

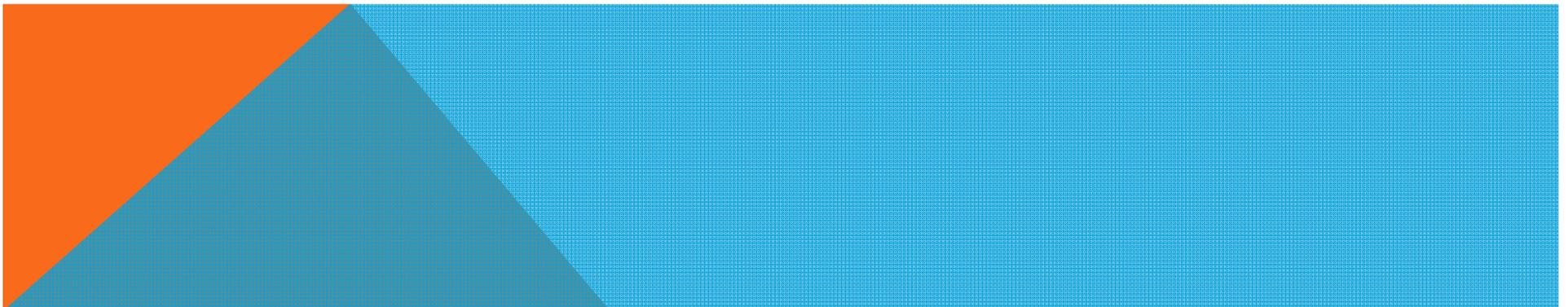
REGULATED UNDERGROUND STORAGE TANKS (USTS)



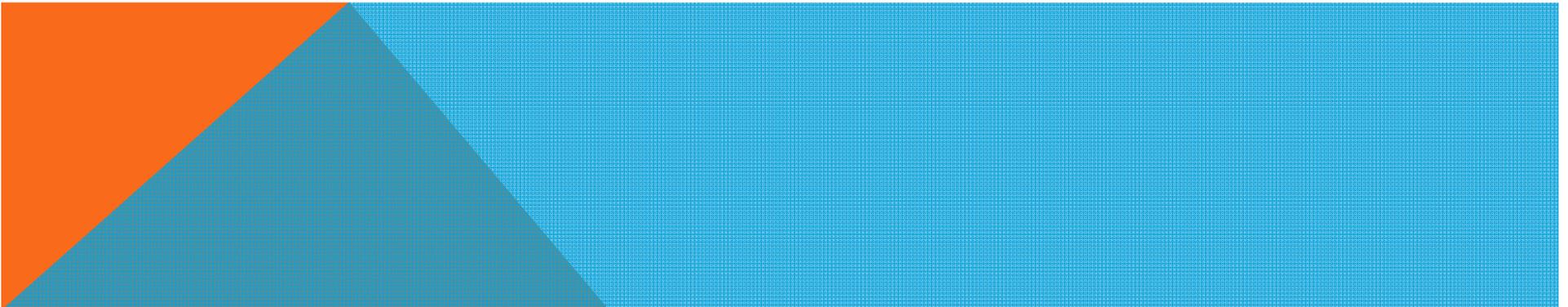
WHAT IS A REGULATED UST?

"Underground storage tank" means and includes any one (1) or combination of underground storage tanks, including underground pipes connected thereto, used to contain an accumulation of regulated substances, and the volume of which, including the volume of the underground pipes connected thereto, is ten percent (10%) or more beneath the surface of the ground, but does not include:

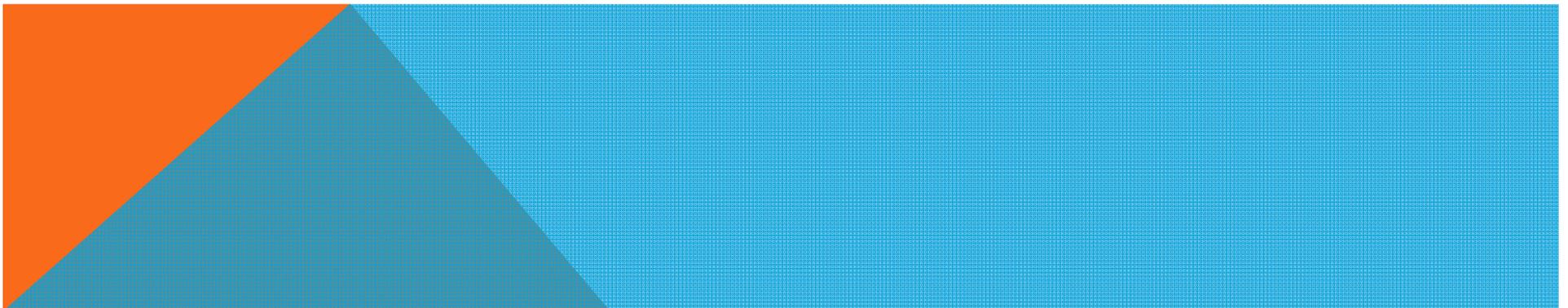
- A farm or residential underground storage tank of one thousand one hundred (1,100) gallons or less capacity used for storing motor fuel for noncommercial or agricultural purposes



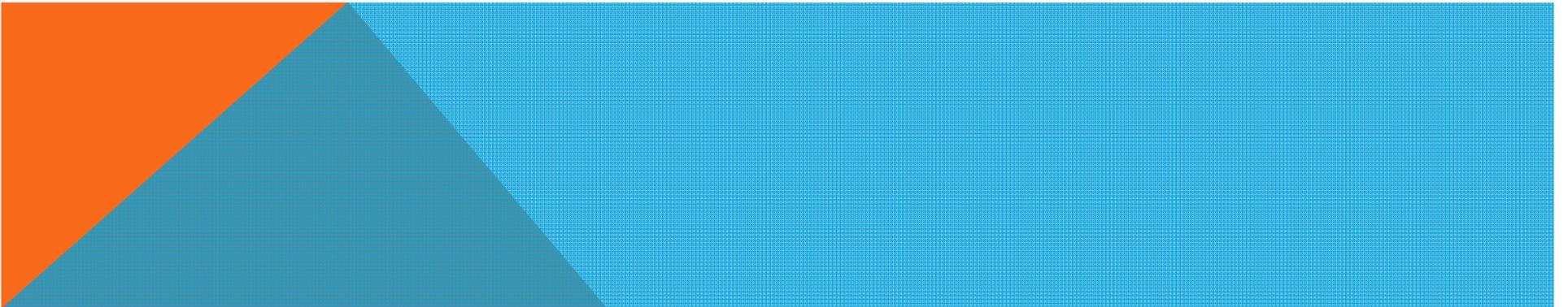
- An underground storage tank used for storing heating oil for consumptive use on the premises where stored
- Septic tank
- A pipeline facility, including gathering lines
- Surface impoundments, pits, ponds or lagoons
- Storm water or wastewater collection systems including oil/water separators used to separate oil and water at oil production sites, gas processing plants and refineries
- Underground storage tanks of one hundred ten (110) gallons or less of holding capacity



