Equipment Leaks Surveys and Population Counts

This page provides an overview of the other emissions from equipment leaks estimated using emission factors source type reporting requirements for Subpart W.

Please see Reporting Form Instructions on downloading the blank reporting form and uploading the completed reporting form. You may also refer to Optional Calculation Spreadsheet Instructions to download the Subpart W calculation spreadsheet.

The other emissions from equipment leaks estimated using emission factors source type is applicable to following industry segments:

- Onshore petroleum and natural gas production [98.230(a)(2)]
- Onshore natural gas processing [98.230(a)(3)]
- Onshore natural gas transmission compression [98.230(a)(4)]
- Underground natural gas storage [98.230(a)(5)]
- Liquefied Natural Gas (LNG) storage [98.230(a)(6)]
- LNG import and export equipment [98.230(a)(7)]
- Natural gas distribution [98.230(a)(8)]
- Onshore petroleum and natural gas gathering and boosting [98.230(a)(9)]

Indicate the method used to calculate emissions for this source type via the picklist selection.

Applicability	
Did this facility use leak surveys to calculate emissions from equipment leaks in accordance with 98.232 [per 98.236(q)]?	
Did this facility use population counts to calculate emissions from equipment leaks in accordance with 98.232 [per 98.236(r)]?	
Did the facility elect to comply with 98.236(q) according to 98.233(q)(1)(iv) for any components at the facility [per 98.236(q)(1)(iv)]?	

If you have questions about how you should respond to the applicability questions, follow this link for additional help content.

If the facility has the source type, then indicate whether missing data procedures were used.

Best Available Monitoring Methods (BAMM) and Missing Data

Were BAMM used for any parameters to calculate GHG emissions?	Provide a brief description of the BAMM used, parameter measured, and time period.	Were missing data procedures used for any parameters to calculate GHG emissions?
BAMM not available	for Equipment Leaks	200

Reporting Requirements

Table Q.1 Leak Survey Characterization must be completed for each facility that completed a leak survey. Required data elements include:

- Number of complete equipment leak surveys performed during the calendar year (98.236(q)(1)(i))
- For Natural gas distribution facilities conducting multi-year surveys, number of years in the leak survey cycle (98.236(q)(1)(ii))
- Method Use to Conduct Leak Surveys (98.236(q)(1)(v)) Select "Yes" from the picklist for all that apply:
 - Optical gas imaging instrument as specified in §60.18 (98.234(a)(1))

- Method 21 (98.234(a)(2))
- o Infrared laser beam illuminated instrument (98.234(a)(3))
- Acoustic leak detection devices (98.234(a)(5))
- Optical gas imaging instrument as specified in §60.5397a (98.234(a)(6))
- Method 21 as specified in §60.5397a (98.234(a)(7))

Table Q.1 Leak Survey Characterization

Table Q.1 Leak Survey Characterization

	ì	Method Used to Conduct Leak Surveys [98.236(q)(1)(v)] Select all that apply					
Number of complete equipment leak surveys performed during the calendar year [98.236(q)(1)(0)]	For Natural gas distribution facilities conducting multi- year surveys, number of years in the leak survey cycle [98.236(q)(1)(ii)]	Optical gas imaging instrument as specified in	Method 21 [98:234(a)(2)]	Infrared laser beam illuminated instrument [98.234(a)(3)]	Acoustic leak detection device [98.234(a)[5)]	Optical gas imaging instrument as specified in §60.5397a [98.234(a)(6)]	Method 21 as specified in §60.5397a [98.234(a)(7)]

Table Q.2 Emissions calculated for component types using emissions factors must be completed for each facility for each component type that uses emission factors for estimating emissions for equipment leaks found in each leak survey. Report the count of components surveyed of all component types and the emissions from those component types (as calculated by Equation W-30) for your industry segment. Note that certain component types are only required if they are subject to the well site or compressor station fugitive emissions standards in 40 CFR 60.5397a or if the facility elected to comply with 98.236(q) as indicated in the applicability questions. If no leaks were identified from any components of a component type during the leak survey, enter "0" (zero) in columns G through I for that component type. Required data elements include:

- Component type (98.236(q)(2)(i)) this data element is autofilled in the Smart Form
- Total number of surveyed component type identified as leaking (98.236(q)(2)(ii))
- Average time the surveyed components are assumed to be leaking and operational (98.236(q)(2)(iii))
- CO₂ emissions (surveyed components identified as leaking only) (mt CO₂) (98.236(q)(2)(iv))
- CH4 emissions (surveyed components identified as leaking only) (mt CH₄) (98.236(q)(2)(v))

