Simple, Handy, Risk-based Integrity Management Plan (SHRIMP) Users' Guide

BEFORE USING SHRIMP, PLEASE READ THIS BACKGROUND DOCUMENT!

On December 4, 2009 the Pipeline and Hazardous Materials Safety Administration (PHMSA) published the final Distribution Integrity Management Programs (DIMP) rule. The rule requires each operator of a natural gas utility, master meter system or propane pipeline system to prepare and follow a written DIMP plan by no later than August 2, 2011.

The APGA Security and Integrity Foundation (SIF), with financial support from PHMSA, developed SHRIMP ("Simple, Handy, Risk-based Integrity Management Plan, an on-line tool to create a written DIMP plan that is customized for your unique system. An advisory group composed of government and industry pipeline safety experts guided the development of SHRIMP, ensuring that all the requirements of the rule are included in the written DIMP plan that SHRIMP creates for you. We are pleased that you have elected to use SHRIMP to develop your plan. This document is intended to prepare you to use SHRIMP to develop your DIMP plan.

What is "SHRIMP?"

SHRIMP is an on-line tool that creates a written Distribution Integrity Management Plan. It is much more than a model plan. It asks questions about your pipeline system inspection and maintenance history and creates a written DIMP plan ready to implement.

SHRIMP includes (bold text indicates an element required by the DIMP regulation):

- A template for a written DIMP plan, which is filled out with text, either provided by SHRIMP or text that you enter during the question and answer process;
- PHMSA Distribution Annual Report data preloaded into the program, so it already knows about your system materials of construction and leaks repaired by cause. You can edit these data or , if not found (as will be the case with master meter and LP piping systems, which do not file annual reports) enter your system data;
- A question an answer **threat identification and assessment** process including:
    - Questions that ask for specific construction, inspection and maintenance history (e.g. "**knowledge of the infrastructure**") to assess each of the eight threats required by the DIMP rule,
    - Questions that ask for information to help the user decide if subdividing the system for any threat is advisable and

    - Questions to help SHRIMP recommend one or more Additional/Accelerated Actions to address one or more threats;
- A mathematical model to **evaluate and rank risk** according to the relative risk;
- A pick list of possible Additional/Accelerated Actions ("A/A Actions") the user may choose to **identify and implement measures to address risks**;
- A pick list of possible performance measures the user may choose to **measure performance, monitor results, and evaluate effectiveness.** The 6 performance measures required by the rule are written into all DIMP plans generated by SHRIMP;
- Includes all mandatory items, such as leak management, excess flow valve installation, compression coupling failure reporting, recordkeeping, periodic evaluation and improvement and more; and
- Provisions for **periodic evaluation and improvement.**

What is a "Threat?"

A threat is something that can cause distribution pipe or components to leak. The DIMP rule requires the user to assess the following 8 threats:

1. Corrosion,
2. Natural forces,
3. Excavation damage,
4. Other outside force damage,
5. Material, weld or joint failure (including compression coupling),
6. Equipment failure,
7. Incorrect operation, and
8. Other threats not included in the above seven specific threats

What are "Additional/Accelerated Actions?"

The objective of an integrity management program is to determine if you should be doing more to address any of the 8 threats on all or just certain parts of your distribution system. The term "Additional/Accelerated Actions" is used in SHRIMP to mean actions to reduce threats that go beyond the minimum maintenance and inspection requirements of the federal pipeline safety regulations. For example, though not explicitly required by pipeline safety regulations, a utility might determine that a construction project poses an unacceptably high risk of excavation damage to a major feeder main, therefore the utility will do more than just mark the location of the main – it will conduct daily inspections of the job site to ensure the pipeline is being protected and supported and that no damage to the coating or pipe has occurred. Daily excavation inspection is one example of an Additional/Accelerated Action to address an excavation damage threat.

The SHRIMP software includes over 60 optional Additional/Accelerated Actions ("A/A Action") that the user can pick from if it is determined that more needs to be done to address any of the 8

threats on all or any portion of the users distribution system. When you pick an A/A Action SHRIMP inserts text describing the A/A Action into your written DIMP Plan. You can review the words that SHRIMP will insert into your DIMP Plan and substitute your own description in place of the pre-written SHRIMP description if you choose. You may already be doing something beyond regulatory requirements – perhaps a replacement program for bare steel, cast iron or other materials. SHRIMP allows you to enter a description of these as an A/A Action that will be included in your DIMP Plan.

Why Would I Want To Subdivide My System When Using SHRIMP?

SHRIMP begins by considering your system as a whole, but you may want to subdivide it into smaller sections for the purpose of evaluating threats, ranking risks and taking A/A Actions.

The goal of DIMP is to focus resources on the problem areas – areas with a higher risk relative to the rest of the system. Some of the possible A/A Actions could be expensive – replacing pipe for instance. You don't want to write into your DIMP Plan that you will replace your entire system if only a small portion of it is higher relative risk.

When answering the questions asked by SHRIMP you find some where the answer if true for parts of your system but not for the rest. An obvious example, when considering the threat of corrosion, corrosion leaks may be occurring on your steel piping but (hopefully!) not on your plastic piping. Keep in mind that, at the end of the process, SHRIMP will create a written plan that may include Additional/Accelerated Actions to address corrosion. You want those actions to be focused on the problem area – the steel part of your system – not on the entire system, so you would subdivide your system into steel and plastic and evaluate the corrosion threat on each part separately.

Evaluating the threat of corrosion separately for different materials is so obvious that SHRIMP forces you to separately evaluate the corrosion threat for plastic, steel (further subdivided according to coated, bare, cathodically-protected and unprotected steel) and cast iron pipe. Other than that, it is up to you to decide whether you want to further sub-divide your system.

The advantage of subdividing, as mentioned previously, is that it focuses A/A Actions on the problem areas. The disadvantage is that subdividing increases the time and effort you expend creating your plan using SHRIMP and results in a longer, more complicated written plan. SHRIMP includes some questions to get information to help you decide whether or not to subdivide, but the ultimate decision is yours. Giving this some thought BEFORE you begin using SHRIMP will save time and avoid confusion.

Some of the questions SHRIMP will ask are:

- Are corrosion leaks, indications of metal loss due to corrosion, low pipe-to-soil potential readings, etc occurring all over or concentrated in certain localized areas?

- Is the number of ONE-CALL locate tickets and/or excavation damages spread throughout the system or concentrated in certain areas?
- Are there certain excavators that cause excavation damage more often than others?
- Are there areas in your system subject to flooding, washouts, landslides or other earth movement?
- Have you experienced a rash of failures of certain types of equipment or piping materials?

SHRIMP does not force you to keep the subdivisions you created for one threat when you begin another threat – each threat assessment starts out treating your system as a whole. You can subdivide your system one way for evaluating the threat of corrosion and an entirely different way for evaluating excavation damage.

If you are already doing something above and beyond the regulations on part of your system – a bare steel pipe replacement project, for instance – it probably makes sense to treat that part of your system as a separate section when evaluating the corrosion threat. Or, if you are replacing part of your system made of a type of plastic pipe prone to brittle cracking, that should be treated as a separate segment when assessing the threat of material, weld or joint failure.

Some A/A Actions are relatively inexpensive, or aren't practical on small areas. If, for example, at the end of the SHRIMP process the A/A Action chosen is to increase leak survey frequency, it may be just easier and no more expensive to conduct the more frequent surveys to a fairly large area rather than in just a few isolated areas within the system.

What Records Must I Have To Use SHRIMP?

SHRIMP was designed to create a DIMP Plan using information from construction records and gathered from inspections and maintenance activities required by federal and state pipeline safety regulations, such as leak surveys, pipe-to-soil potential measurement, exposed pipe inspections, leak repair records, etc. Appendix A lists the specific records required for each threat assessment that you should have available before trying to use SHRIMP. It also describes how SHRIMP will ask you to sort some of your inspection and maintenance data.

Procedures for developing and implementing DIMP elements using SHRIMP

Creating a written DIMP Plan using SHRIMP should follow the steps shown in the SHRIMP process diagram. Each step should be completed before moving on to the next step.

Step 1: Enter/confirm system information

If your system filed a Distribution Annual Report (Form 7100.1-1) you should find your system data already entered into SHRIMP. Note, this may not be the most current data – at the time SHRIMP was created only the annual reports for 2009 were available. This information is shown only to allow you to confirm that this is your system – it is not used for any other purpose in SHRIMP.

If your annual report data is not already entered in SHRIMP, e.g. you are a master meter or LP piping system operator that is not required to file annual reports, or your annual report is missing from PHMSA's database, you must enter the data manually.

Step 2: Select settings

The next step is to enter settings for your plan. These include:

- The name of your system as it will to appear in the written plan,
- A description of what part of your system this plan covers (default is entire system),
- The effective date of the plan (for your first plan this should be no later than August 2, 2011 as required by the DIMP rule),
- The effective date of the DIMP Plan replaced by this Plan – SHRIMP automatically generates this,
- The History Period – this is how many years back you will enter inspection and maintenance data such as leak repairs, line locate tickets, etc. in the threat interviews. The default and minimum is 5 years and but you can change this to up to 10 years if you have the data. More years data = better DIMP plans.

- A LEAK management policy – Either select one of the two pre-written options in SHRIMP or if you already have a leak management plan that meets the rule's requirements enter a cross reference to that policy, and

- A program re-evaluation period, anywhere from 1 to 5 years.

You can go back and change these at any time by clicking on the Required Settings link in the menu bar on the left side of SHRIMP screens

Step 3: Complete threat interviews

SHRIMP uses an interview process to assess each of the eight threats required by the DIMP rule. The 8 threats are:

1. Corrosion
2. Equipment Malfunction
3. Incorrect Operations
4. Material, Weld or Joint Failure
5. Excavation Damage
6. Natural forces
7. Other outside forces
8. Other Threats

Some of the threats are broken down into two or more subthreats. You must complete each threat and subthreat interview before going to Steps 4 and beyond. You can go back and change any of the information you provide in the threat interviews by clicking on the System Overview link on the menu then clicking on the blue "Review" link next to the threat interview in which you wish to make changes. Select the blue question number link by the question and the interview form will open. Make changes, but you may have to re-complete all of the interview questions after that question if your change affects answers to later questions. This is described in more detail later in this users guide.

NOTE: You can complete the first seven threat interviews in any order, however you MUST complete the first seven interviews before attempting to complete the "Other Threats" interview. The answers you provide in the Other Threats interview depend on the answers you provided in the other 7 threat interviews.

The threat interviews are intended to satisfy the following two requirements of the DIMP rule: Section 192.1007 (a) Knowledge and (b) Identify Threats. These requirements and the procedure followed by SHRIMP are further described in an attachment to this document.

Step 4: Validate Risk Rankings

After all 8 threat interviews have been completed SHRIMP will rank each threat and section by relative risk, from highest to lowest, based on a numerical model that considers the likelihood and consequences were a segment of your system to fail due to the threat. A complete description of this risk ranking model is found in an appendix to this user's guide and an attachment to your written DIMP Plan created by SHRIMP.

Click on Risk Ranking in the left menu to open the risk ranking screen. If you entered any threats in the "Other Threats" interview those threats will be listed first, with no assigned rank. These threats MUST be manually placed by the user where the user feels these threats belong in the list of threats. (SHRIMP can't assign a rank to them because it has no idea what these threats might be.) The process for that is described in further detail in the risk ranking section of the user's guide. You should not automatically accept SHRIMP's order of risk ranking. Review it, consider the summary description of why SHRIMP ranked each threat and, if you disagree with the order, rearrange the order of threats as you believe it should be, and be sure to enter a description of what factors you considered that led you to change the order. This is a very important step!

The risk ranking validation process is intended to satisfy the following requirement of the DIMP rule: Section 192.1007 (c) Evaluate and rank risk.

Step 5: Select Additional Actions

After you are satisfied that all threat-sections are ranked in the correct order, the next step is to select additional actions you will undertake to reduce those threats. "Additional actions" means actions above and beyond what is required by pipeline safety regulations. Other than implementing a leak management program, the DIMP rule does not presume that any further additional actions are necessary. You must decide whether any of the threats pose a level of risk that warrants additional action. SHRIMP cannot make that determination. There is additional guidance on selecting additional actions in the additional actions section of this user's guide.

SHRIMP offers at least one additional action for each threat. Click on the blue Choose AAs link in the Risk Ranking screen to display a list of possible additional actions for that threat. If you decide additional actions are warranted you can select one or more of SHRIMP's additional actions or you can create your own by clicking on the Manage AAs link in the left-side menu in SHRIMP.

This step is intended to satisfy the following requirement of the DIMP rule: Section 192.1007 (d) Identify and implement measures to address risks.

Step 6: Select Performance Measures

The next step is to select performance measures for each of the additional actions you selected in Step 5. If you didn't feel any threats warranted additional actions you can skip this step.

The process of selecting performance measures is identical to selecting additional actions in the prior step. Click on the Choose PMs link then select one or more of the displayed, threat-specific performance measures. You can create your own performance measures by clicking on Manage PMs in the left-side menu.

This step is intended to satisfy the following requirement of the DIMP rule: Section 192.1007 (e) Measure performance, monitor results and evaluate effectiveness.

Step 7: Create Implementation Plan

Now you are ready to review the actions required to implement your written DIMP plan. All of the actions required by the rule or selected by you in the additional actions and performance measures steps can be displayed by clicking on "Implementation Plan" in the left-side menu. The Implementation Plan should answer the questions of Who, What, When, Where and How each required action will be accomplished. Action items in your written DIMP Plan can be summarized in the following areas:

1. Describing how you will modify your procedures, policies and recordkeeping system(s) as necessary to collect and retain information required to be collected and retained under the DIMP plan, including mandatory performance measures and performance measures you selected in the previous step, and

2. Describing how you will implement any Additional/Accelerated Actions that you included in your written DIMP plan.

Each action item will be listed separately with a text box in which you must enter a description of how you will accomplish this action.