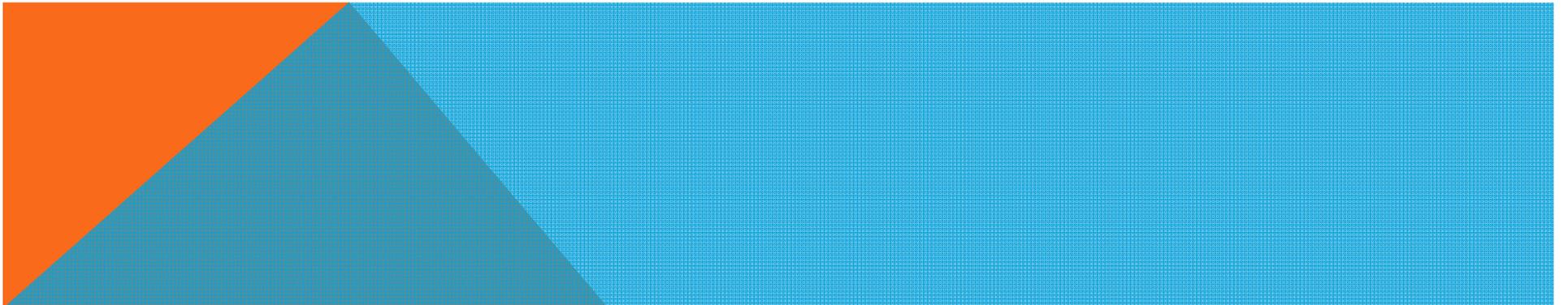
- Emergency or overflow underground storage tanks
- An underground storage tank system holding hazardous wastes
- A wastewater treatment tank system
- Any equipment or machinery that contains regulated substances for operational purposes such as hydraulic lift tanks



WHAT DOES A UST LOOK LIKE?



FIBERGLASS REINFORCED PLASTIC (FRP)