Table Q.2 Emissions calculated for component types using emissions factors

Minimum Mini	Report the count of components surveyed of all component types and the emissions from those component types (as calculated by Equation W-30) for your industry segment. If no leaks were identified from any components of a	Component Type	Total number of surveyed component type identified as	Average time the surveyed components are assumed to be leaking and operational, $T_{p,z} \label{eq:Tpz}$	CO ₂ Emissions (surveyed components identified as leaking only)	CH ₄ Emissions (surveyed components identified as leaking only)
Coulties production and related gas production and following and company of the production and country of the production and c	component type during the leak survey, enter "0" in		leaking, x _p	(hours)	(mt CO₂)	(mt CH ₄)
Coulton persistent and staurs pay production and Charles Applications of the Company of the Com		[98.236(q)(2)(i)] Onshore Production or GB Components, Gas Service - Valve	[98.236(q)(2)(ii)]	[98.236(q)(2)(iii)]	[98.236(q)(2)(iv)]	[98.236(q)(2)(v)]
Orders perform not intering ap protection of Charles (BL2204CF) and gifting fields VF) Orders perform not intering ap protection of Charles (BL2204CF) and gifting fields VF) Orders perform not intering ap protection of Charles (BL2204CF) and gifting fields VF) Orders perform not intering ap protection of Charles (BL2204CF) and gifting fields VF) Orders perform not intering ap gifting field VF) Orders perform not intering ap gifting fields VF) Orders p		Onshore Production or GB Components, Gas Service - Flange				
Souther periodium and salariar gas production and formation and production and salariar gas						
Onshor periodism and rather give production and Control pile 220(CCT) and girling (Task W 1) (B4.22)(CCT) and girling (Ta		Onshore Production or GB Components, Gas Service - Pressure Relief Valve				
October periodicipies and salariuri que production and Charles production and Charles production and Charles Production of Composers, Light Charles Production (Charles Produc		Onshore Production or GB Components, Gas Service - Pump Seal				
Onbor periodes and dativaria pas processors and Order of Commons (Light Coults Search Connected Williams) pt 32,202(12) and g0 (10) (14 abs V.1.1) Contain Probable of Commons (Light Coults Search County						
protection and entering age generoring and beautiful professor (1) and professor (1)	Onehers petroloum and natural ass production and Onehers	Onshore Production or GB Components, Light Crude Service - Flange				
PREZIDENTY and Q 1907 (Table W 12) Company Company (Light Charles Service - Number 2) Company (Ligh	petroleum and natural gas gathering and boosting	Onshore Production of GB Components, Light Crude Service - Connector (other) Onshore Production or GB Components, Light Crude Service - Open-Ended Line				
Onthor resident gas recessing [B3270907]. Take V.2) Onthor resident gas recessing [B1270907]. Take	[98.232(c)(21) and (j)10)] (Table W-1E)	Onshore Production or GB Components, Light Crude Service - Pump				
Control Procedure or CE Components, Casa Process Control Proce		Onshore Production of GB Components, Light Crude Service - Agriculture Service - Other				
Onshore natural gas processing PRAZZOROFFI, Flade W 2) Onshore natural gas recommended. The Brazile PrazzoroFine W 200 Onshore natural gas recommended. The Brazile PrazzoroFine W 200 Onshore natural gas recommended. The Brazile PrazzoroFine W 200 Onshore natural gas recommended to prazzoroFine W 200 Onshor		Onshore Production or GB Components, Heavy Crude Service - Valve				
Scale Procedure or CE Compression, State Procedure or CE Compression, Capital Review Cyber Excellent (CE) Outside Procedure or CE Compression, Capital Review Cyber (CE) Compression Compression, CE		Onshore Production or GB Components, Heavy Crude Service - Flange Onshore Production or GB Components, Heavy Crude Service - Connector (other)				
Onshore relations of an Composente, 1490 Crack Service - Colored S		Onshore Production or GB Components, Heavy Crude Service - Open-Ended Line				
Combote natural gas processing 19x1201(71); "Challe W1-2) Compressor Compressor, Cost Service - Open - ented Line Compressor Compressor, Cost Service - Open - ented Line Compressor Compressor, Cost Service - Open - ented Line Compressor Compressor, Cost Service - Open - ented Line Compressor Compressor, Cost Service - Open - ented Line Compressor Compressor, Cost Service - Comment Cost Service - Compressor, Cost Service - Comment Cost Service - Compressor, Cost Service - Comment Cost Service -						
Compressor Components, Gas Seniors - Connected (Las Seniors - Seni		Onshore Production or GB Components, Heavy Crude Service - Other				
Compressor Compressor, But Short Valve Description statural gas processing paragraphy. The compressor Compres						
Considere natural gas processing [Bit 3219(7)]- (Table V-2) [Bit 3219(7)]- (Table V-		Compressor Components, Gas Service - Open-ended Line				
Next Compress Components, Cas Service - Valve	Onshore natural dae proceeding					
Next Compressor Components, Casi Service - Connected Components Casi Service - Compensation Casi Service - Mine Compressor Components Casi Service - Compressor Casi Service - Compressor Components Casi Service - Compressor Casi Service - Compressor Components Casi Service - Compressor Casi Casi Casi Casi Casi Casi Casi Casi	[98.232(d)(7)] - (Table W-2)					