Step 8: Download your written DIMP Plan

When you are satisfied that Steps 1-7 are complete you should download your written DIMP plan to your computer. Review the Required Settings one more time to ensure your system name appears as you want it to appear in your Plan and that the other information is correct. Then click on "Written Plan" in the left-side menu and a list of download options will be displayed.

Click on Web Page Format to display the written plan on your web browser. You can do this at any time during the process of creating your plan to see how selections you have made up to

that point affect what is written into your plan. It is recommended that you look at the Plan in the Web Page Format frequently as you work on Steps 1-7 to see how data you enter appears in your Plan – it may affect how you write some text that will go into your Plan.

You may save your plan to your computer as a Web Page using the Save command on your web browser.

Click on Microsoft WORD Document to download your plan as a WORD file that you can edit using Microsoft WORD or other word processing software. (Note that the translator that creates this file may lose some formatting of the Table of Contents and other portions of the Plan. We apologize for any inconvenience this may cause you. We are evaluating other options for creating WORD files.)

Click on Adobe PDF Format to download you written Plan as an Adobe PDF file.

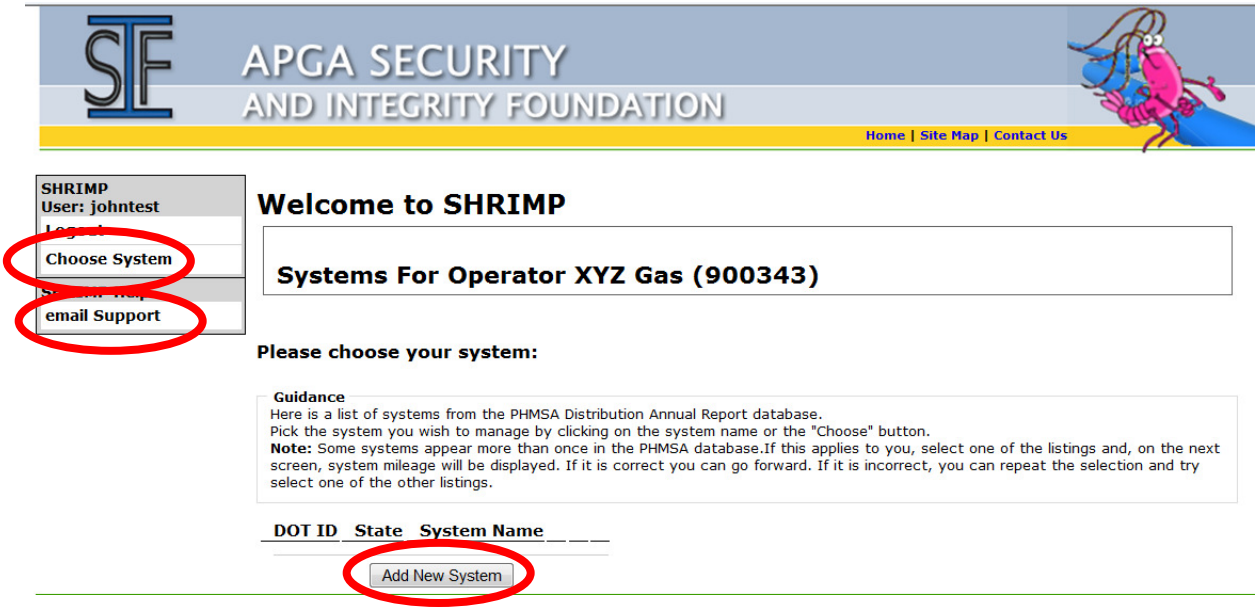
Step 9: Implement the action Items in your DIMP Plan Just like all the other plans required by pipeline safety regulations, you must follow your plan exactly as written. Failure to follow through on actions in your written DIMP plan can result in fines and other penalties. You must maintain records to demonstrate that you are following through on each action item listed in your written DIMP Plan. You must have these records and your written plan available for review by your state (or federal, if you are under federal jurisdiction) pipeline safety inspectors. At this time there is no need to submit your written DIMP plan to either the state or the federal OPS.

Getting Started

Open your internet browser and log on to SHRIMP at:

http://shrimp.imp-tools.com/

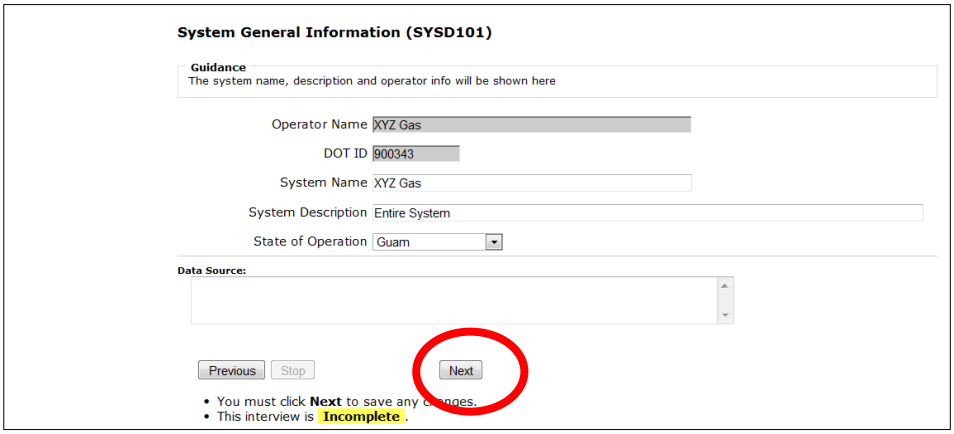
Enter your user name and password, then a screen like this will appear:



Email Support: If at any time you encounter problems using SHRIMP or have questions not answered in this user's guide, click "email Support," which will open your email software to send an email message to the SHRIMP help desk. When you use "email Support," SHRIMP automatically includes information about where you are in the program that assists our help desk to pinpoint the source of your problems or questions.

Add New System: If you are a master meter or LP system that is not required to file annual reports, or for some reason your annual report is missing, you will have to create a new system by clicking on the Add New System button. Also, if you want to create separate DIMP plans for different portions of your system (e.g. different districts, or for master meters, different locations) you would use "Add System" to create another, separate written DIMP Plan. In the example shown, Kastanasburg Utilities has created a second DIMP plan for its East District.

If you choose to create a new system (or if this is the first time the system you selected has been accessed by any user) you will eventually get to the following screen:



Operator Name is your system name as it appears in the PHMSA database. It cannot be changed, but also is not used for any purpose by SHRIMP. If you want to use a different system name in your written plan enter this name in the box labeled "System Name." You can go back and change it at any time.

Enter a description of the portion of the system to which this plan will apply. If you are writing one plan for your entire system, leave it as "entire system." If it is only for a portion of your system, describe it so you and other users of this DIMP plan will know what portion this Plan applies to. What you enter here will be written into the Scope section of the written plan.

Select the state in which your system operates. If your system operates in more than one state we encourage you to consider creating separate plans for each state.

IMPORTANT: Once you begin creating a written DIMP Plan using SHRIMP you can stop at any time and your data entered up to that point will be saved, but data entered on the current page will be saved **ONLY IF** you click on the NEXT button at the bottom of the screen before logging off. Even if you think you will be away from the computer only a short time, click on NEXT even if you're not finished with data entry on that page – you can always go back and continue where you left off. If there is no activity for a period, SHRIMP will disconnect you and you may lose any data you entered on that screen if you didn't click on NEXT

Enter/Confirm Annual Report Data

Depending on whether or not your system was in PHMSA's annual report database the next several screens will ask you to enter or confirm data about your system and its distribution piping. If data exists for your system, but you are creating a plan for a portion of that system you will have to change the data to reflect just that portion of your system for which this plan will apply. Instructions explaining annual report information are attached to this users guide.

NOTE: Once you begin entering the new system data or begin reviewing the system data for the first time, SHRIMP will require that you answer each question until all the data is entered or reviewed. It is OK to stop in the middle of the questions to logout but SHRIMP will continue the questioning any time you choose to continue until all questions are answered.

Error Messages

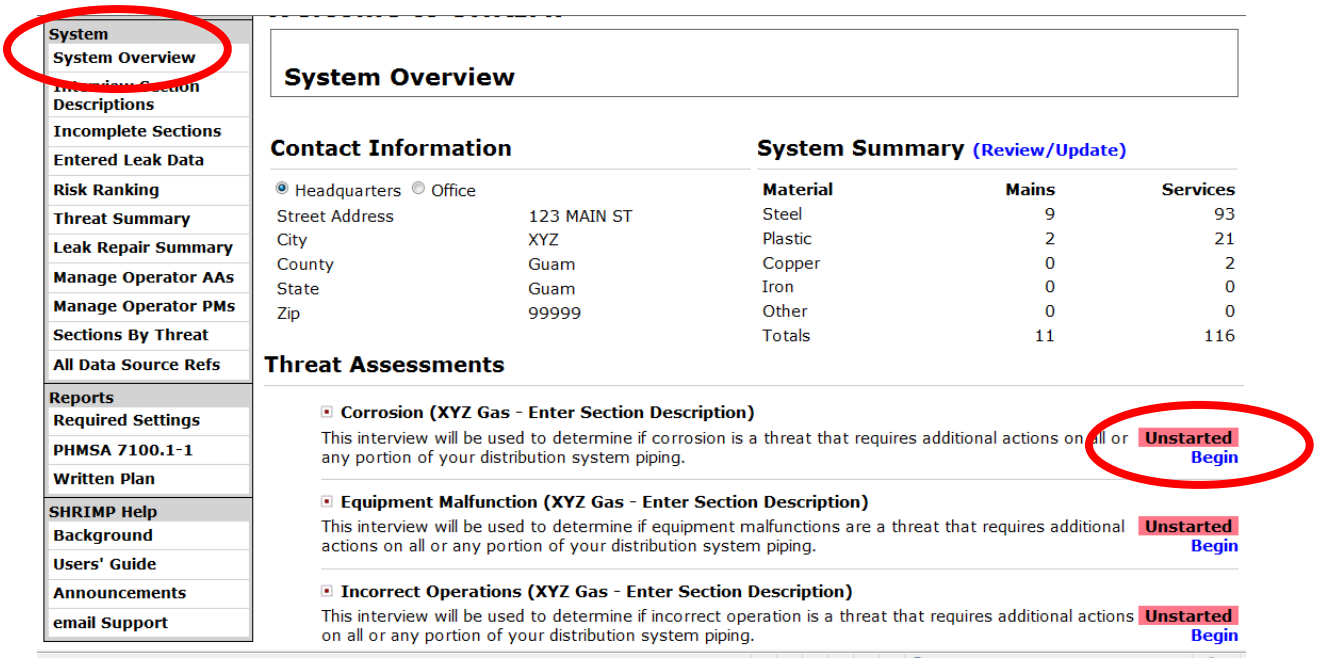
If at any time you get an error message such as this:

```
Fatal error: Uncaught exception 'Zend_Db_Statement_Exception' with message
'SQLSTATE[42000]: Syntax error or access violation
```

Send an email to email support by clicking the email Support button in the Menu Box.

System Overview

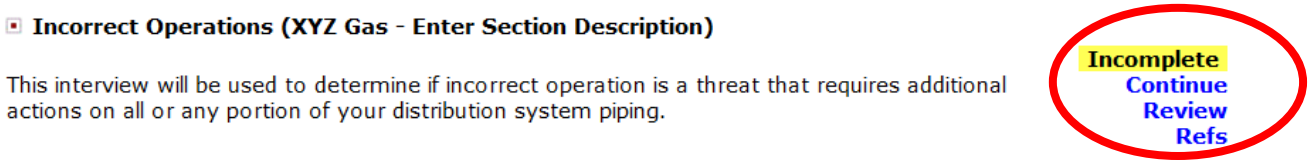
This is the main screen that you will come back many times during the course of developing your plan. It lists summary data about your system and the status of the threat assessment. You can return to this page from anywhere in the program by Clicking on System Overview in the left menu box.



(To save space only 3 threats are shown above) Threats will be flagged as unstarted, incomplete or completed. Some threats have subthreat assessments. Under Corrosion, for example, are subthreat assessments of external corrosion, atmospheric corrosion and internal corrosion. External corrosion is further subdivided by type of metal, coated or bare and cathodically-protected or not. Subthreat assessments are created based on data you provided or confirmed in your annual report. If there are subthreats under a threat a + sign will appear just before the threat name. Click on the + to open the subthreats.

Click on “begin” to start the interview process for one of the first seven threats. For reasons that will become obvious later, wait until the other 7 threat assessments are complete before beginning the interview for “Other threats”

Once you have begun a threat interview the System Overview Screen will display the following options:



Clicking on “Continue” will take you to the first incomplete interview page for this threat or subthreat.

Clicking “Review” will display an Interview Report of the threat assessment, displaying the questions and answers provided by the user to each question and the weighting that SHRIMP’s risk ranking mode applies to this threat based on those answers. If you want to go back and change any answer in the threat assessment interview, that can be done by clicking “Review.”

Kastanasburg Utilities (DOT ID: 00001)

Interview Report

- **Corrosion (CORR) (Kastanasburg Utilities)**
  - Interview Start (CORR)
    This interview will be used to determine if corrosion is a threat that requires additional actions on all or any portion of your distribution system piping.
    Your Choice (weight: 0) --Continue
  - How many leak repairs resulting from corrosion occurred by year for the last 5 years? (CORR-Leak)
    The information in the table shown was imported from your PHMSA 7100.1-1 Annual Report. If this is incorrect you may make changes to the table.
    Your Choice (weight: 0) --

Leak Repairs From PHMSA 7100.1-1				
	Corrosion		Totals	
End of Year	Mains	Services	Mains	Services
In 2005	0	0	0	0
In 2006	0	0	0	0
In 2007	0	0	0	0
In 2008	0	0	0	0
In 2009	0	0	0	0

  - Review the guidance. (ECMETALYES)
    Your data indicates that metal is present.
    Please review and update this data as necessary.