DWT6 8 12000
DOUBLE WALL TANK
12000 GALLONS


CONTAINMENT
SOLUTIONS
18 FT CUB TANK

IL 130907
5050 LBS WEIGHT

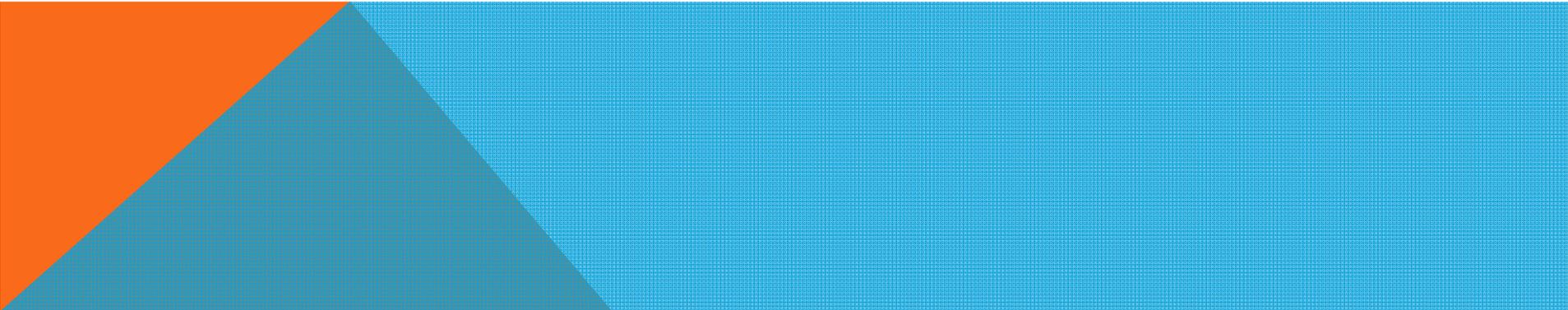
18 FT 2 IN

18 FT 2 IN

18 FT 2 IN

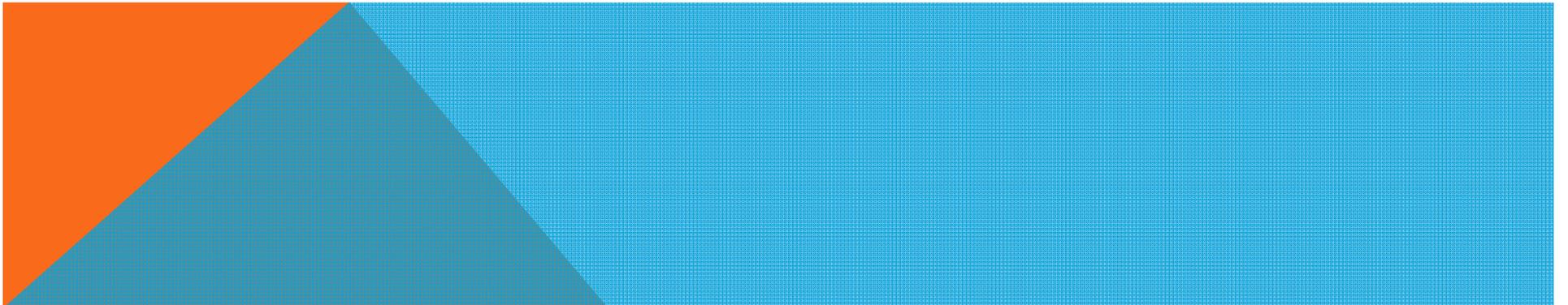
18 FT 2 IN

COMPOSITE STEEL/FRP

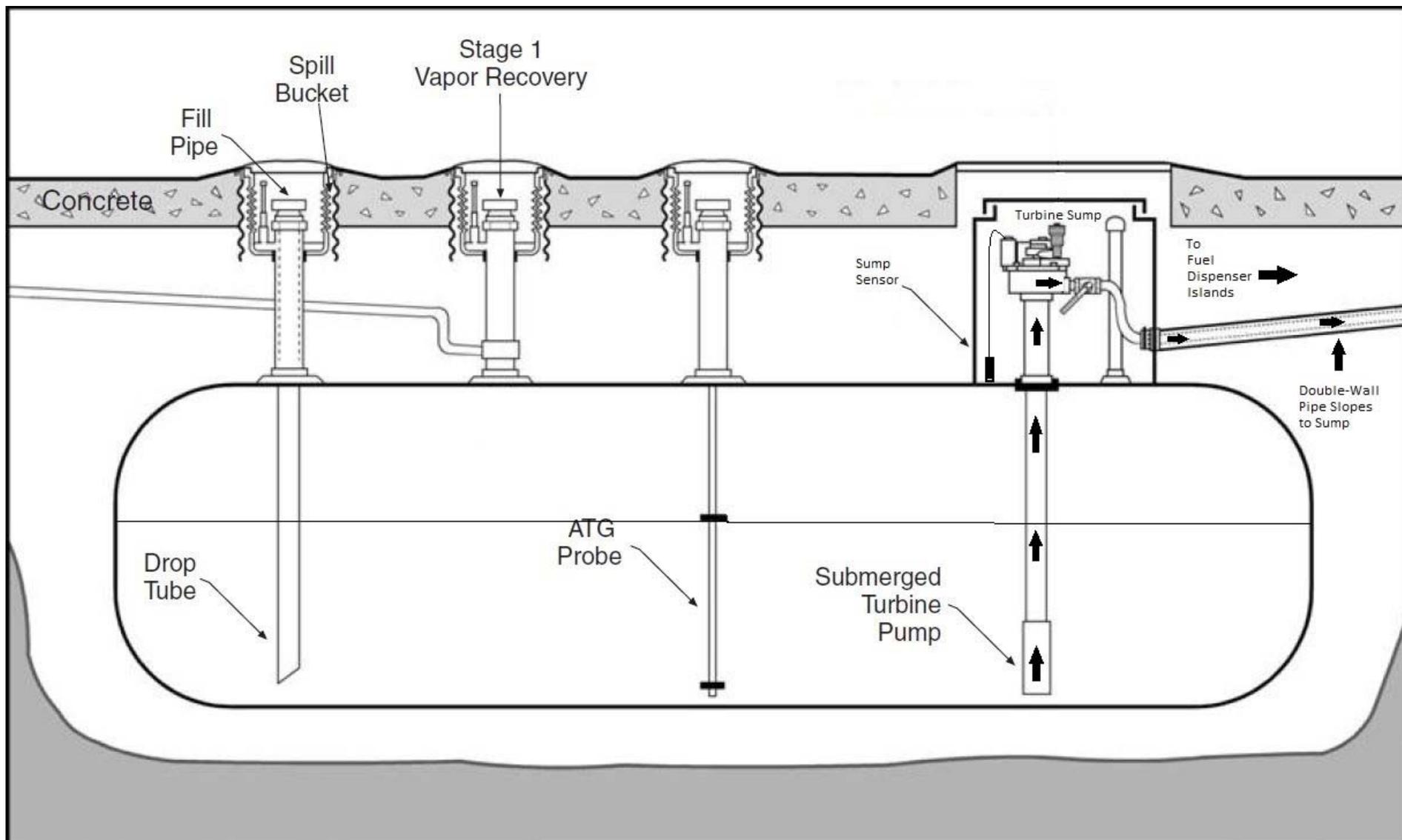




STEEL TANK (STI-P3)