Non-Compressor components, Cas Service - Pressure Rollet Valve						
Roo. Compress or components, Cas Service - Valver						
Compessor Components, Cas Service - Commender Compessor Components, Cas Service - Pressure Reside Tube Compessor Components, Cas Service - Pressure Reside Tube Compessor Components, Cas Service - Pressure Reside Tube Resident Service - Compensor Components, Cas Service - Pressure Resident Service Resident Service - Compensor Components, Cas Service - Commender Compensor Components, Cas Service - Commender Commender Compensor Compens		Non-Compressor components, Gas Service - Meter				
Compessor Components, Cas Service - Open-ended Line Compessor Components, Cas Service - Person Related Vale 8) (Table W 3A) 8) (Table W 3A)						
Omahore natural gas transmission compression [98.2370/17] Bill (Table W-JA) Recompression Compression (Sas Service - Valve Service - Service - Valve Service - Service - Valve Service - Service - Service - Valve Service -						
One-hore natural gas transmission compression (Pa2-2)(r) (7 compression Compre		Compressor Components, Gas Service - Pressure Relief Valve				
Hon-Compress of Components, Case Service - Valve	Onshore natural gas transmission compression [98.232(e)(7-	Compressor Components, Gas Service - Meter or Instrument Compressor Components, Gas Service - Other				
Non-Compressor Components, Gas Service - Pores and de Line Non-Compressor Components, Casa Service - Possure Relet Valve Storage Station, Casa Service - Valve Underground natural gas storage (PR-23/7)(5-8)) (Table W-4A) Underground natural gas storage (PR-23/7)(5-8)) (Table W-4A) Storage Station, Casa Service - Valve Storage Station, Casa Service - Valve Storage Valvebands, Gas Service - Volver Und Storage, LIVG Service - Volver Und Storage, Cas Service - Volver Und Stora	8)] (Table W-3A)	Non-Compressor Components, Gas Service - Valve				
Nex-Compressor components, Gas Service - Pressure Relet Valve Nex-Compressor components, Gas Service - Weter of instrument Nex-Compressor components, Gas Service - Weter of instrument Nex-Compressor components, Gas Service - Weter of instrument Nex-Compressor components, Gas Service - Weter of Service - Weter and Instrument Underground natural gas storage [88.237(f(4-8))] (Table W-4A) Underground natural gas storage [88.237(f(4-8))] (Table W-4A) Storage Service - Service - Weter and Instrument Storage Wethleads, Gas Service - Valve Storage Wethleads, Gas Service - Valve Storage Wethleads, Gas Service - Pressure Relet Valve Storage Wethleads, Gas Service - Pressure Relet Valve Storage Wethleads, Gas Service - Pressure Relet Valve Liquelled natural gas (LHG) storage (88.22(g)(4-6,7)) (Table W-4) Liquelled natural gas (LHG) storage (88.22(g)(4-6,7)) (Table Service - Weter - Pump Seral Liquelled natural gas (LHG) storage (88.22(g)(4-6,7)) (Table W-6) Liquelled natural gas (14.22(g)(4-6,7)) (Table W-6) Liquelled natural gas						
Non-Compressor components, Gas Service - Other Storage Station, Cas Service - Other		Non-Compressor components, Gas Service - Pressure Relief Valve				
Storage Station, Gas Service - Valve Underground natural gas storage [96.7321(K-5-3) (Table VF-A) Underground natural gas storage [96.7321(K-5-3) (Table VF-A) Storage Station, Gas Service - Posen-Relief Valve Storage Station, Gas Service - Meter and Instrument Storage Station, Gas Service - Posen-Relief Valve Storage Station, Gas Service - Posen-Relief Valve Storage Vallenach, Gas Service - Posen-Relief Valve Storage Wellheads, Gas Service - Posen-Relief Valve LING Storage, LING Service - Commedia LING Storage, LING Service - Commedia LING Storage, LING Service - Commedia LING Storage, Gas Service - Posen-Relief Valve LING Storage, Gas Service - Posen-Relief Val						
Storage Station, Gas Service - Open-ended Line		Storage Station, Gas Service - Valve				
Underground natural gas storage 198.232(N/5.8) (Table W-4A)						
Underground natural gas storage [98.232(f)(5.8)] (Table W.4A)		Storage Station, Gas Service - Pressure Relief Valve				
Storage Welthauds, Cas Service - Volve Storage Welthauds, Cas Service - Connector (other than flanges) Storage Welthauds, Cas Service - Connector (other than flanges) Storage Welthauds, Cas Service - Other - Connector (other than flanges) Storage Welthauds, Cas Service - Other - Connector (other than flanges) Storage Welthauds, Cas Service - Other - Connector (other than flanges) Storage Welthauds, Cas Service - Other - Connector Storage Welthauds, Cas Service - Other - Connector Storage Welthauds, Cas Service - Other - Connector Storage Vell (other - Connector - Conn	Underground natural gas storage					
Storage Wellheads, Gas Service - Open-Ended Line		Storage Wellheads, Gas Service - Valve				
Storage Wellheads, Gas Service - Poseure Relief Valve		Storage Wellheads, Gas Service - Connector (other than flanges) Storage Wellheads, Gas Service - Flange				