    Press NEXT to continue.
    Your Choice (weight: 0) --Continue
  - General System Description (EC101)
    This is the mileage of mains and number of services in the PHMSA Annual Report for the system you selected. If these figures are incorrect you may make changes in the table below.
    Your Choice (weight: 0) --

Material

	Mains	Services
Plastic	27.000	1905
Unprotected, Bare	20.000	1400
Cathodically Protected, Bare	0.000	0
Unprotected, Coated	0.000	0
Cathodically Protected, Coated	26.000	1500

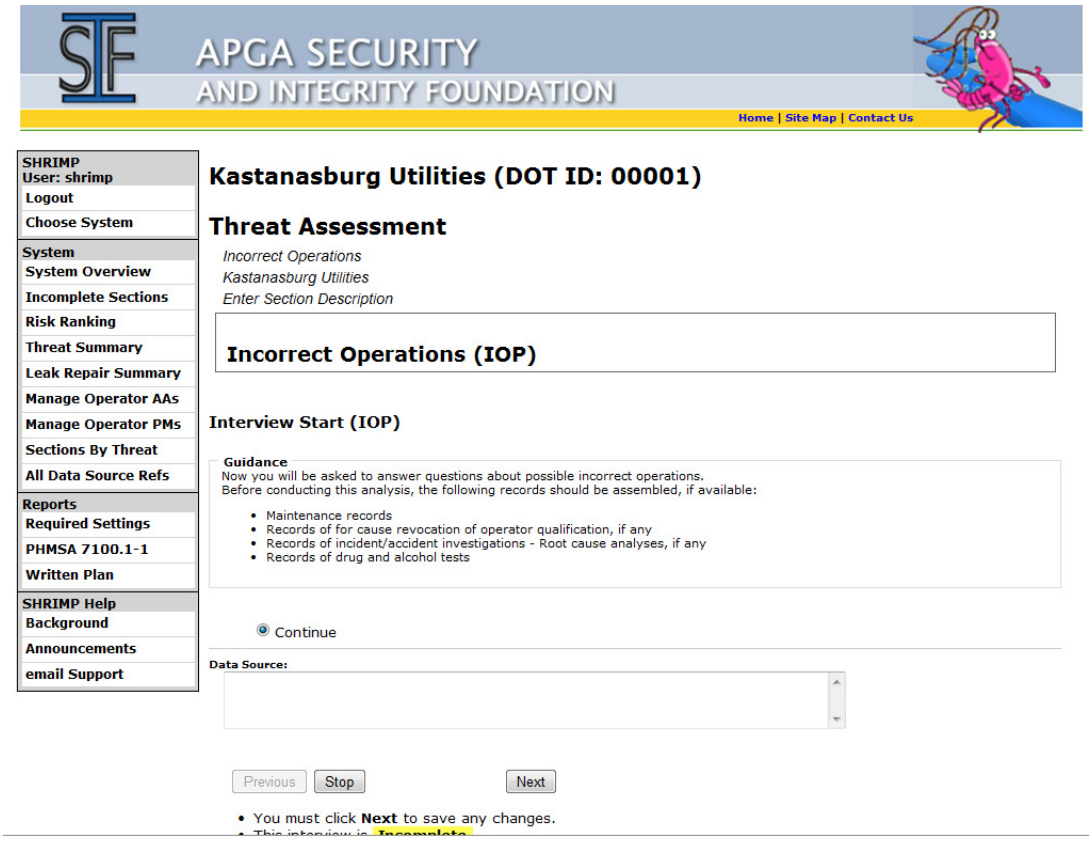
The Interview Report includes a hyperlink for each question, highlighted in blue that, when clicked, will take you to that point in the threat assessment interview process. You may change your answers. Everything prior to where you return to the interview will remain unchanged, but changing your answers may affect answers to questions asked later in this threat assessment interview. For example, if you change the number of corrosion leaks for one or more years and that change results in SHRIMP’s statistical analysis now finding that corrosion leaks per mile are

increasing over time, you will be asked additional questions that would not have been asked had leaks not been increasing.

"Refs" is short for references and will display anything you have entered in the Data Source fields in this threat interview.

Interview Start

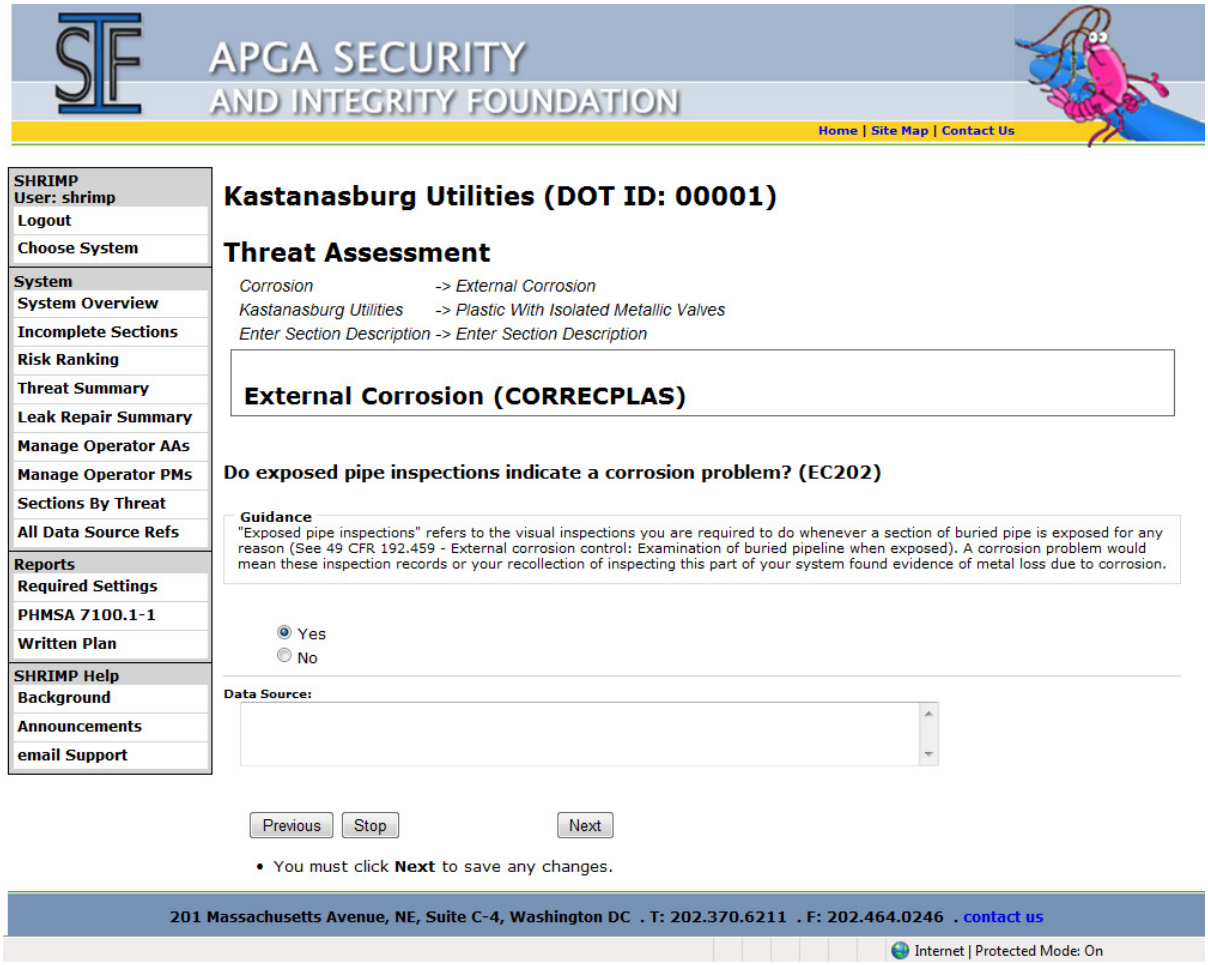
Each threat assessment will begin with an interview start page that lists the records that you should have available before beginning this threat assessment. A complete list of records required by each threat assessment is included as Attachment A to this document.



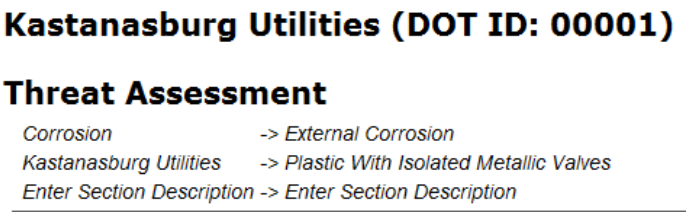
Initially each threat assessment will treat your system as one section and you should answer questions thinking about your entire distribution system, or whatever you entered as the System Description in the System General Information (SYSD101) screen. One exception is corrosion, where SHRIMP requires that you separately assess the risk to different materials of construction that may exist in your system. Later in the interview you will be asked to decide whether it makes sense to treat some portions of your system as separate sections for this threat. A discussion of reasons to subdivide your system can be found in the beginning of this guide.

Typical SHRIMP Interview Screens

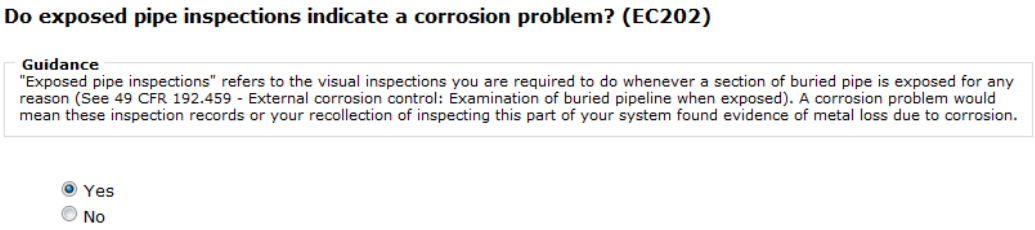
The following shows a typical interview screen in a SHRIMP threat assessment. It asks a question and provides choices for answers and/or space for the user to enter data or text, but there is much more on these screens.



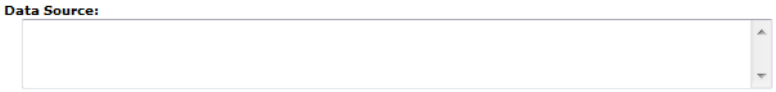
System Name, Threat and Section Information are displayed to remind the user what portion of the system this question is being asked about. When answering questions always look to this section of the screen so that the answers provided are limited to the portion of the system listed on the screen. You cannot edit this information on this screen.



Guidance will be provided for most question screens to help the user understand exactly what information SHRIMP is asking for.



Data Source provides the user a way to record information about the source of the data that was used to answer this question in SHRIMP. It can be a reference to the location of the records that were reviewed while answering this question, but it can also be used to store any information that the user believes will be helpful to future users when reviewing or updating the answers to this question.



PHMSA has stated that "the written integrity management plan must contain a list of the sources used to demonstrate an understanding of the gas distribution system including documents, records, and information obtained from subject matter experts. These sources are used to identify the characteristics of the pipeline's design, operations and environmental factors that are necessary to assess the applicable threats and risks to the distribution system. The information about the sources should include the name of the documents, the time period covered by the documents, and the location and format (e.g. electronic, paper, or subject matter expert interview, etc.)." The rule is not so specific about data source documentation, however this is good insight into what regulators may expect as far as data source information.

The SHRIMP Menu Box

On most screens a menu box will appear on the left side of the screen. This can be used to navigate to other sections of the program or to bring up helpful reference materials.

Logout will end your SHRIMP session

Choose system will return you to the Choose system screen. If you are working on more than one DIMP plan you can use this to jump between different plans

System Overview is the main page in SHRIMP. It shows all the threat assessments that are completed, in progress or not started.

Incomplete Sections provides a status report on tasks that are yet to be completed in developing your DIMP plan. This is a very important report as you cannot consider your plan ready until there is nothing listed as incomplete in

this report. This report will also contain “links” that will take you to whatever items need completion.

Entered Leak Data provides a listing of all trend data you entered in tables in each of the threat assessments, such leaks, failed drug tests, # of locate tickets, etc.

Risk Ranking displays a summary of all the threat assessments by section, listed in descending order of risk based on SHRIMP’s risk-ranking model and any adjustments the user has made to the order of various threat-sections. This also where you select Additional/Accelerated Actions (AAs) and Performance Measures (PMs) for any threat or section.

Implementation Plan displays all the action items listed in your plan including both mandatory items from the regulation and items that you selected or entered. You should enter the names and/or titles of those responsible for completing each action item, a schedule for beginning and completing the action and other information describing how the action will be accomplished.

Threat Summary is a summary of the answers the user provided during the threat assessment process.

Leak Repair Summary displays the number of leak repairs for this system by cause for the last 5 years with the total for all distribution systems in the PHMSA database. If your system has had more than 50 leak repairs over the past 5 years the SHRIMP risk ranking model boosts the riskl score for each threat by the percentage of leak repairs on your system for that threat. If you have had fewer than 50 leak repairs SHRIMP uses the national averages rather than your system data in the risk ranking model.

Manage Operator AA’s displays Additional/Accelerated Actions that have been created by the user. Additional AA’s can be entered on this screen.

Manage Operator PM’s displays Performance Measures that have been created by the user. Additional PM’s can be entered on this screen.

Sections by Threat is a summary of threat-sections created during the SHRIMP threat assessment process along with any AA’s and PMs selected by the user for that section.

All Data Source Refs displays all the notes the user has entered in the Data Source text boxes during the interview process.

Required Settings allows the user to view and/or change the system name as it appears in the plan, the system description and the selections for LEAKS, EFVs, and program re-evaluation period.

Form 7100.1-1 will display the PHMSA Distribution Annual Report (Form 7100.1-1) for the system.

Written Plan will display the written DIMP plan for the system. From there you will be able to generate the plan in various formats including as a web page on your screen or as a Microsoft Word file which may be downloaded to your computer. Initially, the written DIMP plan will consist of headings with little or no text underneath, but as the user completes the steps in creating the plan, these blanks will be filled in with text selected from SHRIMP or entered by the user. At anytime the user can go to the written plan and view the changes that have resulted to the written plan from information the user has just entered.

