:
  (1) Cathodically protected lines at least once every 7 years (§192.941(b)(1)), or
  (2) Unprotected pipe at least once every 18 months (§192.941(b)(2)).

(c) For pipe subject to low stress reassessment, the requirement to evaluate internal corrosion data at least once every 7 years (§192.941(c)(3)).

(d) The evaluation intervals should not exceed the assessment intervals listed in ASME B31.8S ~~-2004~~, ~~Section 5, Table 3~~ 5.6.1-1 of Section 5 (see §192.7 for IBR).

(e) Items that might trigger an evaluation (e.g., incidents, new data) before the scheduled evaluation.

...

Section 192.939

...

2 MAXIMUM REASSESSMENT INTERVALS

(a) Tables 192.939i through 192.939iv and Appendix E to Part 192 list the maximum permitted reassessment intervals based on type of prior assessment and operating stress level. If the maximum permitted time interval for an assessment method exceeds 7 calendar years, a confirmatory direct assessment (see §192.931 regarding CDA) or other assessment must be conducted at intervals not exceeding 7 calendar years (§192.939(a) and (b)).

...

MAXIMUM REASSESSMENT INTERVALS FOR IN-LINE INSPECTION (ILI)			
Stress Level	**Ratio of Predicted Failure Pressure (FP) of Remaining Defects to the MAOP**	**Maximum Interval** Based on prior assessments, data integration, and risk assessment using reasonably anticipated or scientifically proven rate of defect growth. [§192.939(a)(1)(i)]	**Maximum Interval** Based on ASME B31.8S ~~-2004~~, ~~Section 5, Table 3~~ Table 5.6.1-1 (see §192.7 for IBR). [§192.939(a)(1)(ii)]
≥ 50% SMYS	FP exceeds 1.25 times MAOP	7 years	5 years
	FP exceeds 1.39 times MAOP	10 years	10 years
< 50% and ≥ 30% SMYS	FP exceeds ~~1.4~~ 1.39 times MAOP	15 years	5 years
	FP exceeds ~~1.7~~ 1.65 times MAOP	15 years	10 years
	FP exceeds 2.0 times MAOP	15 years	15 years
< 30% SMYS (Low stress reassessment may be used; see §192.941)	FP exceeds ~~1.7~~ 1.65 times MAOP	20 years	5 years
	FP exceeds 2.2 times MAOP	20 years	10 years
	FP exceeds ~~2.8~~ 2.75 times MAOP	20 years	15 years
	FP exceeds 3.33 times MAOP	20 years	20 years

TABLE 192.939i

2 ADDITIONAL PERFORMANCE MEASURES

Operators are required to maintain the threat-specific performance measures identified in ASME B31.8S~~-2004~~, Table 9.4-1 (see §192.7 for IBR). Operators are not required to report these measures to PHMSA- OPS, but must make the records available for inspection.

...

{LB note for GMA G-192-9A: TR 21-40 in Addendum 1 will make the changes to Table 3.3 as shown in green font.}

GUIDE MATERIAL APPENDIX G-192-9A

(See guide material under §§192.503, 192.505, 192.506, 192.507, 192.513, 192.517, 192.619, 192.921, and Guide Material Appendix G-192-9)

PRESSURE TESTING GUIDELINES FOR TRANSMISSION INTEGRITY ASSESSMENTS

1 GENERAL ...
2 PRESSURE TESTING ADVANTAGES AND DISADVANTAGES ...
3 PRESSURE TESTING OF STEEL TRANSMISSION PIPELINES

...

3.3 General pressure testing considerations for steel transmission pipelines.

(a) Pressure tests used for integrity assessments on new or existing steel pipelines must be performed in accordance with the requirements of Subpart J and §192.921.

(b) The following factors may be considered when selecting a test pressure for an existing pipeline.

(1) Mill test certificates to ascertain the pressure test levels in the manufacturing process and ..pipe data pertaining to specified minimum yield strength along with seam and joint data. If not available, check the listed pipe specification (e.g., API Spec 5L - see §192.7 for IBR for §192.55 and Appendix B to Part 192) applicable to the pipe's manufacturing date to obtain industry specifications for mill testing and pipe data.

(2) Previous pressure test results from time of construction or MAOP upgrades.

(3) Prior integrity assessments and operating history.

(4) Number of test failures that will be acceptable to the operator when testing. The probability of pressure reversal failure occurring after completing the test increases with the number of failures permitted during testing. In determining the level of acceptable failures, operators may consider the following factors.

...

(5) Identification of potential safety issues during testing, such as the presence of existing mechanical couplings.

(6) Integrity assessment intervals based on test pressure attained (see Table 3.3 below which is excerpted from ASME B31.8S~~-2004~~, Table ~~3~~ 5.6.1-1 ~~- see §192.7 for IBR~~). If the maximum permitted time interval for a pressure test exceeds 7 years, a confirmatory direct assessment or other assessment must be conducted at intervals not exceeding 7 years (see §192.939).

INTEGRITY ASSESSMENT INTERVALS
(Reference ASME B31.8S-~~2004~~, Table ~~3~~ 5.6.1-1~~- see §192.7 for IBR~~).)

Interval Years	Hoop Stress <30 Percent SMYS	Hoop Stress 30 Percent to 50 Percent SMYS	Hoop Stress >50 Percent SMYS
5	~~1.7~~ 1.65 x MAOP	~~1.4~~ 1.39 x MAOP	1.25 x MAOP
10	2.2 x MAOP	~~1.7~~ 1.65 x MAOP	1.39 x MAOP
15	~~2.8~~ 2.75 x MAOP	2.0 x MAOP	N/A
20	3.3 x MAOP	N/A	N/A

TABLE 3.3