Storage Wellheads, Gas Service - Pressure Relief Valve Storage Wellheads, Gas Service - Pressure Relief Valve Linguefied natural gas (LNG) storage (198.232(q))4.6,7)] (Table W. 5A) Liquefied natural gas (LNG) storage (98.232(q))4.6,7)] (Table W. 5A) Liquefied natural gas (LNG) storage (98.232(q))4.6,7)] (Table W. 5A) W. 5A) Liquefied natural gas (LNG) storage (98.232(q))4.6,7)] (Table W. 5A) W. 5A) Liquefied natural gas (LNG) storage (98.232(q))4.6,7)] (Table W. 5A) W. 5A) Liquefied natural gas (LNG) storage (98.232(q))4.6,7)] (Table W. 5A) W. 5A) Liquefied natural gas (LNG) storage (98.232(q))4.6,7)] (Table W. 5A) Liquefied natural gas (LNG) storage (98.232(q))4.6,7)] (Table W. 5A) Liquefied natural gas (LNG) storage (98.232(q))4.6,7)] (Table W. 5A) Liquefied natural gas (LNG) storage (98.232(q))4.6,7)] (Table W. 5A) Liquefied natural gas (LNG) storage (98.232(q))4.6,7)] (Table W. 5A) Liquefied natural gas (LNG) storage (98.232(q))4.6,7)] (Table W. 5A) Liquefied natural gas (LNG) storage (98.232(q))4.6,7)] (Table W. 5A) Liquefied natural gas (LNG) storage (98.232(q))4.6,7)] (Table W. 5A) Liquefied natural gas (LNG) storage (98.232(q))4.6,7)] (Table W. 5A) Liquefied natural gas (LNG) storage (98.232(q))4.6,7)] (Table W. 5A) Liquefied natural gas (LNG) storage (98.232(q))4.6,7)] (Table W. 5A) Liquefied natural gas (LNG) storage (98.232(q))4.6,7)] (Table W. 5A) Liquefied natural gas (LNG) storage (98.232(q))4.6,7)] (Table W. 5A) Liquefied natural gas (LNG) storage (198.232(q))4.6,7)] (Table W. 5A) Liquefied natural gas (LNG) storage (198.232(q))4.6,7)] (Table W. 5A) Liquefied natural gas (LNG) storage (198.232(q))4.6,7)] (Table W. 5A) Liquefied natural gas (LNG) storage (198.232(q))4.6,7)] (Table W. 5A) Liquefied natural gas (LNG) storage (198.232(q))4.6,7)] (Table W. 5A) Liquefied natural gas (LNG) storage (198.232(q))4.6,7)] (Table W. 5A) Liquefied natural gas (LNG) storage (198.232(q))4.6,7)] (Table W. 5A) Liquefied natural gas (LNG) storage (198.232(q))4.6,7)] (Table W. 5A) Liq		Storage Wellheads, Gas Service - Open-Ended Line				
Liquefied natural gas (LNG) storage [98.232(q)]4,6,7] (Table W-5A UNS Groage, LNG Service - Pomp Seal UNS Groage, LNG Service - Other UNS Groage, Gas		Storage Wellheads, Gas Service - Pressure Relief Valve				
Linguefied natural gas (LNG) storage [98.232(g)(4,6,7)] (Table W-5A) Linguefied natural gas (LNG) storage [98.232(g)(4,6,7,8)] (Table W-5A) Linguefied natural gas distribution (Robert Internal, LNG) service - Open-Ended Line (LNG) storage [98.232(g)(4,6,7,8)] (Table W-5A) Linguefied natural gas distribution (Robert Internal, LNG) service - Open-ended Line (LNG) terminal, Cas Service - Ope		LNG Storage, LNG Service - Valve				
Liquefied natural gas (LHG) storage [98.232(g)(4,6,7)] (Table W-FA)		LNG Storage, LNG Service - Connector				
W.5A		LNG Storage, LNG Service - Other				
LNG Storage, Gas Service - Open-Ended Line	Liquefied natural gas (LNG) storage [98.232(g)(4,6,7)] (Table	LNG Storage, Gas Service - Valve				
UNS Storage, Gas Service - Meter and Instrument	11-00)	LNG Storage, Gas Service - Open-Ended Line				
UNG storage, Gas Service - Other UNG Terminal, LNG Service - Valve UNG Terminal, LNG Service - Valve UNG Terminal, LNG Service - Pump Seal UNG Terminal, LNG Service - Pump Seal UNG Terminal, LNG Service - Pump Seal UNG Terminal, LNG Service - Other UNG Terminal, Gas Service - Other - UNG Terminal, Gas		LNG Storage, Gas Service - Pressure Relief Valve				
LNG reminal, LNG service - Varies LNG reminal, LNG service - Connector LNG reminal, LNG service - Connector LNG reminal, LNG service - Connector LNG reminal, LNG service - Other LNG reminal, Cas Service - Other L		LNG Storage, Gas Service - Other				
LNG import and export equipment LNG service - Dump Seal LN C Terminal, LNG Service - Other LN C Terminal, Cas Serv		LNG Terminal, LNG Service - Valve				
LNG import and export equipment LNG service - Other LNG service - Valve LNG Terminal, Cas Service - Valve Transmission-distribution Transfer Station Components, Cas Service - Valve Transmission-distribution Transfer Station Components, Cas Service - Valve Transmission-Distribution Transfer Station Components, Cas Service - Valve Transmission-Distribution Transfer Station Components, Cas Service - Valve Transmission-Distribution Transfer Station Components, Cas Service - Valve Transmission-Distribution Transfer Station Components, Cas Service - Valve Transmission-Distribution Transfer Station Components, Cas Service - Valve Transmission-Distribution Transfer Station Components, Cas Service - Valve Transmission-Distribution Transfer Station Components, Cas Service - Valve Transmission-Distribution Transfer Station Components, Cas Service - Valve Transmission-Distribution Transfer Station Components, Cas Service - Valve Transmission-Distribution Transfer Station Components, Cas Service - Valve Transmission-Distribution Transfer Station Components, Cas Service - Valve Transmission-Distribution Transfer Station Components, Cas Service - Valve Transmission-Distribution Transfer Station Components, Cas Service - Valve Transmission-Distribution Transfer Station Components, Cas Service - Valve Transmission-Distribution Transfer Station Components, Cas Service - Valve Transmission-Distribution Transfer Station Components, Cas Service - Valve Transmission-Distribution Transfer Station Components, Cas Service - Valve		LNG Terminal, LNG Service - Pump Seal				
UNC Terminal, Gas Sevice - Connector	LNG import and export equipment	LNG Terminal, LNG Service - Other				
