

## CGT Standard 4127.1

### “Class Location Study Requirements: Pipelines Operating Over 40% SMYS”

#### *Talking Points Summary*

<b>Whom does this standard affect?</b>	The standard affects GSM&TS Pipeline Engineers and Estimators.
<b>What are the standard's mandatory requirements?</b>	<ul style="list-style-type: none"><li>• Required study for change in class location, 49 CFR Part 192.609.</li><li>• Confirming or revising MAOP for change in class location, 49 CFR Part 192.611.</li></ul>
<b>Is this standard new or revised? If this is a revised standard, what will change?</b>	This Standard in conjunction with Standard S4127 replaces the Interim Standard 460-1.

Engineering Design       Maintenance, Operations, & Construction

Issuing Department: GAS SYSTEM MAINTENANCE AND TECHNICAL SUPPORT  
Manager: [REDACTED]

Effective Date: 01 June 1999  
Review Date: 01 June 1999

**SUBJECT: Class Location Study Requirements: Pipelines Operating Over 40% SMYS**

<b>Objective</b>	To provide guidance on conducting class location studies for pipelines operating over 40% SMYS.  This standard must be used with CGT Standard S 4127, "Responsibility for Class Location Determination, Compliance, and Maintenance."
<b>Scope</b>	The requirements of this standard apply to all CGT-owned transmission pipeline facilities operating over 40% SMYS.
<b>Applies To</b>	Pipeline Engineers and Estimators
<b>Rescission</b>	None
<b>Related Standard</b>	CGT Standard S 4127, "Responsibility for Class Location Determination, Compliance, and Maintenance."
<b>Originator</b>	Gas System Maintenance & Technical Support (GSM&TS) - System Integrity
<b>Responsibility for Implementation</b>	Director of Pipeline Engineering, GSM&TS
<b>Contact for Further Information</b>	System Integrity, [REDACTED] Co. [REDACTED]
<b>Appendices</b>	Appendix A, Sliding Mile Appendix B, Confirmation or Revision of MAOP Flowchart Appendix C, Class Location Study Checklist

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**References**


49 CFR Part 192.609 & 611

**Deviations**

Approval to deviate from the requirements of this standard must be obtained in writing from the Director, Pipeline Engineering, GSM&TS.

**Approvals and Authorizations**

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 Date  
Manager, Gas System Maintenance and Technical Support

**Evaluating An  
Increase In  
Population Density**

1. The latest version density survey drawing from the GSM&TS Mapping group will be used when analyzing a potential class location change for the pipeline segment involved.
2. Verify mapping assessment of class location change by using the sliding mile method (see Appendix A).
3. Look at all data on the density survey drawing and from the field that could indicate future growth and is pertinent to class location determination. This should include locations of other permanent references, such as streets, roads, rivers, railroads, bridges, etc., that cross or are within the survey strip with respect to the built-up area and the pipeline. If there are additional impacts you may consider testing of additional footage, if it appears there will be future growth. Check with the Risk Management Section for their input.
4. Any structure is to be counted as a building intended for human occupancy if either a gas or an electric service is connected to it, even though the building may be uninhabited at the time of the survey. This applies to barns, homestead shacks, and other structures which have visible evidence of usage as a residence.
5. Count as one building intended for human occupancy: Each unit in a motel or hotel, each unit in an apartment house, and each space in a trailer park that is occupied or connected to gas or electric service.
6. Note the presence of buildings, places of public assembly, and well-defined outside areas that are occupied by 20 or more persons on at least 5 days a week for 10 weeks in any 12 month period and are within 100 yards of the pipeline segment involved (The days and weeks need not be consecutive). Some examples of these types of facilities are indoor or outdoor theaters, hotels, hospitals, playgrounds, recreation areas, driving range/club house at golf courses, commercial buildings, restaurants, RV parks, race tracks, stadiums, etc.

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### Required Study

(49CFR Part 192.609)

7. For unusual circumstances where determining exact class location change is questionable contact the System Integrity Section for assistance.