Resources provides helpful links to other resources such as PHMSA's DIMP webpage and PHMSA's frequently asked question page**.**

Background displays this users' guide's opening comments about DIMP and records needed to complete the threat assessments.

User's Guide displays this users guide.

Announcements displays current announcements from the SHRIMP development team. These will be displayed each time you log onto SHRIMP.

Email Support allows you to send an email with questions, comments, concerns, etc to the SHRIMP support technical team.

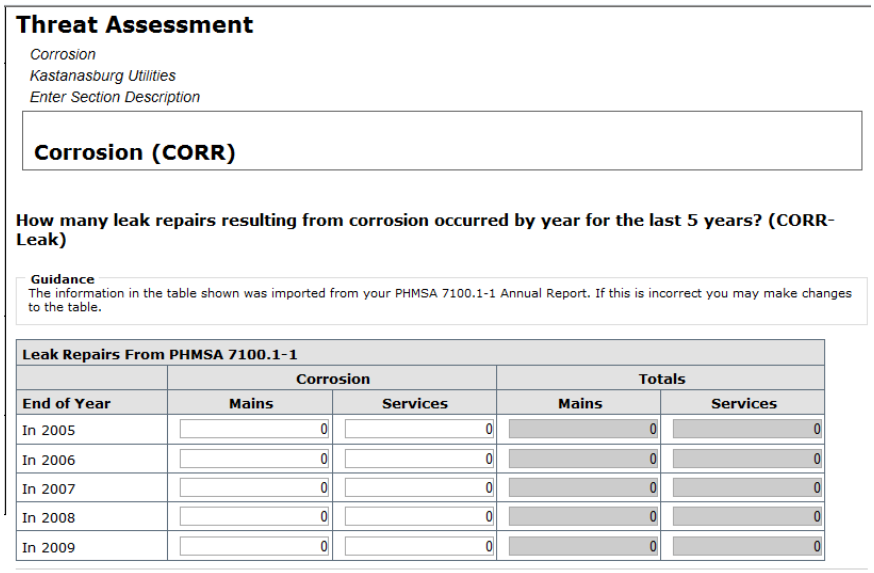
The NEXT button is extremely important!

The information you enter on any page is not saved until you hit this button. On a question with one or two choices this is no big deal, but on the pages that ask for a lot of information, such as the tables of leak history, losing data you have entered may be frustrating. If you have to stop in the middle of entering data on a screen, if you are inactive for long you may be timed out and lose connection with SHRIMP. To be on the safe side, if you have to stop to do something else, hit the NEXT button, even if you haven't finished data entry. You can always come back and continue entering data where you left off.

Also, changes to the written plan as the result of choices you have made on a screen are not made until you hit the NEXT button. For example, at the end of a threat assessment you will see a screen that says "Interview Complete." The results of that threat assessment are not made to the written plan until you hit NEXT. If want you open the written plan to view its current state hit the NEXT button first.

Data Entry Screens

In many of the threat assessment interviews the user is asked to enter historical data on leak repairs, locate tickets and other inspection and maintenance data. An example is shown below.



Threat Assessment

Corrosion
Kastanasburg Utilities
Enter Section Description

Corrosion (CORR)

How many leak repairs resulting from corrosion occurred by year for the last 5 years? (CORR-Leak)

Guidance
The information in the table shown was imported from your PHMSA 7100.1-1 Annual Report. If this is incorrect you may make changes to the table.

Leak Repairs From PHMSA 7100.1-1				
	Corrosion		Totals	
End of Year	Mains	Services	Mains	Services
In 2005	0	0	0	0
In 2006	0	0	0	0
In 2007	0	0	0	0
In 2008	0	0	0	0
In 2009	0	0	0	0

Five years' data is the default, but you can change how many years' data SHRIMP will accept in the Required Settings screen.

On some screens SHRIMP will already have entered some data if that data was found in PHMSA's Annual Report database. You should confirm that these data are correct and make any additions or changes.

Sometimes SHRIMP will be asking for records for the entire system and other times it will ask for records for just one section of the system. A description of the section will appear at the top of the screen. It is important that you look at this information when entering data to ensure the data you enter is the right information for that particular section.

SHRIMP asks for these data to determine if there is a statistically significant upward or downward trend. SHRIMP uses the Mann-Kendall trend test to identify trends. The result affects both the risk score for the section and the follow up questions that will be asked.

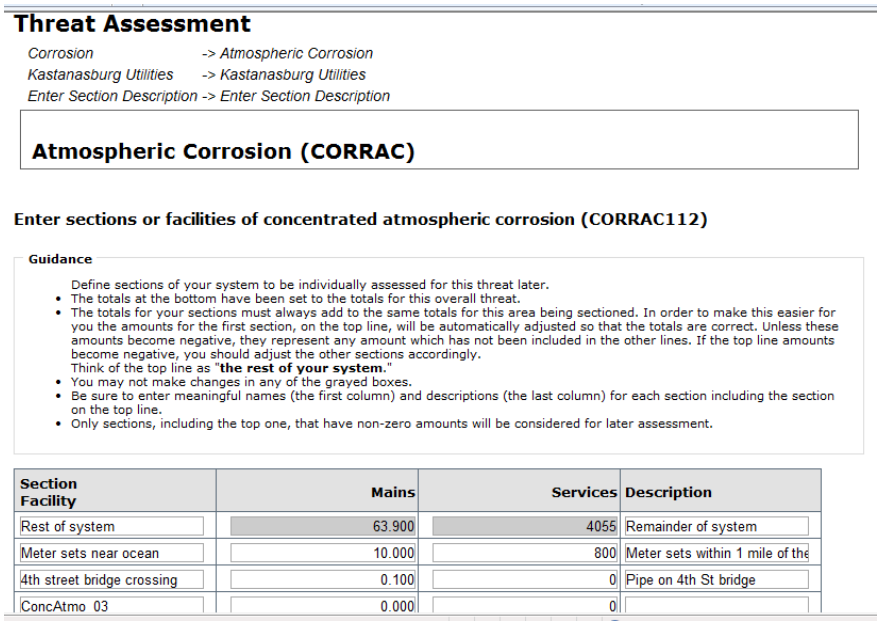
Subdividing Your System

The DIMP rule states that "An operator may subdivide its pipeline into regions with similar characteristics (e.g., contiguous areas within a distribution pipeline consisting of mains, services and other appurtenances; areas with common materials or environmental factors), and for which similar actions likely would be effective in reducing risk." 49 CFR 192.1007(c). You do not have to subdivide your system, but if there are portions with similar characteristics and for which similar actions would be effective in reducing risk, there are advantages to subdividing.

First and foremost, if you determine additional actions are necessary, some additional actions can be expensive, so you would want to limit those actions to the problem areas.

Whenever you begin a new threat assessment SHRIMP begins by asking questions about your system as a whole. Unless any of the 8 threats is a non-issue on your entire system, at some point you will have to decide whether or not to subdivide your system into sections that will considered separately for the threat assessment. You should subdivide the system into regions

with similar characteristics and for which similar actions are likely to be effective in reducing risk.



Threat Assessment

Corrosion -> Atmospheric Corrosion
Kastanasburg Utilities -> Kastanasburg Utilities
Enter Section Description -> Enter Section Description

Atmospheric Corrosion (CORRAC)

Enter sections or facilities of concentrated atmospheric corrosion (CORRAC112)

Guidance

Define sections of your system to be individually assessed for this threat later.
- The totals at the bottom have been set to the totals for this overall threat.
- The totals for your sections must always add to the same totals for this area being sectioned. In order to make this easier for you the amounts for the first section, on the top line, will be automatically adjusted so that the totals are correct. Unless these amounts become negative, they represent any amount which has not been included in the other lines. If the top line amounts become negative, you should adjust the other sections accordingly.
  Think of the top line as "**the rest of your system**."
- You may not make changes in any of the grayed boxes.
- Be sure to enter meaningful names (the first column) and descriptions (the last column) for each section including the section on the top line.
- Only sections, including the top one, that have non-zero amounts will be considered for later assessment.

Section Facility	Mains	Services	Description
Rest of system	63.900	4055	Remainder of system
Meter sets near ocean	10.000	800	Meter sets within 1 mile of the
4th street bridge crossing	0.100	0	Pipe on 4th St bridge
ConcAtmo_03	0.000	0	

Subdivisions in SHRIMP may be geographic (e.g. in the downtown business district), by material (bare, unprotected steel, PE 3306 plastic, etc), by equipment type, by utility or contractor crew (for excavation damage), by task (for incorrect operations) or any other manner that groups things with similar risk profiles together.

Subdividing is done by creating two or more sections in a table like the one shown to the left. In this example the user knew that atmospheric corrosion was occurring more frequently on meter sets located near the ocean, perhaps due to salt water in the air. The user also knew the gas main hanging below the 4th Street Bridge had a history of atmospheric corrosion problems. The user created 3 named sections – the third being the remainder of the system. Enter the name for the section as you want it to appear in your written plan. The name should be something that makes sense to you, that you can identify exactly what parts of your system are included in that section. Some threats will ask for miles of main and # of services within each section – others (e.g. atmospheric corrosion) will ask for the count of facilities in the section. In just about all sectioning screens, the top row is reserved for “the rest of the system” meaning those portions of your system that are not having problems with the threat that is being considered. In these cases the top row will show the total miles of main and # of services in this portion of your system and, as you create new sections on the rows below, the miles and service count you enter in those sections will be deducted from the top row.

The description field is for a more detailed description of the section, which will also be included in the final written plan. You should enter a description that

If you create subsections for any threat, you will then go through all the threat assessment questions for each of the sections and a separate subchapter for each section will be included in the threat assessment chapter of your written plan.

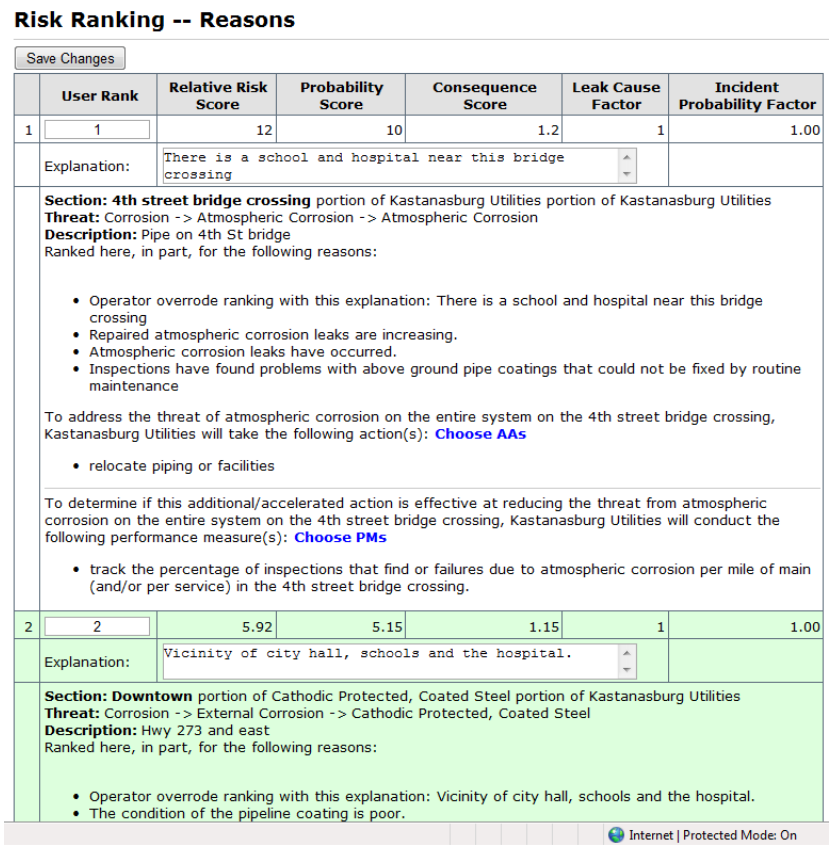
When you move on to another threat you will start with the entire system being treated as one section again. The subsections you create for one threat do not have to be treated as subsections for any of the other threats. In most systems it would be pure chance if the same

portions of the system had similar risk characteristics for more than one threat – say excavation and external corrosion.

Risk Ranking

After threat assessments have been completed the next step is risk ranking. SHRIMP uses an index model developed by the development team that assigns a numeric score to the answers provided by the user during the threat assessment process. A description of the risk ranking model is included in Appendix B of this guide.

Click on Risk Ranking in the SHRIMP Menu Box to go to the risk ranking screen.



Threat-segments are displayed in descending order with the highest relative risk threat-segment at the top of the page.

The four components of the relative risk score are shown.

A brief description of the factors that led to the relative risk ranking shown in bullets.

If the user rearranged the order of relative risk for the segment, an explanation of the factors justifying this action is displayed. This explanation is created by the user whenever the user elects to move a threat-segment to a different order than originally assigned by SHRIMP. More on this below.

The risk ranking screen also contains links to Choose AA's (Additional/Accelerated Actions the operator will implement on this segment to address the identified threat) and Choose PMs (threat-specific Performance Measures). If AAs and/or PMs have already been selected, they will be displayed as shown above.

VALIDATING RISK RANKINGS AND MOVING THREATS HIGHER OR LOWER

A critical step in developing your written DIMP Plan is validating the results of the risk ranking. "Validating" means comparing the results of the SHRIMP risk ranking model with what you, as

the operator of system, believe are the highest risk areas in your system. Before you began developing your DIMP plan you probably had a sense for which parts of your system, if any, were relatively trouble-free and which parts required extra attention. You undoubtedly know more about your system than SHRIMP will ever know, even though SHRIMP attempts to ask all the relevant questions that affect the probability and consequences of a failure of your system due to any of the 8 threats. If you disagree with the relative rankings produced by SHRIMP it is most likely because you are aware of factors that SHRIMP did not consider.

At this point you should review the relative risk rankings produced by SHRIMP and the explanation for that ranking listed in the bullets under the threat-segment. If you agree with the relative risk ranking you can leave them unchanged, but if you believe one or more threat-segments are higher or lower in the list than they should be, you should move them.