LNG Terminal, Gas Sevice - Pressure Relief Valve LNG Terminal, Gas Sevice - Meter and Instrument Transmission-Distribution Transfer Station Components, Gas Sevice - Block Valve Transmission-distribution Transfer Station Components, Gas Sevice - Ontrol Valve Transmission-Distribution Transfer Station Components, Gas Sevice - Pressure Relief Valve Transmission-Distribution Transfer Station Components, Gas Sevice - Pressure Relief Valve Transmission-Distribution Transfer Station Components, Gas Sevice - Pressure Relief Valve Transmission-Distribution Transfer Station Components, Gas Sevice - Pressure Relief Valve Transmission-Distribution Transfer Station Components, Gas Sevice - Pressure Relief Valve Transmission-Distribution Transfer Station Components, Gas Sevice - Pressure Relief Valve Transmission-Distribution Transfer Station Components, Gas Sevice - Pressure Relief Valve		LNG Terminal, Gas Service - Connector				
LNG Terminal, Case Service - Meter and instrument LNG Terminal, Case Service - Other LNG Terminal, Case Service - Other Transmission-Distribution [Note: limited to equipment leaks at above grade transmission-distribution transfer stations [Note: limited to equipment stations] [Service - Connector Connec						
Natural gas distribution [Note: limited to equipment leaks at above grade transmission-Distribution Transfer Station Components, Gas Sentce - Clondo Valve [Instituted to equipment leaks at above grade transmission-Distribution Transfer Station Components, Gas Sentce - Control Valve Transmission-Distribution Transfer Station Components, Gas Sentce - Control Valve Transmission-Distribution Transfer Station Components, Gas Sentce - Control Valve Transmission-Distribution Transfer Station Components, Gas Sentce - Ordice Meter Transmission-Distribution Transfer Station Components, Gas Sentce - Ordice Meter Transmission-Distribution Transfer Station Components, Gas Sentce - Ordice Meter		LNG Terminal, Gas Service - Meter and Instrument				
Natural gas distribution [Note: limited to equipment leaks at above grade transmission-Distribution Transfer Station Components, Gas Sentice - Block Valve Transmission-Distribution Transfer Station Components, Gas Sentice - Control Valve Transmission-Distribution Transfer Station Components, Gas Sentice - Ordice Meter Transmission-Distribution Transfer Station Components, Gas Sentice - Pressure Relief Valve Transmission-Distribution Transfer Station Components, Gas Sentice - Ordice Meter Transmission-Distribution Transfer Station Components, Gas Sentice - Ordice Meter Transmission-Distribution Transfer Station Components, Gas Sentice - Ordice Meter Transmission-Distribution Transfer Station Components, Gas Sentice - Ordice Meter		Transmission-Distribution Transfer Station Components, Gas Service - Connector				
[Note: limited to equipment leaks at above grade transmission-distribution transfer stations] [Iransmission-distribution transfer stations] [Iransmission-distribution transfer stations] [Iransmission-distribution transfer stations] [Iransmission-distribution transfer station Components, Gas Sentice - Pressure Relief Valve [Iransmission-distribution Transfer Station Components, Gas Sentice - Pressure Relief Valve [Iransmission-distribution Transfer Station Components, Gas Sentice - Pressure Relief Valve [Iransmission-distribution Transfer Station Components, Gas Sentice - Pressure Relief Valve [Iransmission-distribution Transfer Station Components, Gas Sentice - Pressure Relief Valve [Iransmission-distribution Transfer Station Components, Gas Sentice - Pressure Relief Valve [Iransmission-distribution Transfer Station Components, Gas Sentice - Pressure Relief Valve [Iransmission-distribution Transfer Station Components, Gas Sentice - Pressure Relief Valve [Iransmission-distribution Transfer Station Components, Gas Sentice - Pressure Relief Valve [Iransmission-distribution Transfer Station Components, Gas Sentice - Pressure Relief Valve [Iransmission-distribution Transfer Station Components, Gas Sentice - Pressure Relief Valve [Iransmission-distribution Transfer Station Components, Gas Sentice - Pressure Relief Valve [Iransmission-distribution Transfer Station Components, Gas Sentice - Pressure Relief Valve [Iransmission-distribution Transfer Station Components, Gas Sentice - Pressure Relief Valve [Iransmission-distribution Transfer Station Components, Gas Sentice - Pressure Relief Valve [Iransmission-distribution Transfer Station Components, Gas Sentice - Pressure Relief Valve [Iransmission-distribution Transfer Station Components, Gas Sentice - Pressure Relief Valve [Iransmission-distribution Transfer Station Components, Gas Sentice - Pressure Relief Valve [Iransmission-distribution Transfer Station Components] [Iransmission-distribution Transfer Station Components] [Iransmission-distribution Transfer Station Co		Transmission-Distribution Transfer Station Components, Gas Service - Block Valve				
Transmission-Distribution Transfer Station Components, Gas Sentce - Ordice Meter Transmission-Distribution Transfer Station Components, Gas Sentce - Ordice Meter Transmission-Distribution Transfer Station Components, Gas Sentce - Regulator	[Note: limited to equipment leaks at above grade	Transmission-Distribution Transfer Station Components, Gas Service - Pressure Relief Valve				
Hallottission-bistiodilot Hallotel Station Components, Gas Service - Regulator		Transmission-Distribution Transfer Station Components, Gas Service - Orifice Meter				
Transmission-Distribution Transfer Station Components, Gas Service - Open-ended line		Transmission-Distribution Transfer Station Components, Gas Service - Regulator				