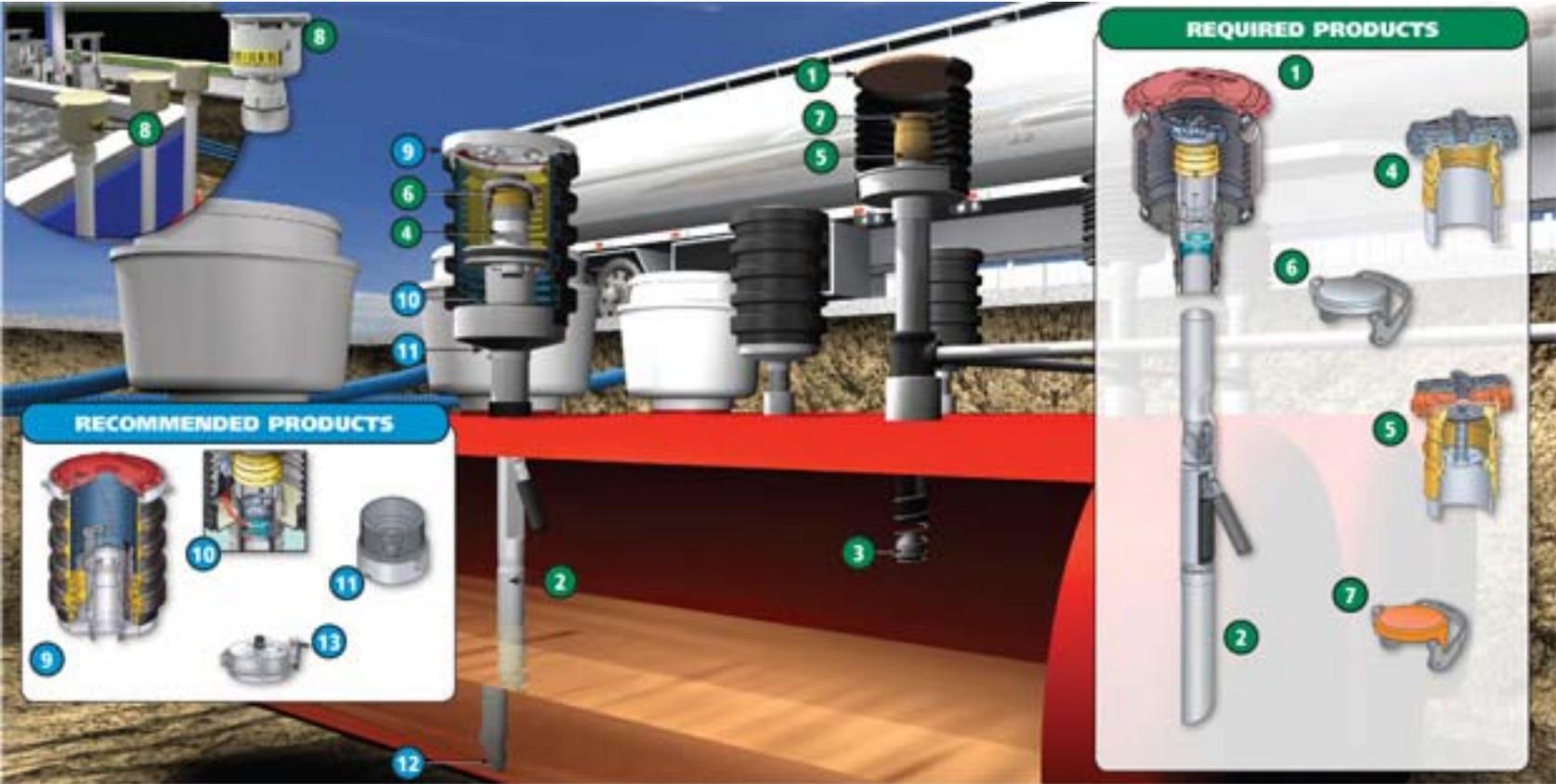






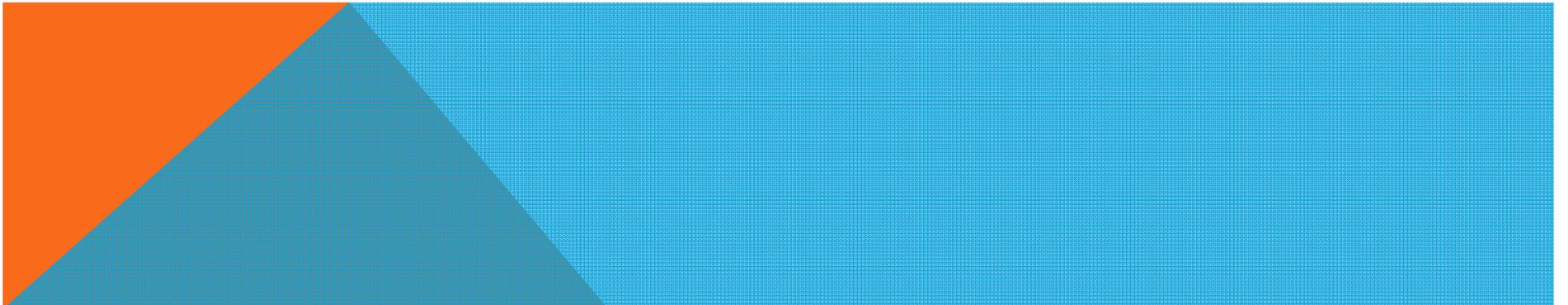
SPILL BUCKET/CATCHMENT BASIN (SPILL PREVENTION EQUIPMENT)



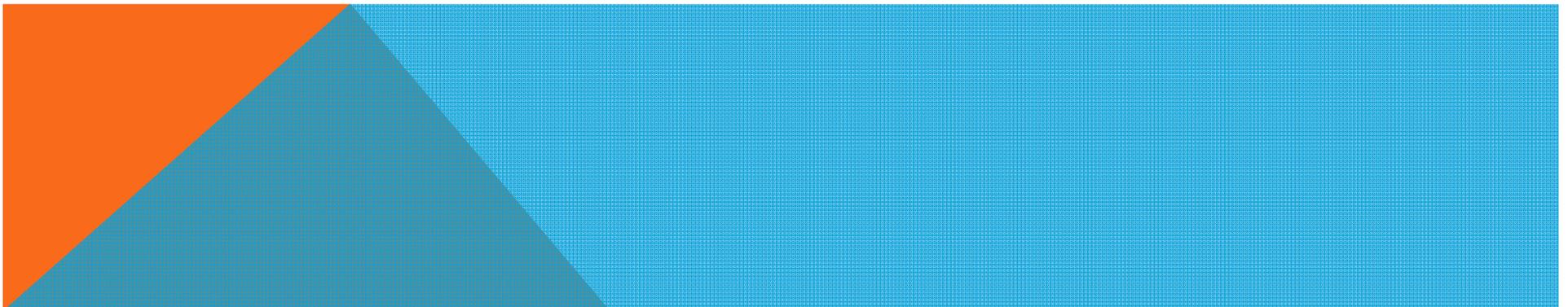
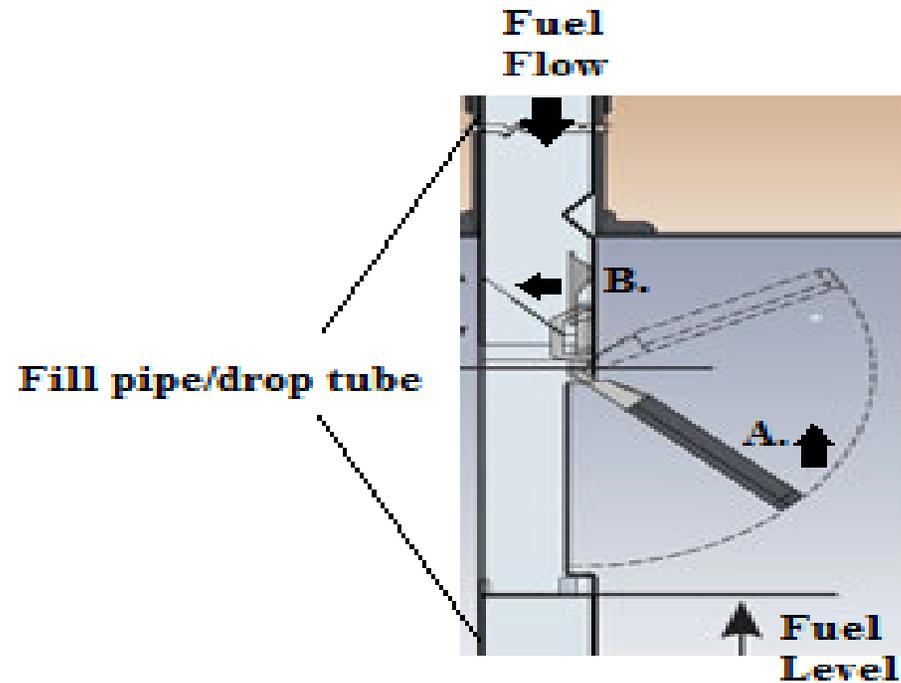