Some threat-segments may not be ranked. If you created any threats under “Other” threats, for instance, SHRIMP cannot rank them because the threat assessment does not include any probability for consequence questions. You must manually move these threat segments into the list where you believe the relative risk of these threat-segments should be. Follow the steps below to place these threats somewhere in the list.

To move a threat segment higher or lower on the list, type into the User Rank box the number where you believe the threat-segment should be in the list. If you type “1” the threat segment will be moved to the top of the list and every other threat-segment pushed down one rank. If you type “7” it will be inserted in the 7th place on the list and threat segments 7 and below will be pushed down one rank.

Anytime you move a threat-segment you must enter an explanation of the factors that led you to believe the threat-segment justified a higher or lower rank on the list. For example in the example shown above, the user moved the threat segment of atmospheric corrosion on a bridge crossing to #1 because of its proximity to a school and hospital which could lead to higher consequences should it break.

Your explanation will be written into your written DIMP plan created by SHRIMP so that the reasons for your decision are recorded.

Selecting Accelerated/Additional Actions (AA Actions)

Once you are comfortable with the order your threat-segments are ordered, you must determine which threat-segments have relative risk ranks justifying Additional/Accelerated Actions (AA Actions). As described earlier in this guide, AA Actions are actions to minimize a threat to distribution integrity above and beyond what is required by pipeline safety regulations

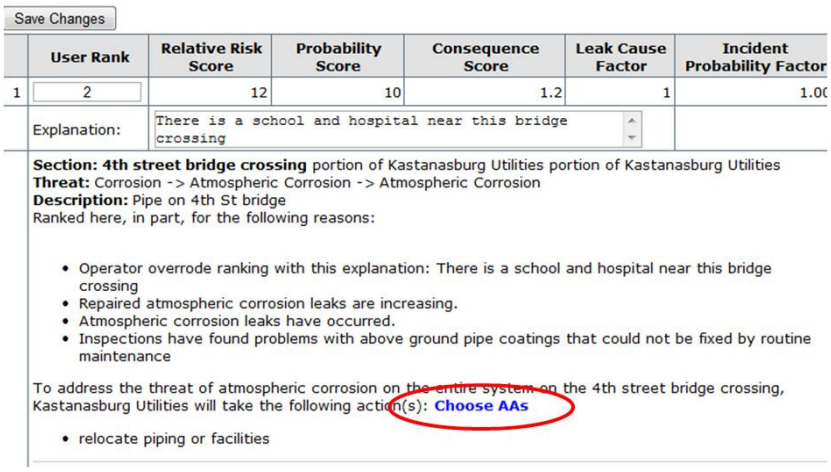
Actions not required by regulations might include:

- Pipeline replacement
- Inspection of 3rd party excavation sites
- Inspection of areas of erosion after significant rainfall

AA Actions could also include increasing the frequency of inspections or other activities above what is required by regulations, such as:

- More frequent leak surveys
- Additional public awareness activities

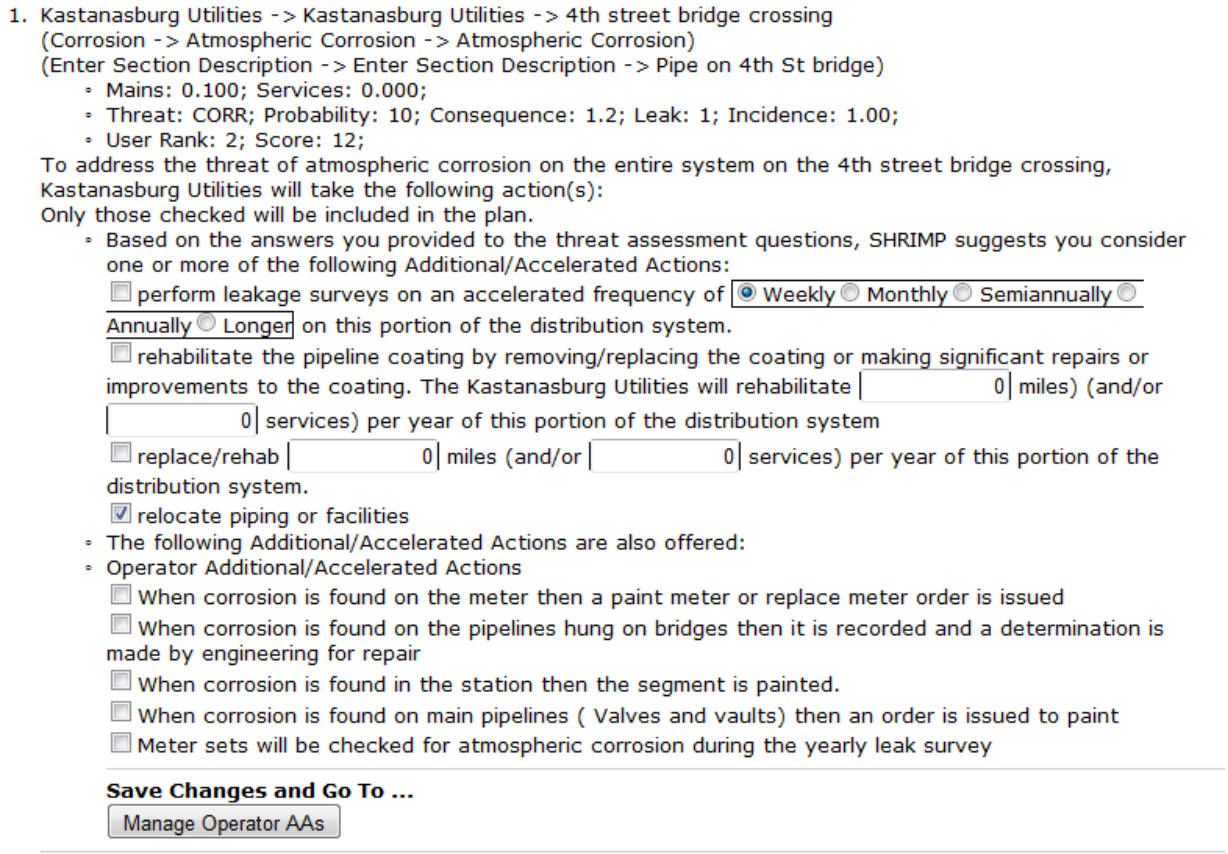
You do not have to select AA Actions for every threat segment. You should select AA Actions for those threat segments that you decide have a high enough relative risk ranking to merit additional actions to reduce the risk. For some threats SHRIMP will strongly urge that AA Actions be taken based on answers you provided to certain “threshold” questions during the threat assessment process. For example, if during the external corrosion threat assessment you answered that external corrosion leaks were increasing, that exposed pipe inspections found evidence of metal loss or that you were having difficulty maintaining pipe-to soil potentials above criteria, SHRIMP will urge that AA Actions be selected for that threat-segment. Not all threats have threshold questions, however, and the ultimate decision whether or not ot select AA Actions for a threat-segment resides with you the user.



For every threat except “Other,” SHRIMP offers at least one possible AA Action you can choose, which will then insert some pre-written text into the appropriate places in your written DIMP plan.

To displaya list of possible AA Actions for a particular threat-segment, click on “Choose AA’s” from the risk ranking screen.

That will cause a screen as shown below to appear, listing 3 categories of possible AA Actions.


1. Kastanasburg Utilities -> Kastanasburg Utilities -> 4th street bridge crossing
   (Corrosion -> Atmospheric Corrosion -> Atmospheric Corrosion)
   (Enter Section Description -> Enter Section Description -> Pipe on 4th St bridge)
   - Mains: 0.100; Services: 0.000;
   - Threat: CORR; Probability: 10; Consequence: 1.2; Leak: 1; Incidence: 1.00;
   - User Rank: 2; Score: 12;

   To address the threat of atmospheric corrosion on the entire system on the 4th street bridge crossing, Kastanasburg Utilities will take the following action(s):
   Only those checked will be included in the plan.
   - Based on the answers you provided to the threat assessment questions, SHRIMP suggests you consider one or more of the following Additional/Accelerated Actions:
     ☐ perform leakage surveys on an accelerated frequency of ◉ Weekly ○ Monthly ○ Semiannually ○ Annually ○ Longer on this portion of the distribution system.
     ☐ rehabilitate the pipeline coating by removing/replacing the coating or making significant repairs or improvements to the coating. The Kastanasburg Utilities will rehabilitate 0 miles) (and/or 0 services) per year of this portion of the distribution system
     ☐ replace/rehab 0 miles (and/or 0 services) per year of this portion of the distribution system.
     ☑ relocate piping or facilities
   - The following Additional/Accelerated Actions are also offered:
   - Operator Additional/Accelerated Actions
     ☐ When corrosion is found on the meter then a paint meter or replace meter order is issued
     ☐ When corrosion is found on the pipelines hung on bridges then it is recorded and a determination is made by engineering for repair
     ☐ When corrosion is found in the station then the segment is painted.
     ☐ When corrosion is found on main pipelines (Valves and vaults) then an order is issued to paint
     ☐ Meter sets will be checked for atmospheric corrosion during the yearly leak survey

   Save Changes and Go To ...
   Manage Operator AAs

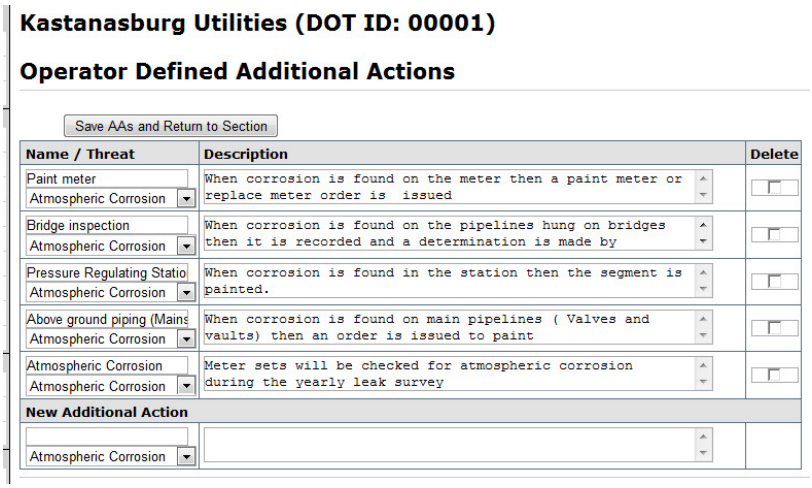
Listed first will be one or more AA Actions that SHRIMP has determined are most likely to address the problems you identified during the threat assessment. This is based on the collective expertise of the SHRIMP Advisors, who reviewed the possible combination of answers to the threat assessment questions and developed the list of AA Actions most likely to held.

Listed next are other possible AA Actions that could address this threat, but which are not recommended because answers you provided during the threat assessment process indicated these AA Actions were not likely to resolve the problems you are experiencing.

Lastly, though not shown above, will be listed AA actions that you have created to address this threat. You can always create your own AA Actions and select those rather than one of the pre-written AA's in SHRIMP. This is particularly useful if you are already taking additional actions to address a particular threat-segment. For instance, if you have an existing policy for managing cast iron or bare steel pipe, you can create an AA Action that cross references that policy. If you have an ongoing program to upgrade your cathodic protection system in problem areas you can create an AA that references that program.

To create your own AA Actions, click on the "Manage AA Actions" link on the AA Actions screen.

That will bring up a screen that looks like this:



Under New Additional Action type a short title of the AA Action. This is what will appear on the Select AA Actions screen under Operator-defined AA Actions, so it needs to be something that you will recognize when you read it on that screen.

Select from the drop down list the threat or subthreat that this AA Action is intended to address. This Operator defined AA Action will only appear in those threat segments where the threat is what you selected here. For example the Operator-defined additional action “Paint meter” will only appear for sections where the threat is atmospheric corrosion.

In the description filed enter a more detailed description of the AA Action. This text will be inserted into your written DIMP plan under every threat-section where you select this AA Action. I should be detailed enough that someone reading your DIMP plan can understand what it is you have committed to do. It can also be a cross reference to an existing policy or program if you are already doing something that addresses this threat on this section of your system.

To select one or more AA Actions for this threat-segment, click on the box next to that AA Action. You can select more than one AA Action for each threat segment. Keep mind that this written DIMP plan is enforceable just like your Operations and Maintenance Manual is enforceable, even if what you write into it goes beyond what regulations require. You are obligated to follow through on all AA Actions you specify in your written DIMP plan.