Table Q.3 Natural gas distribution facility activity and emissions must be completed by Natural gas distribution facilities with emission sources listed in 98.232(i)(1). Report the leak survey data from above grade T-D transfer stations and meter/regulator runs for the calendar year and for the current leak survey cycle. NOTE: If you do not have any metering-regulating stations or transmission-distribution (T-D) transfer stations, enter "0" (zero) into these fields; do not leave the fields blank.

Required data elements include:

- For leaks surveyed in the calendar year:
 - Total number of above grade T-D transfer stations (98.236(q)(3)(i))
 - Number of meter/regulator runs at above grade T-D transfer stations surveyed in the calendar year (98.236(q)(3)(ii))
 - Average time meter/regulator runs surveyed in calendar year were operational (98.236(q)(3)(iii))
- For leaks surveyed in the current leak survey cycle:
 - Number of above grade T-D transfer stations surveyed in current leak survey cycle (98.236(q)(3)(iv))
 - Number of meter/regulator runs at above grade T-D transfer stations surveyed in current leak survey cycle (98.236(q)(3)(v))
 - Average time that meter/regulator runs surveyed in the current leak survey cycle were operational (98.236(q)(3)(vi))

- Meter/regulator run CO₂ emission factor based on all surveyed T-D transfer stations in current leak cycle, Average of current survey (standard cubic feet per operational hour of all meter/regulator runs) (98.236(q)(3)(vii))

 Meter/regulator run CH₄ emission factor based on all surveyed T-D transfer stations in current leak cycle, Average of current
- survey (standard cubic feet per operational hour of all meter/regulator runs) (98.236(q)(3)(viii))
- - Annual CO₂ emissions from all above grade T-D transfer stations combined (mt CO₂) (98.236(q)(3)(ix)(C))
 - Annual CH₄ emissions from all above grade T-D transfer stations combined (mt CH₄) (98.236(q)(3)(ix)(D))

Table Q.3 Natural gas distribution facility activity and emissions

Surveyed in calendar year:

Total number of above grade T-D transfer stations surveyed in the calendar year	
[98.236(q)(3)(i)]	
Number of meter/regulator runs at above grade T-D transfer	
stations surveyed in the calendar year, Count _{MR.v}	
·,	
[98.236(q)(3)(ii)]	
Average time meter/regulator runs surveyed in calendar year	
were operational, Average of calendar year T _{w.v}	
(hours)	
(<u></u>	
[98.236(q)(3)(iii)]	

Surveyed in current leak survey cycle:

Number of above grade T-D transfer stations surveyed in	
current leak survey cycle	
[00 236/a//3//iv/]	
[98.236(q)(3)(iv)]	
Number of meter/regulator runs at above grade T-D transfer	
stations surveyed in current leak survey cycle, Sum of Count _{MR.v}	
,,	
[00 236(a)/3)/v/]	
[98.236(q)(3)(v)]	
Average time that meter/regulator runs surveyed in the current	
leak survey cycle were operational, Average of current survey	
T _{w.v}	
(hours)	
(Hours)	
FOO 000/-V0V-4VI	
[98.236(q)(3)(vi)]	
Meter/regulator run CO ₂ emission factor based on all surveyed T-	
D transfer stations in current leak cycle, Average of current	
survey EF _{S,MR,i}	
(standard cubic feet per operational hour of all meter/regulator	
runs)	
1.5.1.07	
[98.236(q)(3)(vii)]	
Meter/regulator run CH ₄ emission factor based on all surveyed T-	
D transfer stations in current leak cycle, Average of current	
survey EF _{S,MR,i}	
(standard cubic feet per operational hour of all meter/regulator	
runs)	
[98.236(q)(3)(viii)]	

Surveyed in multiple year leak survey cycle:

Does the facility perform equipment leak surveys across a	
multiple year leak survey cycle	
(Yes/No)	
[98.236(q)(3)(ix)]	
Total number of meter/regulator runs at above grade T-D station	
facilities, Countum	

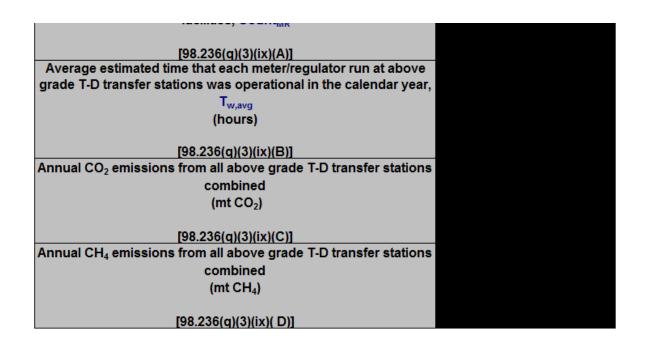


Table R.1 Equipment leaks calculated using population counts and factors must be completed only by Onshore petroleum and natural gas production and Onshore petroleum and natural gas gathering and boosting facilities. NOTE: Do not complete this table for any emission source types /components that are subject to the well site or compressor station fugitive emissions standards in 40 CFR 60.5397a or emission source types/components for which the facility elected to comply with 98.236(q) according to 98.233(q)(1)(iv). Required data elements include:

- Emission source types (98.232(c)(21) and (r)) Geographic location (98.236(r)(1)(i))
- Total number of emission source type (for gathering pipelines, this value is the number of miles of pipeline per material type) (98.236(r)(1)(ii))
- Average estimated time that the emission source type was operational in the calendar year (hours) (98.236(r)(1)(iii))
- CO₂ emissions (mt CO₂) (98.236(r)(1)(iv))
- CH₄ emissions (mt CH₄) (98.236(r)(1)(v))

Table R.1 Equipment leaks calculated using population counts and factors (for Onshore Petroleum and Natural Gas Production and Onshore Petroleum and Natural Gas Gathering and Boosting only)