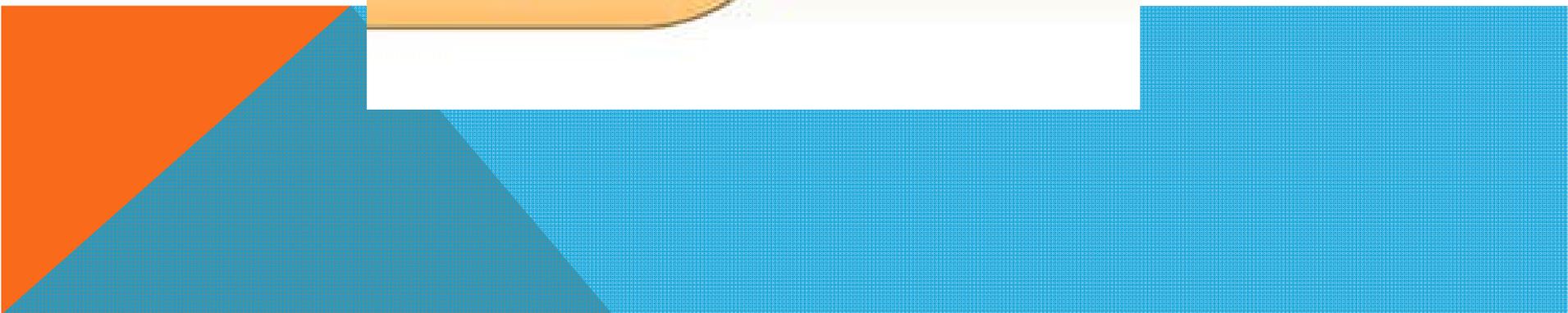
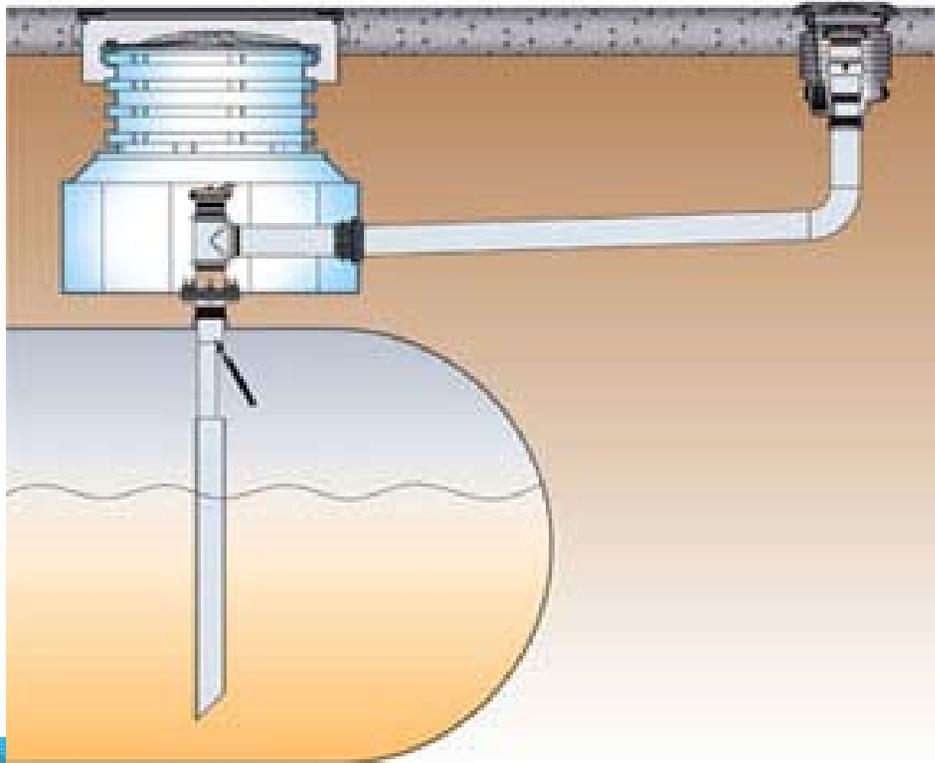


OVERFILL DEVICES (WWQRR CHAPTER 17, SECTION 6(C)(B))