Selecting Performance Measures

SHRIMP will automatically include in your written plan statements that you will track the following mandatory performance measures that are required of all operators under the DIMP rule:

(i) Number of hazardous leaks either eliminated or repaired as required by 49 CFR 192.703(c) (or total number of leaks if all leaks are repaired when found), categorized by cause;

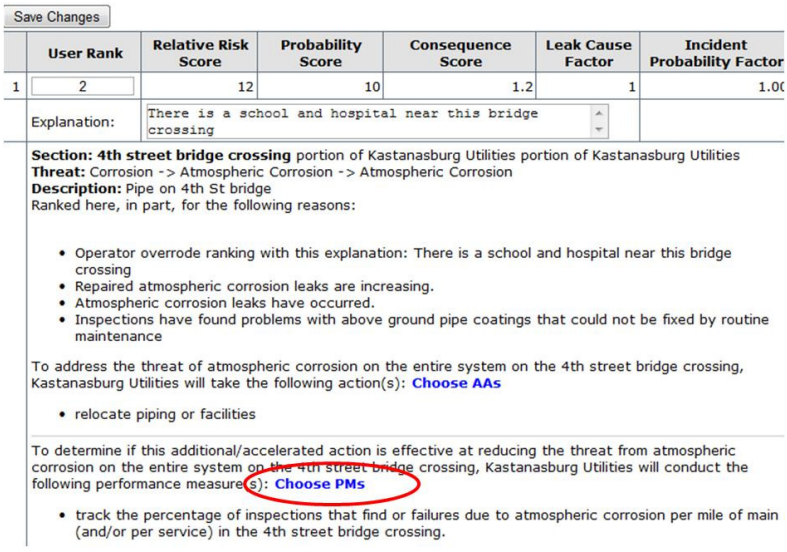
(ii) Number of excavation damages;

(iii) Number of excavation tickets (receipt of information by the underground facility operator from the notification center);

(iv) Total number of leaks either eliminated or repaired, categorized by cause;

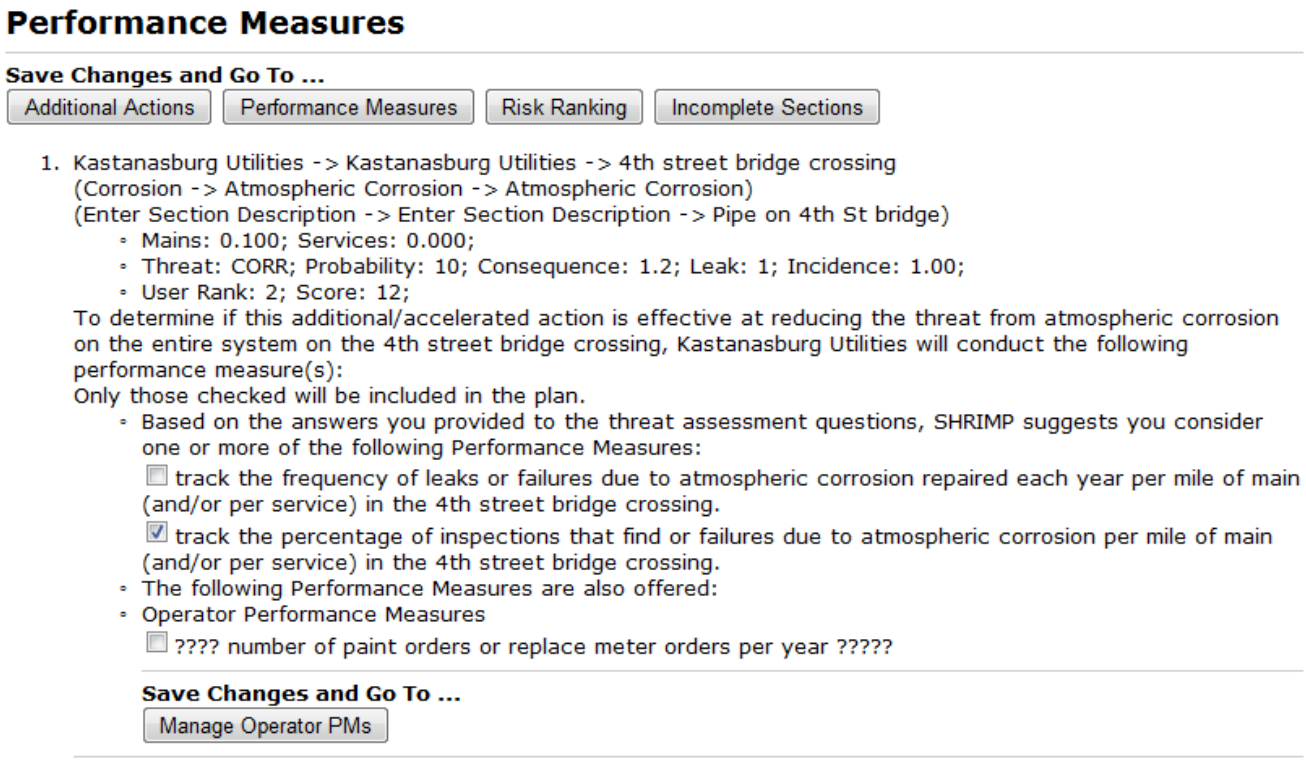
(v) Number of hazardous leaks either eliminated or repaired as required by Sec. 192.703(c) (or total number of leaks if all leaks are repaired when found), categorized by material;

The rule also states that the written plan must include any additional measures the operator determines are needed to evaluate the effectiveness of the operator's DIMP program in controlling each identified threat. To address this requirement, SHRIMP will require you to select at least one threat-specific performance measure for each threat segment for which you have selected AA Actions. SHRIMP will offer at least one potential performance measure for each threat. Based on the AA Action that you selected, SHRIMP may recommend one or more performance measures as appropriate for measuring the effectiveness of an AA Action. For example, if you selected that you would upgrade the cathodic protection system on a particular section that you reported was having trouble maintaining CP levels above criteria, a performance measure might be the number of cathodic protection measurements that are below criteria.



To select performance measures for those threat-segments for which you selected AA actions, click on “Choose PM’s” on the risk ranking screen as shown to the left.

The following screen will appear:



Just as with AA Actions you can create your own performance measures by clicking on “Manage Operator PMs” and following a process just as you did to create Operator-defined AA Actions. SHRIMP will always offer at least one performance measure for you to choose from. The performance measure(s) you select will be inserted into the appropriate sections of you written DIMP plan.

Creating an Implementation Plan

Your written DIMP plan created using SHRIMP will include a number of actions that must be accomplished in order to demonstrate that you are following through with both the mandatory and risk-based action items in the plan. Click on Implementation Plan in the left side menu to open the Implementation Plan screen. Action items fall into two general categories:

1. Modifying your procedures, policies and recordkeeping system as necessary to collect and retain information required to be collected and retained under the DIMP plan, including:

a. Records for all piping system installed after the effective date of this Plan, including, at minimum, the location where new piping and appurtenances are installed and the material of which they are constructed.

b. Number of hazardous leaks either eliminated or repaired as required by 49 CFR 192.703(c) (or total number of leaks if all leaks are repaired when found), categorized by cause;

c. Number of excavation damages;

d. Number of excavation tickets (receipt of information by the underground facility operator from the notification center);

e. Total number of leaks either eliminated or repaired, categorized by cause;

f. Number of hazardous leaks either eliminated or repaired as required by Sec. 192.703(c) (or total number of leaks if all leaks are repaired when found), categorized by material;

g. Any threat-specific-performance measures that you selected in your plan to measure the effectiveness of selected AA Actions; and

h. Mechanical fitting failure data, including:

    i. location of the failure in the system,

    ii. nominal pipe size,

    iii. material type,

    iv. nature of failure including any contribution of local pipeline environment,

    v. fitting manufacturer,

    vi. lot number and date of manufacture, and

    vii. other information that can be found in markings on the failed fitting

Performance Measure Baselines: NOTE: Items b through g above are performance measures. The DIMP rule requires that each operator "[d]evelop and monitor performance measures from an established baseline to evaluate the effectiveness of its IM program." [emphasis added]. Your implementation description for items b through g should describe what you have established as the baseline for each performance measure. If you have historical data necessary to calculate a particular performance measure (e.g. you have previous years' data on total number of leaks either eliminated or repaired, categorized by cause) then you may use historical data as the baseline. If, as a a result of this DIMP Plan,

you will be collecting data for a performance measure for the first time, then the appropriate baseline will be your first year's or first few years' results for this performance measure.

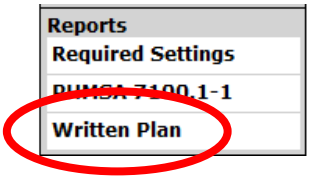
2. Developing an implementation plan for how you will address LEAKS and any risk-based Additional/Accelerated Actions that you included in your written DIMP plan.

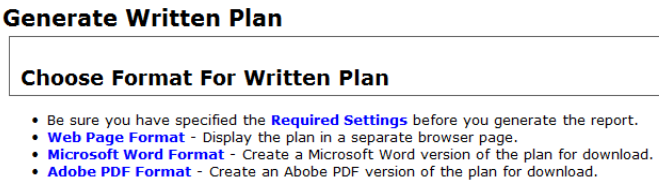
SHRIMP will list these action items in risk ranked order, with a text box under each where you should describe how you plan to implement this action item. At minimum the implementation description should include the name(s) and/or job titles of the person(s) responsible for following through on the listed action and timetables for initiating and completing the action item.

You should also review the written plan to ensure it meets any state regulations in the state(s) in which you operate because SHRIMP does not address state-specific requirements.

Viewing and Downloading Your Written DIMP Plan

At this point your written DIMP Plan is complete. Click on "Written Plan" to display options for downloading your written plan.





You can view the written plan at any time during the development process by clicking on "Web Page format".

If you wish to download the written plan, which is highly, highly, HIGHLY recommended, you can choose either a MS Word file or an Adobe pdf format. The WORD file can be edited after it is downloaded – the pdf cannot be edited.

Appendix A: Records Required to Use SHRIMP

Threat: External Corrosion

Record	Is any sorting of the data required? If so describe:	Critical (Y/N)
Leak Repair Records for the past 5 years of all leaks caused by external corrosion.	Must be able to sort leaks repaired by type of pipe where the leak occurred: 1. Steel a. coated, cathodically-protected (CP) b. coated, not CP c. bare, CP d. bare, not CP 2. Cast Iron/Ductile Iron/Wrought Iron 3. Isolated metal components on a plastic piping system 4. Other Within each of these subsets of pipe it will be valuable if the user can plot the geographic location of leaks repaired, to identify clusters of leak repairs, if such clusters exist.	Y
Pipe to Soil Cathodic Protection readings required by 192.465.	Must be able to sort CP readings by type of pipe where the reading occurred: 1. Steel a. coated, cathodically-protected (CP) b. bare, CP 2. Other Within each of these subsets of pipe it will be valuable if the user can plot the geographic location of CP readings or the CP section.	Y
Rectifier inspection reports required by 192.465	Must be able to sort rectifier readings by type of pipe where the reading occurred:	Y

	1. Steel a. coated, cathodically-protected (CP) b. bare, CP 2. Other Within each of these subsets of pipe it will be valuable if the user can plot the geographic location of rectifier readings or the CP section.	
Exposed Pipeline Inspection Reports required by 192.459.	Must be able to sort pipe inspections by type of pipe where it occurred, e.g. 1. Steel a. coated, cathodically-protected (CP) b. coated, no CP c. bare, CP d. bare, no CP 2. Cast Iron/Ductile Iron/Wrought Iron 3. Isolated metal components on a plastic piping system 4. Other Within each of these subsets of pipe it will be valuable if the user can plot the geographic location of pipe inspections, to identify clusters of pipe in poor condition, if such clusters exist.	Y
Leak Survey Records required by 192.723.	Same as above.	N

Threat: Atmospheric Corrosion

Record	**Is any sorting of the data required? If so describe:**	**Critical (Y/N)**
List of above-ground and indoor piping requiring monitoring for atmospheric corrosion		Y
Atmospheric corrosion monitoring records (192.481). This also includes records of patrols, meter set inspection, regulator	Sorted by geographic location on the system (to identify possible clusters of problem	Y

station inspections and any other records of inspections of above ground facilities where checking for atmospheric corrosion is conducted.	areas)	
Leak repair records for the past 5 years for leaks caused by atmospheric corrosion	Same as above	Y

Threat: Internal Corrosion

Record	Is any sorting of the data required? If so describe:	Critical (Y/N)
Internal corrosion monitoring records (192.477.	Sorted by geographic location on the system (to identify possible clusters of problem areas)	Y
Leak repair records for the past 5 years for leaks caused by internal corrosion	Same as above	Y
Records of any liquids removed from the distribution system	Same as above	Y
Gas composition for any gas received from local production	Same as above	Y

Threat: Equipment

Record	Is any sorting of the data required? If so describe:	Critical (Y/N)
Leak repair records associated with any leaks caused by equipment failure.	Sort equipment leak histories by type of equipment. The primary equipment categories are regulators/relief valves, valves, meters, controls, EFVs, odorizers, heaters, dehydrators, compressor, filters, other.	Y
Equipment failure and maintenance records for equipment which failed but did not result in a leak.	Sort equipment failures by type of equipment. The primary equipment categories are regulators/relief valves, valves, meters, controls, EFVs, odorizers, heaters, dehydrators, compressor, filters, other.	Y
Equipment inspection and maintenance records including but not limited to Regulator Station/Relief Valve records required by 192.739, Valve inspections required by 192.747.		Y
System MAOP in areas where equipment		Y

failure is occurring.		
Log of abnormal operations caused by equipment malfunction.		N
Manufacturer's installation and operating/maintenance procedures for failed equipment.		N

Threat: Excavation caused damage

Record	**Is any sorting of the data required? If so describe:**	**Critical (Y/N)**
One-call system ticket information for the past 5 years. This information may be available from the operator's one-call system.	Sort by geographic location to identify areas by degree of excavation activity	Y
Excavation caused damage reports for the past 5 years	Sort by geographic location to identify areas with higher probability of damage. Sort by excavator to identify excavators by number of damages Sort by type of facility damaged • Steel • Plastic • Cast iron • Other	Y
Maintenance, repair, replacement records relating to excavation caused damage	Sort by geographic location and excavator as above Sort by type of facility damaged • Steel • Plastic • Cast iron • Other	Y
Leak repair reports relating to excavation caused damage	Sort by geographic location, excavator, facility damaged as above. Sort by date to identify damages	Y

	that occurred in the past and were not reported to the operator. If possible match this with excavator information or type of project to identify possible areas where additional damage may not have been reported.	
Incident reports relating to excavation caused damage.	Sort by geographic location, excavator, facility damaged as above.	Y
Patrol or inspection reports identifying excavation caused damage.	Sort by geographic location, excavator, facility damaged as above.	Y
Blasting studies, inspections, reports	Sort by geographic location and facility type.	Y
Operator prepared reports or audits of company contractors identifying damage due to excavation or backfill activities.		Y
Exposed pipe reports related to excavation caused damage	Sort by geographic location, excavator, facility damaged as above.	N
Line marker replacement information to identify areas where line markers are damaged or destroyed by others.		N