If an increase in population density indicates a change in class location for an existing steel pipeline segment and the segment of pipeline is not commensurate with the new class location, an immediate study is required. The study must include review and documentation of the following elements (use the checklist in Appendix C as a guide):

1. The current (and originally installed) class location for the segment of pipeline involved.
2. The design, construction, and testing procedures followed in the original pipeline construction, and compare with the current requirements for the new class location.
3. The operating and maintenance history of the pipeline segment, including the physical condition, based on available records.
4. The maximum actual operating pressure and the corresponding operating hoop stress, taking pressure gradient changes into account, for the segment of pipeline involved. (For example: "This pipeline was designed to operate at 600 MAOP, however this segment only has 500 MOP")
5. The actual area affected by the population density increase as well as physical barriers or other factors which may limit further expansion of the more densely populated area.

### Confirming or Revising MAOP for Change in Class Location

(49CFR Part 192.611)

If the hoop stress corresponding to the established maximum allowable operating pressure of a segment of pipeline is not commensurate with the present class location, and the segment of pipeline is in satisfactory physical condition, the MAOP of that segment of pipeline must be confirmed or revised. The requirements illustrated in the flow chart in Appendix B must be followed to confirm or revise the MAOP.

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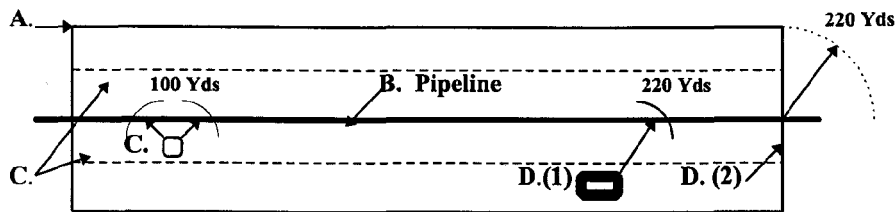
**Documentation**

1. Completed F4127 forms shall be kept in the field office "Class Location" file.
2. If there is a job established, all original records (e.g., charts, strength test pressure reports, letters, etc.) shall be kept in the job file.
3. If there is no job associated with a class location change, then written communication about the class location change shall be kept in the field "Class Location" file.
4. In either step 2 or 3, if there is an MAOP or MOP change associated with the class location change, it shall be documented according to Standard S4125.