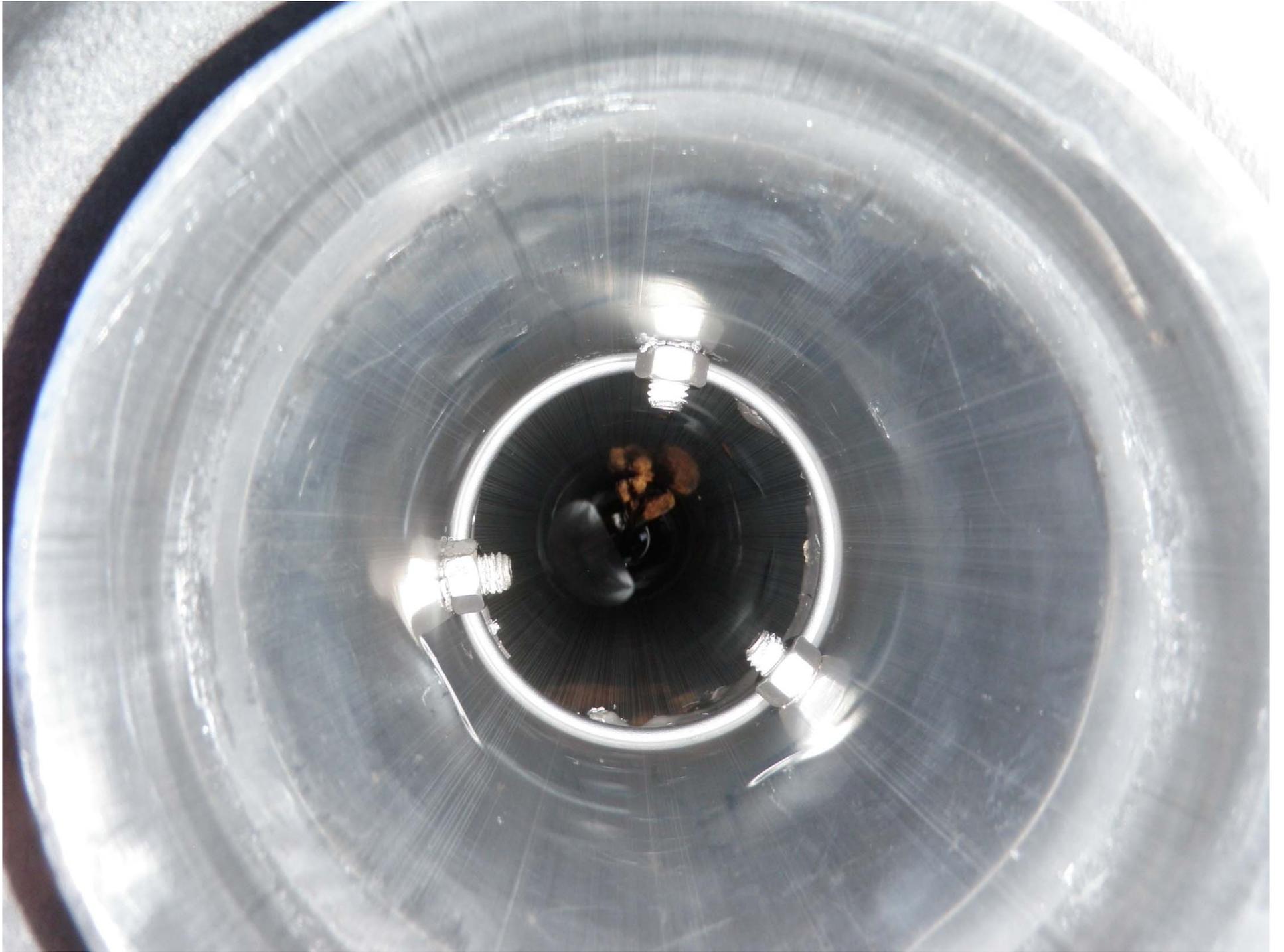


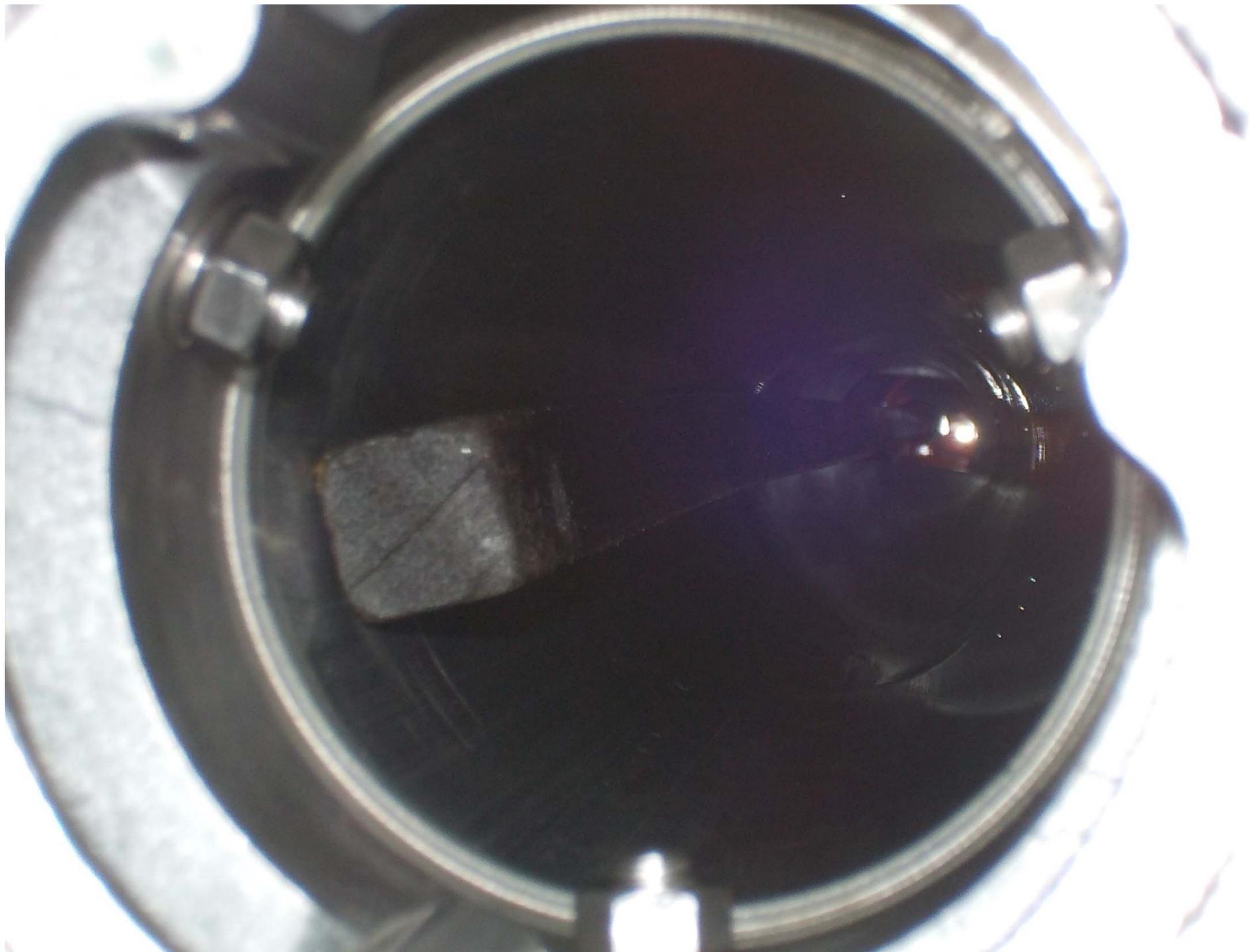
BUTTERFLY/FLAPPER VALVE 95% CAPACITY







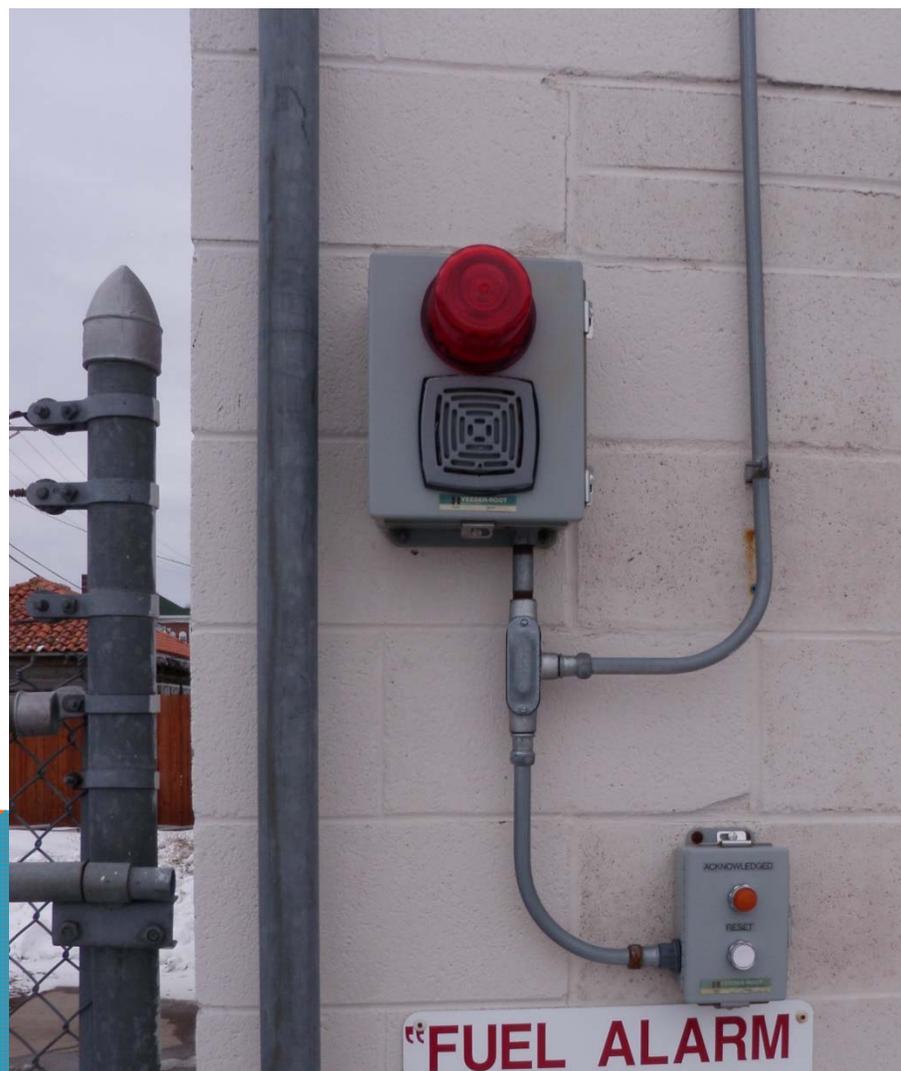




**BALL FLOAT 95% CAPACITY
(DO NOT USED IF FILLING TANK UNDER