Threat: Natural Forces

Record	**Is any sorting of the data required? If so describe:**	**Critical (Y/N)**
Maintenance or repair records including pipe replacements for facilities damaged by subsidence, landslide earthquakes, floods, washouts, temperature extremes (frost, ice build-up, high temperature), mudslide, ice falls	Sort by geographic location to identify areas with more than one damage or failure Sort by type of facility • Steel pipe • PE pipe • Meter sets • Regulator stations • Other above ground facilities	Y
Leak repairs due to the above causes	Sort by geographic location,	Y

	type of facility as above	
Patrol or inspection reports indicating damage or failure due to above causes	Sort by geographic location, type of facility as above	Y
Incident reports as a result of failure from above causes	Sort by geographic location, type of facility as above	Y
Failure investigation reports as a result of above causes	Sort by geographic location, type of facility as above	Y
Environmental or geological records to identify flood plains, areas with potential for seismic activity (earthquakes). Topographic maps to identify areas prone to landslides, mudslides and to identify geographic features within the system (rivers, streams, ravines, tidal influence zones)	Identify facilities within these areas.	Y
Safety related condition reports, or evaluations for SRC as a result of above causes	Sort by geographic location, type of facility as above	N
Exposed pipe reports as a result of above causes	Sort by geographic location, type of facility as above	N

Threat: Other outside forces

Record	**Is any sorting of the data required? If so describe:**	**Critical (Y/N)**
Repair/replacement records for above ground facilities damaged by vehicles, vandalism	Sort records by type of facility: • Meter sets • Regulator/pressure limiting stations • Other above ground facilities Sort records by geographic location to identify areas with more than one damage or failure	Y
Repair/replacement of below grade facilities caused by external loading. Operator should identify cause of damage such as heavy vehicle traffic or dumping of material	Sort by: • Geographic location to identify areas with more than one damage • Facilities such as valves, valve	Y

	boxes, vaults, meters or regulators in below grade meter boxes/vaults Sort by type of facility • Steel • Plastic • Cast iron • Other	
Leak repair reports relating to vehicles, vandalism or external loading	Sort by geographic location, facility as above.	Y
Incident reports for incidents caused by vehicles or external loading.	Sort by geographic location, facility as above	Y
Patrol or inspection reports with indications of damage to facilities	Sort by geographic location, facility as above	Y
Reports to law enforcement officials regarding vandalism or unauthorized operation of facilities.	Sort records by: Type of facility Type of damage reported • Vehicle • Vandalism	Y
Failure investigation reports for failures related to vehicles, vandalism, external loading	Sort by geographic location, facility as above	Y
Safety related condition reports, or evaluations for SRC related to vehicles, vandalism, external loading	Sort by geographic location, facility as above	N
New construction records of facilities where additional barriers, bump guards or additional protection was included	Sort by geographic location, facility as above These records may indicate locations where damages have previously occurred and additional protection is required	N
Reports of gas theft	Identify situations where theft occurred as a result of system modification	N
Exposed pipe reports related to exposure of facilities as a result of vehicle damage or vandalism		N

Threat: Materials/Welds

Record	Is any sorting of the data required? If so describe:	Critical (Y/N)
Leak Repair history including the details of the materials involved (and installation procedures for workmanship leak failure) for any leaks caused by material failure or from poor workmanship.	Separate leak history by material failures and workmanship defects. Further separate material failures into steel pipe, PE pipe, CI/PI/WI Pipe, copper pipe, tapping tees, couplings, directional fittings, flanges, transition fittings, screwed fittings.	Y
Records of use of any material that have been recalled or been a topic of a PHMSA Advisory Bulletin.	Separate by: • Low ductile Aldyl A PE pipe manufactured by Dupont prior to 1973. • PE 3306. • Compression Coupling for PE pipe. • Delrin insert tap tees. • Plexco service tee Celcon (polyacetal) caps. • Other.	N
O&M and Construction Specifications for materials and installation procedures.		N
Leak Survey Records.		N
Pressure test records for failures associated with material/weld failures.		N

Threat: Inappropriate Operations

Record	Is any sorting of the data required? If so describe:	Critical (Y/N)
Records of failures due to poor workmanship, failure to follow procedures and/or inadequate procedures, if any	Sort by employee involved, by department, if applicable and by task	Y
Records of for cause revocation of operator qualification, if any		Y
Records of incident/accident investigations – Root cause analyses, if any		Y
Records of drug and alcohol tests		Y

Threat: Other Threats

Record	Is any sorting of the data required? If so describe:	Critical (Y/N)

None		

Appendix B – SHRIMP Risk Ranking Model

SHRIMP Relative Risk Model

The centerpiece of the Simple, Handy, Risk-based Integrity Management Plan (SHRIMP) is the risk ranking model. SHRIMP uses an index model in which numeric scores are assigned based on answers provided by the user to questions asked by SHRIMP. The index model was developed by the APGA Security and Integrity Foundation (SIF) with guidance by an advisory group comprised of industry and federal and state pipeline safety regulators.

Risk is the product of the probability of a failure times the consequences of a failure. The SHRIMP relative risk model considers both the probability and consequences of a failure for each of the eight threats. The equation is as follows:

Relative Incident Probability		**Probability**		**Consequence**		**Leak History**		
Risk Factor	**=**	**Score (Normalized**	**x**	**Score**	**x**	**Factor**	**x**	
Score (1.0 or 1.25)		**to 1 – 10)**		**(1.0-1.5)**		**(1 + % of LKS)**		

Each of the four components that go into the relative risk score are described in the following sections.

Probability Score is the sum of points assigned by answers to threat interview questions. Each segment receives a relative probability score for each threat based on the answers to a series of questions. The probability questions are based on the GPTC DIMP guidance, as modified and added to by the SIF SHRIMP Advisors. The weighting given to each possible answer are based on the knowledge and experience of the SHRIMP Development Team and the SHRIMP Advisors.. The questions for each of the eight threats and the scores assigned to each possible answer are shown in Appendix A.

Threat	Subthreat category	Maximum Score	Minimum Score	Incident Probability Factor
Natural Forces	No subthreats	19	0	1
Other Outside forces	No subthreats	12	0	1.0
Excavation Damage	Grouping by concentration of damages or tickets	39	0	1.25
	Grouping by operator crew or operator contractor damage	34	0	1.25
	Grouping by Third Party Damage	31	0	1.25
	Blasting	15	0	1.25
Corrosion	External corrosion	16	1	1
	Internal corrosion	30	1	1
	Atmospheric corrosion	25	1	1
Incorrect operations	Failure to Follow Procedures	5	1	1.25

Threat	Subthreat category	Maximum Score	Minimum Score	Incident Probability Factor
	Inadequate Procedures	5	1	1.25
	Operator Qualification	5	1	1.25
	Drug & Alcohol	5	1	1.25
Equipment	No subthreats	5	1	1
Material/Welds/Joints	No subthreats	5	1	1
Other	No subthreats	None (User assigns rank)		1

Because there are different numbers of questions for each threat and subthreat, the maximum possible score for each threat and subthreat are different, therefore the probability score for each threat-segment is normalized to a scale of 1 – 10 using this equation:

Normalized probability score = 1 + (9 x (subthreat score - subthreat minimum score) / (subthreat maximum score – subthreat minimum score))

For example, if a segment received a score of 9 for external corrosion the normalized probability score would be 1 + (9 x (9-1) / (16-1) = 1 + 9 x 8/15 = 5.8

Incident Probability Factor

The normalized probability factor described above is useful to rank various sections by the probability of a failure occurring within each of the eight threats, but SHRIMP also must rank sections across the eight threats. Failures due to some threats are more likely to cause death, injury or significant property loss than other threats. DOT Distribution Annual and Incident Report data shown below provide an indication of how likely it is that a failure (e.g. leak) due to one of the 8 threats will result in death, injury or significant property loss.

Reported Cause of Incidents and Failures 2005-2007	# OF INCIDENTS	# OF FAILURES	INCIDENTS/1000 FAILURES	Normalized to corrosion
CORROSION	6	293933	**0.02**	**1**
EXCAVATION DAMAGE	73	338666	**0.22**	**11**
INCORRECT OPERATIONS	8	30145	**0.27**	**13**
MATERIAL FAILURE	8	147384	**0.05**	**3**
EQUIPMENT FAILURE	6	140442	**0.04**	**2**
NATURAL FORCE DAMAGE	22	77229	**0.28**	**14**
OTHER OUTSIDE FORCE DAMAGE*	39	37426	**1.04**	**51**
ALL OTHER CAUSES	NA	NA	NA	

*Excluding fire first incidents

The results of this analysis find that failures due to three threats (corrosion, material failure and equipment failure) are least likely to result in reportable incidents, that failures due to excavation damage, incorrect operations and natural force damage are moderately likely to result in reportable incidents and that other outside force damage failures are most likely to result in reportable incidents.

The advisors agreed to assign an Incident Probability Factor of 1.0 (no increase in relative risk score) for Corrosion, Materials/Welds, Equipment, and Other Outside Force Threats[1] where it is relatively unlikely a failure will result in a reportable incident. For Excavation, Incorrect Operations, and Natural Force Threats where it is relatively more likely that a failure will result in a reportable incident the advisors agreed on an Incident Probability Factor of 1.25 (e.g. a 25% increase in relative risk score for these threats).

[1] Further investigation of the “other outside force” category revealed that virtually all the incidents involved vehicles striking above ground facilities, usually meter sets. The SHRIMP advisors agreed with the PHMSA Phase 1 report conclusions that there was not enough information to conclude that vehicular damage could have been anticipated at the location of these incidents or whether meter protection existed, therefore no additional weighting is provided for this threat. SHRIMP does, however, include assessment of vehicle damage in the threat assessment and offer additional/accelerated actions if vehicular damage is found to be a significant threat.

If the user sections the system by geographic area, the **Consequence Score** is determined by points assigned based answers to threat interview questions as follows:

	Question	Possible Answers
CSQ-1	Are the pressure and/or diameter of this section greater than or about the same as the system as a whole?	Substantially greater Somewhat greater About the same
CSQ-2	Is this section predominantly located in business districts or outside business districts (as those are defined for leak survey)?	Within Business Districts Outside Business Districts
CSQ-3	How long would it typically take utility crews to reach this part of the system after receiving notice of a possible failure?	Less than one (1) hour Between one (1) and two (2) hours More than two (2) hours
CSQ-4	What would be the impact on the utility and its customers if this section were to fail?	Low Moderate High

The base consequence factor is 1.0

1. Greater pressure and/or diameter can increase the consequence factor by up to 20% (1.0 to 1.2)

2. Sections predominantly within business districts get an additional 15% increase in the consequence factor

3. The time to respond to a failure results in an increase in consequence factor of up to 5% (1.0 to 1.05)

4. The significance of the facility can result in an increase in consequence factor of up to 10% (1.0 to 1.1)

These weightings are based on the knowledge of the subject matter experts on the SHRIMP Advisory Group. These increases are added together to calculate the consequence factor for the section. If all four questions were answered so that maximum scores were assigned, the consequences factor would be 1.50 (1.2 + 1.15 + 1.05 + 1.1). The overall relative risk score would be increased by 50%.

If all four questions are answered so the minimum scores are assigned, then the consequence factor will be 1.0 and the relative risk score would be unchanged by this factor.

If the user does not create subsections for a threat, then these consequence questions are not asked.

For the threats shown below where the geography based threat questions do not apply the following threat specific consequence questions are asked:

	Question	**Possible Answers**
CSQ-EXC1	Have the (crews/contractors/excavators) identified for this section caused damage that resulted in a reportable incident?	Yes No
CSQ-EXC2	Considering disruption of service and cost to return the system to service, how serious are the damages caused by the (crews/contractors/excavators) identified for this section when compared to all other excavation caused damages?	More serious Less serious About the same
CSQ-GEN1	What would be the potential consequences (injuries and/or property loss) if a failure were to occur because of this problem?	High likelihood of serious injury and/or property loss Moderate likelihood of injury and/or property loss. Not likely to result in injury and/or property loss.
EQIPCSQ-1	Is the size/capacity of the equipment substantially greater or lesser than other equipment in the system as a whole?	Substantially greater Somewhat greater About the same

EQIPCSQ-2	Does the equipment primarily affect the system located in the business district?	Within Business Districts Outside Business Districts
EQIPCSQ-3	How long would it typically take utility crews to reach this part of the system after receiving notice of a possible failure?	Less than one (1) hour Between one (1) and two (2) hours More than two (2) hours
EQIPCSQ-4	What would be the impact on the utility and its customers if this equipment were to fail?	Low Moderate High

Leak Cause Factor

While most leaks are repaired without incident, the SHRIMP advisors felt that the users integrity management plan should consider the relative percentage of leaks by cause.

The Leak Cause Factor equals 1 + the percentage of leaks associated with threat to the total number of leaks for the system.

If the number of total leaks over a five year period are less than 50, the national average is used rather than the user's leak history data because with fewer than 50 leak repairs the relative percentages of leaks by cause may be skewed by a handful of leak repairs that are not representative of the system. The national average is shown below, taken from leak repair data reported to PHMSA by all distribution operators on Annual Report Form 7100.1-1..

Reported Cause of Failures 2005 – 2009

Threat	Failures	Percent	Leak History Factor
Corrosion	399,378	26	1.26
Excavation Damage	161,079	11	1.11
Incorrect Operations	38,416	3	1.03
Material/Welds Failure	155,255	10	1.10
Equipment Failure	326,793	21	1.21
Natural Force Damage	82,565	5	1.05
Other Outside Force Damage	40,529	3	1.03
All Other Causes	329,401	22	N/A*
		100	

* Since the threat category “Other” is not assigned a relative risk score by SHRIMP the leak history factor is not used for that threat.

Appendix C: Sample Written DIMP Plan

Before you get started you might like to see what the output of SHRIMP will look like. This is an example of a written DIMP Plan created by SHRIMP.

Appendix C

Instructions for the Distribution Annual Report Form 7100.1-1

All section references are to Title 49 of the Code of Federal Regulations. Reporting requirements are contained in Part 191, "Transportation of Natural and Other Gas by Pipeline; Annual Reports, Incident Reports and Safety Related Condition Reports." Except as provided in §191.11(b), each operator of a gas distribution pipeline (see definitions below) must submit an annual report Form PHMSA F 7100.1-1 for the preceding calendar year not later than **March 15th**. Be sure to report TOTAL miles of main pipeline and services in the system at the end of the reporting year, including additions to the system during the year. The annual reporting period is on a calendar year basis ending on December 31st of each year.