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### Sliding Mile

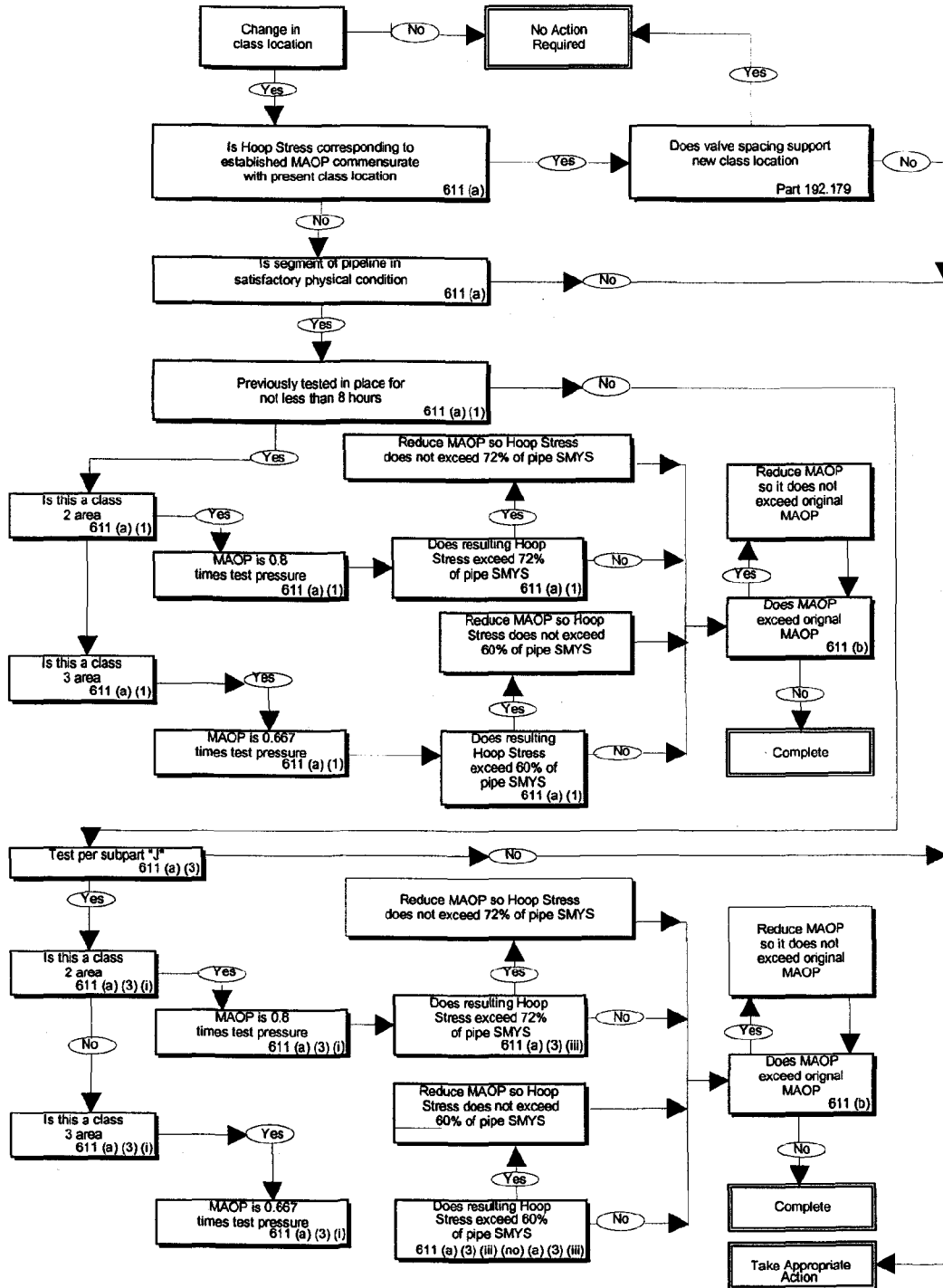


1. When determining the number of buildings intended for human occupancy in any continuous 1-mile length of pipeline, the sliding mile concept must be used.
2. The 1-mile long segment must be positioned to obtain the maximum number of buildings in the segment. (NOTE: Dividing the pipeline into fixed 1-mile segments and counting the buildings in each segment will frequently result in a population density count which is less than that obtained using the sliding mile. Therefore, it is necessary to use the sliding mile when determining a class location.)
3. Create a "Mile Density Gauge" template transparency similar to the one shown above to the scale needed.
  - A. The solid line rectangle outlines 1 mile long by  $\frac{1}{4}$  mile wide (220 yards to each side of the pipeline). The 220 yard boundary on each side of the pipeline is used to mark the Class 1,2,3, or 4 limit as determined by the dwelling count.
  - B. The centerline is positioned over the pipeline to maintain the quarter-mile corridor.
  - C. The parallel dashed lines are scaled at 100 yards (300 ft) from the pipeline as a limit for any building or area of 20 or more persons that fall within 100 yards of the pipeline, which would qualify by themselves as Class 3. To determine the boundary of the pipeline that would now be Class 3, draw a 100 - yard radius circle with the center point on the corners of the building or well defined area. The length of the new class 3 location is where the arc of the circle crosses the pipeline at two points.
  - D. If the last dwelling falls substantially shorter (more than 220 yards) before the end of the mile template, then the length of the class location change indicated by the sliding mile can be shortened by striking a 220 - yard radius arc from the corner of the last residence building to where it crosses the pipeline to determine the boundary of the class location change [see D.(1)]. If the last dwelling does not fall more than 220 yards from the end of the mile template, then the length of the class location change extends to the end of the mile template [see D.(2)]. The arc on the end is not part of the sliding mile, however, it is provided as a convenience to be used as a pivot point for angles in the pipeline.

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Change In Class Location: Confirmation Or Revision Of MAOP (49CFR Part 192.611)





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**Class Location Study Checklist For The Segment Of Pipeline Involved**

- Current class location
- Originally installed class location
- Strength test pressure report(s)
- Pipe specifications
- Valve spacing appropriate for proposed class location
- Leak survey data
- Leak history report
- Pipe condition reports
- Leak repair orders
- Patrol reports
- Cathodic protection records
- Input from field personnel on pipeline condition
- Other important items to consider: \_\_\_\_\_

Note: This checklist is not all inclusive and does not preclude the use of additional documentation deemed necessary to complete the study.