PRESSURE)**



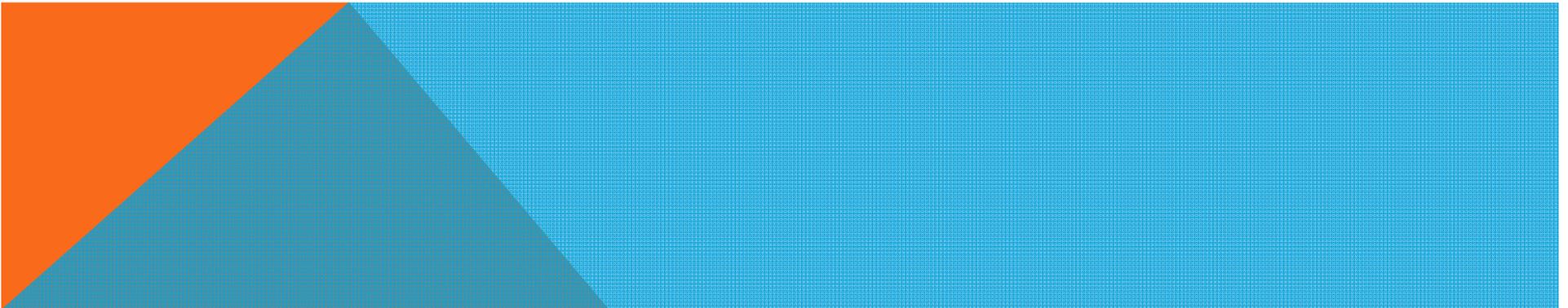
OVERFILL ALARM 90% CAPACITY



PRODUCT PIPING CONSTRUCTION

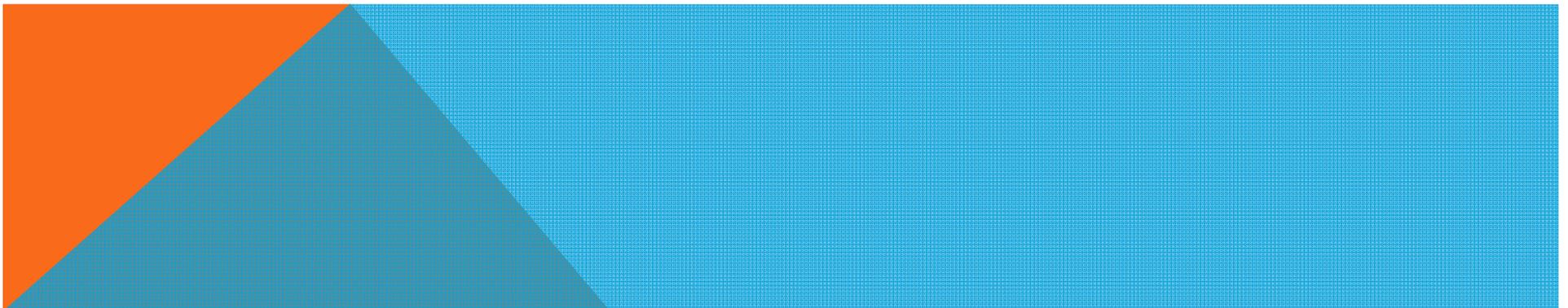
- Steel
- Flexible plastic
- Fiberglass reinforced plastic (FRP)