ONLINE SUBMISSION IS REQUIRED UNLESS AN ALTERNATIVE REPORTING METHOD IS GRANTED BY PHMSA.

If electronic reporting imposes an undue burden and hardship, an operator may submit a written request for an alternative reporting method to the Information Resources Manager, Office of Pipeline Safety, Pipeline and Hazardous Materials Safety Administration, PHP-20, 1200 New Jersey Avenue, SE Washington DC 20590. The request must describe the undue burden and hardship. PHMSA will review the request and may authorize, in writing, an alternative reporting method. An authorization will state the period for which it is valid, which may be indefinite. An operator must contact PHMSA at 202-366-8075, or electronically to informationresourcesmanager@dot.gov or make arrangements for submitting a report that is due after a request for alternative reporting is submitted but before an authorization or denial is received.

Operators should request and receive authorization from PHMSA prior to the use of alternative reporting methods.

Online Submissions:

Online Submission Registration Requirements:

The following two requirements must be fulfilled prior to submitting data online:

1. You must have an Office of Pipeline Safety (OPS) provided Operator ID and Personal Identification Number (PIN)/password. If you do not have one, please complete and submit the form located on the OPS Online Data Entry and Operator Registration System New Operator Registration web site at http://opsweb.phmsa.dot.gov/cfdocs/opsapps/pipes/new_operator.cfm to obtain one.

2. You must have a Username and Password obtained by registering through the PHMSA Portal. If you have an OPS Operator ID and PIN/password, you may obtain a Username and Password through the PHMSA Portal.

Each Operator, without an Operator ID, should plan accordingly and allow for several weeks prior to the due date of the report to obtain their Operator ID.

Online Submission Instructions:

1. Navigate to PHMSA's, Office of Pipeline Safety web site, Pipeline Safety Community, located at http://www.phmsa.dot.gov/pipeline.
2. Click the "**Online Data Entry**" hyperlink listed in the first column. This takes you to the OPS Online Data Entry and Operator Registration System.
3. Click on the "**Gas Distribution System Annual Report**" hyperlink under the *Gas Distribution Systems* subtitle. This takes you to the PHMSA Portal login screen.
4. Enter your "Username" and "Password and click on "**Login**".
5. Create or modify record:
    a. To create a new *Gas Distribution System Annual Report*, click "**Submit New**". Enter the "Calendar Year" for which the report is being filed

    OR

    b. To modify an existing *Gas Distribution System Annual Report*; locate the report using the "Search" function. Once the report is located, click "**Create Supplemental**" and make the necessary changes.
6. Follow the detailed instructions below to complete Parts A – I.
7. Click "**Save"** when finished.
8. A copy of the report can be printed or downloaded in PDF format.
9. For distribution pipelines subject to the jurisdiction of a State agency pursuant to certification under 49 U.S.C. § 60105, send a copy of the report to the State agency no later than March 15th.

Alternative Reporting Submissions:

****Authorization from PHMSA is needed to submit the form using an alternative reporting method****

Form PHMSA F 7100.1-1 and instructions are available for download on the Office of Pipeline Safety web site, Pipeline Safety Community, located at http://www.phmsa.dot.gov/pipeline. Click on the "**Library**" hyperlink and then the "**Forms**" hyperlink under the *Mini-Menu* subtitle. If you have questions about this report or these instructions, please call (202) 366-8075.

Please type or print all entries when submitting forms by mail or fax.

Alternative Reporting Submission Instructions:

1. Check new or modified report:
    a. If this is the first time this *Gas Distribution System Annual Report* is being submitted, check **Initial Report.**

OR

b. If an initial report has already been filed but that report needs to be modified check **Supplemental Report.** Only submit Parts B, C, D, E, F, G, and H as needed for which the information is being modified.

2. Enter the Calendar Year for which the report is being filed.
3. Follow the detailed instructions below to complete Parts A - I.
4. Submit the report via one of the following methods:
   a. Mail to:
      DOT/PHMSA Office of Pipeline Safety
      Information Resources Manager,
      1200 New Jersey Ave., SE
      East Building, 2nd Floor, (PHP-20)
      Room Number E22-321
      Washington, DC 20590

   OR

   b. Fax to: Information Resources Manager at (202) 366-4566.
5. For distribution pipelines subject to the jurisdiction of a State agency pursuant to certification under 49 U.S.C. § 60105, submit a copy of the report to the State agency no later than March 15th.

GENERAL INSTRUCTIONS

The following definitions are from § 192.3:

1. "Distribution line" means a pipeline other than a gathering or transmission line.

2. "Gathering line" means a pipeline that transports gas from a current production facility to a transmission line or main.

3. "Transmission line" means a pipeline, other than a gathering line, that:
   a. Transports gas from a gathering line or storage facility to a distribution center, storage facility, or large volume customer that is not downstream from a distribution center;
   b. Operates at a hoop stress of 20 percent or more of SMYS; or
   c. Transports gas within a storage field. A large volume customer may receive similar volumes of gas as a distribution center, and includes factories, power plants, and institutional users of gas.

4. "Operator" means a person who engages in the transportation of gas.

Make an entry in each block for which data are available. Estimate data if necessary. Avoid entering any data in the **UNKNOWN** columns, if possible. Some companies may have very old pipe for which installation records do not exist. Estimate the total of such mileage in the **UNKNOWN** column of Part B,

item 2 “Miles of Main in System at End of Year” and item 3 “Number of Services in System at End of Year”, and item 4 “Miles of Main and Number of Services by Decade of Installation.”

Please round all mileage to the nearest 3 decimal positions. **DO NOT USE FRACTIONS.** Examples of rounding are as follows: 3/8 should round to 0.375; 3/4 should round to 0.75 and ½ should round to 0.5.

The total miles of main and services reported in Part B sections 1 through 4 **MUST** all sum to the same totals in the appropriate rows. Please do not to report miles of main in feet. If necessary, please convert feet into a decimal notation (e.g. 1,320 feet = .25 miles).

PART A – OPERATOR INFORMATION

Online Submissions:

Items 1, 3, and 4 are auto-populated. If this information is incorrect, please contact PHMSA’s Information Resources Manager at (202) 366-4566.

Item 2: Provide the address where PHMSA can mail information.

Item 5: Enter the **State for which information is being reported**. **Submit a separate report for each State** in which the company operates a gas distribution pipeline system.

Alternative Reporting Submissions:

Item 1: Provide the name of the operator.

Item 2: Provide the address where PHMSA can mail information.

Item 3: Provide operators’ ID number. The Pipeline and Hazardous Materials Safety Administration assigns the operator’s five-digit identification number. Contact PHMSA at (202) 366-8075 if you need assistance with determining your operator’s five-digit identification number.

Item 4: Provide the Headquarters’ name and address.

Item 5: Enter the **State for which information is being reported**. **Submit a separate report for each State** in which the company operates a gas distribution pipeline system.

PART B – SYSTEM DESCRIPTION

“Coated” means pipe coated with any effective hot or cold applied dielectric coating or wrapper.

“PVC” means polyvinyl chloride plastic.

"PE" means polyethylene plastic.

"ABS" means acrylonitrile-butadiene-styrene plastic.

"Cathodically protected" applies to both "bare" and "coated."

"Other" means a pipe of any material not specifically designated on the form. If you check "other pipe," describe it in Part I.

"Number of service" is the number of service lines, not the number of customers served.

Provide miles of main and numbers of services by decade installed in Part B, section 4.

If you do not know the decade of installation of the pipe because there are no records containing such information, enter an estimate in the UNKNOWN column. The sum total of mileage and numbers of services reported for Part B, section 4 should match total mileage and numbers of services reported in sections 1, 2, and 3 in Part B.

PART C – TOTAL LEAKS AND HAZARDOUS LEAKS ELIMINATED/REPAIRED DURING YEAR

In the appropriate column, include the total number of leaks and the number of hazardous leaks eliminated by repair, replacement or other action during the reporting year. The number of "hazardous leaks" eliminated or repaired during the year is reported as a performance measure for integrity management per 192.1007(g). When reporting leaks or hazardous leaks eliminated by replacing or abandoning a segment of pipe, count the leaks that existed in the pipe segment before it was replaced or abandoned. Also include leaks and hazardous leaks reported on form PHMSA 7100.1, "Incident Report Gas Distribution Systems." A reportable incident is one described in §191.3. Do not include leaks that occurred during testing.

A "leak" is defined as an unintentional escape of gas from the pipeline. A non-hazardous release that can be eliminated by lubrication, adjustment, or tightening, is not a leak.

A "hazardous leak" means a leak that represents an existing or probable hazard to persons or property and requires immediate repair or continuous action until the conditions are no longer hazardous. A "hazardous leak" which occurs aboveground or belowground is a leak and must be reported.

Operators who do not grade leaks for hazard, but rather repair all leaks when found, need not grade repaired leaks solely for the purpose of this report. Such operators treat all leaks as if hazardous. Operators who do not grade leaks should report the same values for both total and hazardous leaks for each cause.

The "number of known system leaks at the end of the year scheduled for repair" is the total number pipeline system leaks being monitored and scheduled for repair at the end of the calendar year. Monitored leaks also include those leaks which have been temporarily repaired until a permanent repair can be

performed. These leaks are non-hazardous unless reclassified following the operator's operation and maintenance procedures.

Leak causes are classified as:

CORROSION: leak resulting from a hole in the pipe or other component that was caused by galvanic, bacterial, chemical, stray current, or other corrosive action.

NATURAL FORCES: leak resulting from earth movements, earthquakes, landslides, subsidence, lightning, heavy rains/floods, washouts, flotation, mudslide, scouring, temperature, frost heave, frozen components, high winds, or similar natural causes.

EXCAVATION DAMAGE: leak resulting from damage caused by earth moving or other equipment, tools, or vehicles. Include leaks from damage by operator's personnel or contractor or people not associated with the operator.

OTHER OUTSIDE FORCE DAMAGE: Include leaks caused by fire or explosion and deliberate or willful acts, such as vandalism.

MATERIAL OR WELDS: leak resulting from failure of original sound material from force applied during construction that caused a dent, gouge, excessive stress, or other defect that eventually resulted in a leak. This includes leaks due to faulty wrinkle bends, faulty field welds, and damage sustained in transportation to the construction or fabrication site. Also include leak resulting from a defect in the pipe material, component, or the longitudinal weld or seam due to faulty manufacturing procedures. Leaks from material deterioration, other than corrosion, after exceeding the reasonable service life, are reported under Other.

EQUIPMENT: leak resulting from malfunction of control/relief equipment including valves, regulators, or other instrumentation; stripped threads or broken pipe couplings on nipples, valves, or mechanical couplings; or seal failures on gaskets, O-rings, seal/pump packing, or similar leaks.

INCORRECT OPERATIONS: leaks resulting from inadequate procedures or safety practices, or failure to follow correct procedures, or other operator error.

OTHER: leak resulting from any other cause, such as exceeding the service life, not attributable to the above causes.

PART D – EXCAVATION DAMAGE

Excavation damages are reported as a measure of the effectiveness of integrity management programs (192.1007(g)).

Report the "Number of Excavation Damages" experienced during the calendar year. For this purpose, "Excavation Damage" means any impact that results in the need to repair or replace an underground facility due to a weakening, or the partial or complete destruction, of the facility, including, but not limited to, the protective coating, lateral support, cathodic protection or the housing for the line device or facility.

Report also the "Number of Excavation Tickets" received during the year, (i.e., receipt of information by the operator from the notification center).

PART E – EXCESS FLOW VALVE (EFV) DATA

Report the number of EFVs installed on single-family residential services during the calendar year. Report the estimated total number of EFVs in the system at the end of the calendar year. (The "Estimated Total number of EFVs in the system" should include the "Number of EFVs installed on single-family residential services during the calendar year".)

PART F – TOTAL NUMBER OF LEAKS ON FEDERAL LAND REPAIRED/ELIMINATED OR SCHEDULED FOR REPAIR

Federal Lands: As defined in 30 U.S.C. §185, federal lands means "all lands owned by the United States except lands in the National Park System, lands held in trust for an Indian or Indian tribe, and lands on the Outer Continental Shelf." Indicate only those leaks repaired, eliminated, or scheduled for repair during the reporting year, including those incidents reported on Form PHMSA F 7100.1.

PART G – PERCENT OF UNACCOUNTED FOR GAS

"Unaccounted for gas" is gas lost; that is, gas that the operator cannot account for as usage or through appropriate adjustment. Adjustments are appropriately made for such factors as variations in temperature, pressure, meter-reading cycles, or heat content; calculable losses from construction, purging, line breaks, etc., where specific data are available to allow reasonable calculation or estimate; or other similar factors.

State the amount of unaccounted for gas as a percent of total input for the 12 months ending June 30 of the reporting year.

[(Purchased gas + produced gas) minus (customer use + company use + appropriate adjustments)] divided by (purchased gas + produced gas) equals percent unaccounted for.

Do not report "gained" gas. If a net gain of gas is indicated by the calculations, report "0%" here. (Decimal or fractional percentages may be entered.)

PART H – ADDITIONAL INFORMATION

Include any additional information which will assist in clarifying or classifying the reported data.

PART I - PREPARER AND AUTHORIZED SIGNATURE

PREPARER is the name of the person most knowledgeable about the report or the person to be contacted for more information. Please include the direct phone number and email address as applicable (e-mail address is desired but not required). It should be noted that PHMSA will use your e-mail address to issue correspondence that is normally sent via mass mailings. "Correspondence" includes notifications such as the annual reminder letter for Annual Report filings.

AUTHORIZED SIGNATURE may be the preparer, an officer, or other person whom the operator has designated to review and sign reports. Please include the direct phone number. If submitting online your username and password take the place of the Authorized Signature.