Emission Source Type (Eq. W-32A) [98.232(c)(21)] [98.233(n)]	Geographic Location (according to Table W-1D) [98.236(r)(1)(i)]	Total number of emission source type, Count, (for gathering pipelines, this value is the number of miles of pipeline per material type) [98.236(r)(1)(ii)]	Average estimated time that the emission source type was operational in the calendar year, T _o (hours) [98.236(r)(1)(iii)]	CO ₂ Emissions (mt CO ₂) [98.236(r)(1)(iv)]	CH ₄ Emissions (mt CH ₄) [98.236(r)(1)(v)]
Gas Service - Valves					
Gas Service - Connectors					
Gas Service - Open ended lines					
Gas Service - Pressure relief valves					
Light crude service - Valves					
Light crude service - Flanges					
Light crude service - Connectors					
Light crude service - Open ended lines					
Light crude service - Pumps					
Light crude service - Other equipment leak sources (such as instruments, loading arms, stuffing boxes, compressor seals, dump lever arms, breather caps)					
Heavy crude service - Valves			E		
Heavy crude service - Flanges				1	
Heavy crude service - Connectors					
Heavy crude service - Open ended lines					
Heavy crude service - Other equipment leak sources (such as instruments, loading arms, stuffing boxes, compressor seals, dump lever arms, breather caps)					
Gathering pipelines - Protected steel gathering pipeline					
Gathering pipelines - Unprotected steel gathering pipeline				17	
Gathering pipelines - Plastic/composite gathering pipeline					
Gathering pipelines - Cast iron gathering pipeline					

Table R.2 Emissions calculated for component types by population count must be completed for each component type that population counts for estimating emissions for equipment leaks using Equation W-32A. This table is relevant to the following industry segments: Underground natural gas storage [98.230(a)(5)], Liquefied Natural Gas (LNG) storage [98.230(a)(6)], LNG import and export equipment [98.230(a)(7)], and Natural gas distribution [9 8.230(a)(8)]. NOTE: Do not complete this table for any emission source types/components that are subject to the well site or compressor station fugitive emissions standards in 40 CFR 60.5397a or emission source types/components for which the facility elected to comply with 98.236(q) according to 98.233 (q)(1)(iv). The required data elements include:

- Emission source type (98.232, 98.233(r)(1)) this data element is pre-filled in the Smart Form for each applicable industry segment
- Total number of emission source types (98.236(r)(1)(ii))
- Average estimated time that the emission source type was operational in the calendar year (hours) (98.236(r)(1)(iii))
- CO₂ emissions (mt CO₂) (98.236(r)(1)(iv))
- CH₄ emissions (mt CH₄) (98.236(r)(1)(v))

Table R.2 Emissions calculated for component types by population count

	Emission Source Type (Eq. W-32A) [98.232] [98.233(r(1)]	Total number of emission source type, Count, [98.236(r)(1)(ii)]	Average estimated time that the emission source type was operational in the calendar year, T _c (hours) [98.236(r)(1)(iii)]	CO ₂ Emissions (mt CO ₂) [98.236(r)(1)(iv)]	CH ₄ Emissions (mt CH ₄) [98.236(r)(1)(v)]
	Storage wellheads, Gas Service - Valves				
Underground natural gas storage [98.232(f)(5)]	Storage wellheads, Gas Service - Connector				
Ondorground natural guo storago [00.202(1)(0)]	Storage wellheads, Gas Service - Open-ended line				
	Storage wellheads, Gas Service - Pressure Relief Valve				
Liquified natural gas (LNG) storage [98.232(g)(3)]	LNG Storage Compressor, Gas Service - Vapor Recovery Compressor				
LNG import and export equipment [98.232(h)(4)]	LNG Terminals Compressor, Gas Service - Vapor Recovery Compressor				
	Below Grade T-D Station, Gas Service, Inlet Pressure > 300 psig				
Natural gas distribution [98.232(i)(2)]	Below Grade T-D Station, Gas Service, Inlet Pressure 100 to 300 psig				
	Below Grade T-D Station, Gas Service, Inlet Pressure < 100 psig				
	Below Grade M-R Station, Gas Service, Inlet Pressure > 300 psig				
Natural gas distribution [98.232(i)(4)]	Below Grade M-R Station, Gas Service, Inlet Pressure 100 to 300 psig				
	Below Grade M-R Station, Gas Service, Inlet Pressure < 100 psig				
Natural gas distribution [98.232(i)(5)]	Distribution Mains, Gas Service - Unprotected Steel				
ratarar gas alsa isaasir [56.252(i)(6)]	Distribution Mains, Gas Service - Protected Steel				
(Distribution main equipment)	Distribution Mains, Gas Service - Plastic				
(Distribution main equipment)	Distribution Mains, Gas Service - Cast Iron				
Natural gas distribution [98.232(i)(6)]	Distribution Services, Gas Service - Unprotected Steel				
riatarar gao alouribador [80.202(1)(0)]	Distribution Services, Gas Service - Protected Steel				
(Distribution services equipment)	Distribution Services, Gas Service - Plastic				
(Distribution services equipment)	Distribution Services, Gas Service - Copper				

Table R.3 Equipment leaks calculated using population counts and factors must be completed for Natural gas distribution facilities, as applicable. The required data elements include:

- Number of above grade T-D transfer stations at the facility (98.236(r)(2)(i))
- Number of above grade metering-regulating stations that are not T-D transfer stations (98.236(r)(2)(ii))
- Total number of meter/regulator runs at above grade metering-regulating stations that are not above grade T-D transfer stations (98.236(r)(2)(iii))
- Average estimated time that each meter/regulator run at above grade metering-regulating stations that are not above grade T-D transfer stations
 was operational in the calendar year (98.236(r)(2)(iv))
- Annual CO₂ emissions from above grade metering-regulating stations that are not above grade T-D transfer stations (mt CO₂) (98.236(r)(2)(v)(A))
- Annual CH₄ emissions from above grade metering-regulating stations that are not above grade T-D transfer stations (mt CH₄) (98.236(r)(2)(v)(B))

Table R.3 Equipment leaks calculated using population counts and factors (for Natural Gas Distribution only)

Number of above grade T-D transfer stations at the facility	
Number of above grade metering-regulating stations that are not T-D transfer stations	
[98.236(r)(2)(ii)]	
Total number of meter/regulator runs at above	
grade metering-regulating stations that are not	
above grade T-D transfer stations, Count _{MR}	
[98.236(r)(2)(iii)]	
Average estimated time that each meter/regulator	
run at above grade metering-regulating stations	
that are not above grade T-D transfer stations was	
operational in the calendar year, T _{w,avg}	
(hours)	
[98.236(r)(2)(iv)]	

If your facility has above grade metering-regulating stations that are not above grade T-D transfer stations AND your facility also has above grade T-D transfer stations, you must report the following emissions

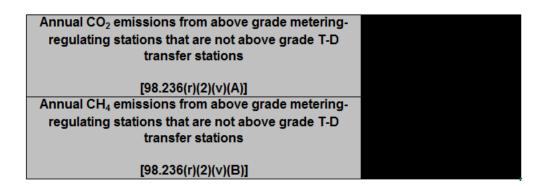


Table R.4 Major Equipment Type must be completed by facilities in the Onshore petroleum and natural gas production and Onshore petroleum and natural gas gathering and boosting industry segments. NOTE: Do not complete this table for any emission source types/components that are subject to the well site or compressor station fugitive emissions standards in 40 CFR 60.5397a or emission source types/components for which the facility elected to comply with 98.236(q) according to 98.233(q)(1)(iv). Required data elements include:

- Component count calculation method for all emission source types in Table R.1 other than gathering pipelines (98.236(r)(3)(i))
- Major equipment type (98.236(r)(3)(ii)) (this data element is pre-filled by the Smart Form for the appropriate options for Natural gas production and Gathering and boosting equipment (Table W-1B) and Crude oil production equipment (Table W-1C)
- Equipment type present at the facility (98.236(r)(3)(ii)(A))
- Count of major equipment type in Eastern and/or Western US (98.236(r)(3)(ii)(B))

Table R.4 Major Equipment Type (for Onshore Petroleum and Natural Gas Production and Onshore Petroleum and Natural Gas Gathering and Boosting only)

Component count calculation method for all emission source types in Table R.1 other than gathering pipelines	
[98.236(r)(3)(i)]	

	Major Equipment Type	Equipment type present at facility?	Count of Major Equipment Type in Eastern US	Count of Major Equipment Type in Western US
	[98.236(r)(3)(ii)]	[98.236(r)(3)(ii)(A)]	[98.236(r)(3)(ii)(B)]	[98.236(r)(3)(ii)(B)]
	Wellhead			
Natural gas production and Gathering and boosting	Separators			
equipment	Meters/piping			
(Table W-1B)	Compressors			
. ,	In-line heaters			
[98.236(r)(3)(ii)]	Dehydrators			
Crude oil production equipment	Wellhead			
(Table W-1C)	Separators			
, ,	Heater-treater			
[98.236(r)(3)(ii)]	Header			

Table QR.1 Missing Data Table is required if your facility relied on missing data procedures to develop data elements used in calculating emissions from equipment leaks. Complete only the applicable sections (note that the ID columns are tailored to the different Tables):

- Emission source type/Major equipment type, service type, component type, geographic location (as appropriate for the target Table and Parameter)
- Parameters
- Measurement Frequency
- · Number of quarters missing data procedures were used [98.236(bb)(1)] (required only if the measurement frequency was quarterly)
- Total number of hours in the year missing data procedure was used [98.3(c)(8)], [98.236(bb)(2)] (required <u>unless</u> the measurement frequency was quarterly, annually, biannually or N/A)
- Procedures used for missing data [98.235(h)]

Type of Data	Emission Source Type/ Major Equipment Type	Service Type	Component Type	Geographic Location	Parameters	Measurement Frequency	Number of quarters missing data procedures were used [98.236(bb)(1)]	Total number of hours in the year missing data procedure was used [98.3(c)(8)]	Procedures used
Table Q.2 Emissions calculated for component types using emissions factors									
Table R.1 Equipment leaks calculated using population counts and factors (for Onshore Petroleum and Natural Gas Production and Onshore Petroleum and Natural Gas Gathering and Boosting only)									
Table R.2 Emissions calculated for component types by population count									
Table R.3 Equipment leaks calculated using population counts and factors (for Natural Gas Distribution only)									
Table R.4 Major Equipment Type (for Onshore Petroleum and Natural Gas Production and Onshore Petroleum and Natural Gas Gathering and Boosting only)									

Total Emissions

The total emissions roll-up at the top of the sheet reflects the sum of each gas emission reported for the source type. These summations are calculated automatically by the Smart Form and tabulated on the Introduction tab.

Total Other Emissions from Equipment Leaks Estimated Using Emission Factors [98.236(q,r)]							
mt CO ₂	mt CH ₄	mt N₂O					
0.0	0.00	N/A					