All new or replacement piping must be double wall



STEEL PIPE

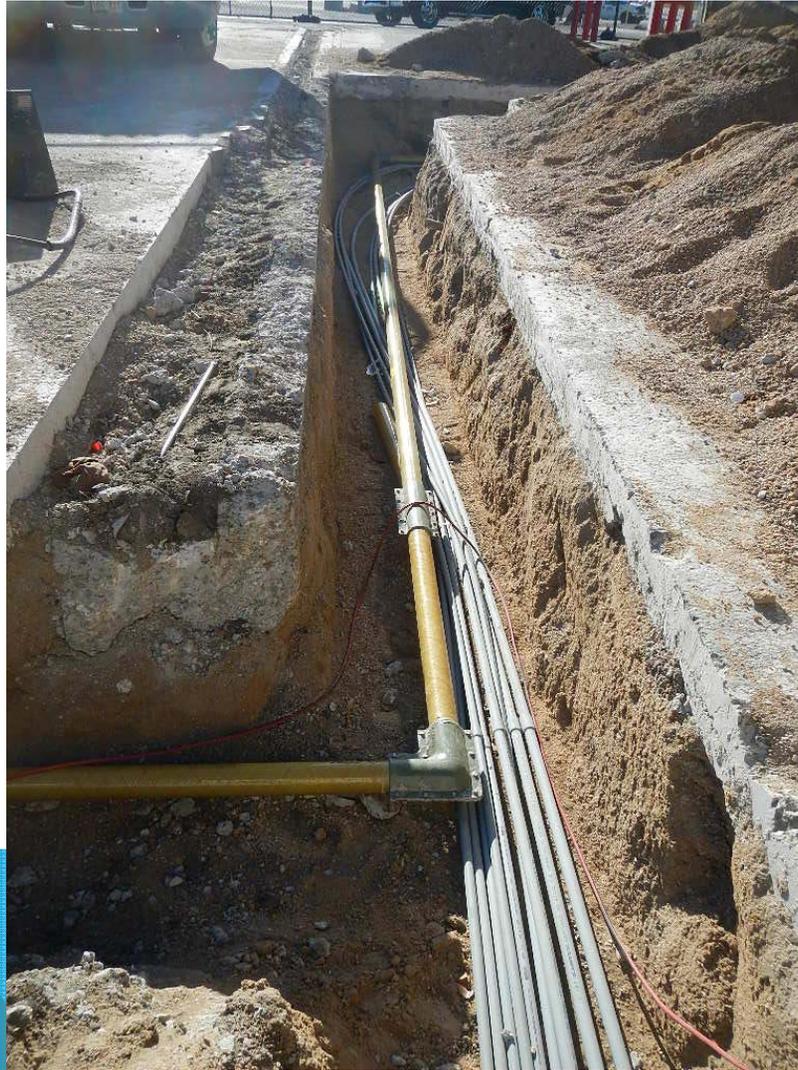
Must have cathodic protection



FLEXIBLE PLASTIC PIPE

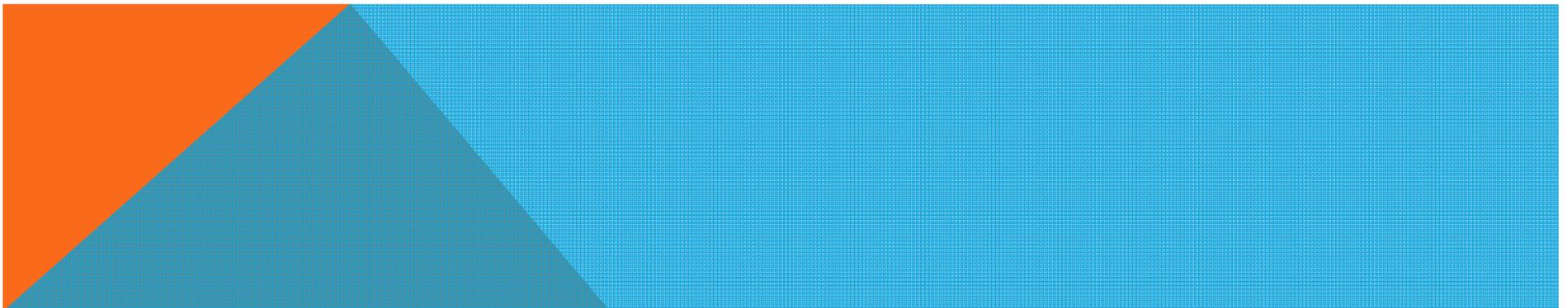


FIBERGLASS REINFORCED PLASTIC (FRP) PIPE

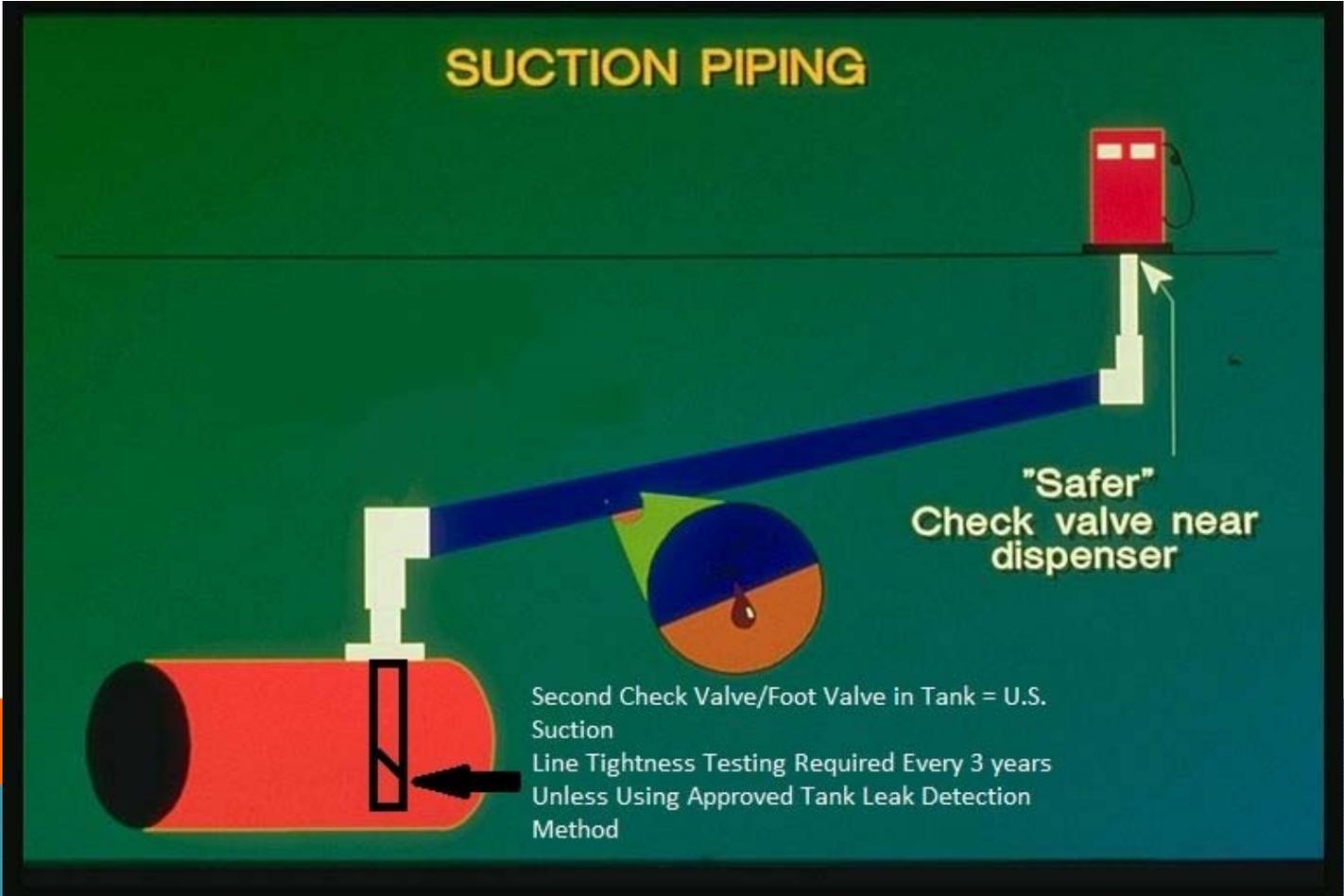


TYPES OF PIPING SYSTEMS

- Safe suction/exempt suction/European suction
- US Suction
- Pressurized



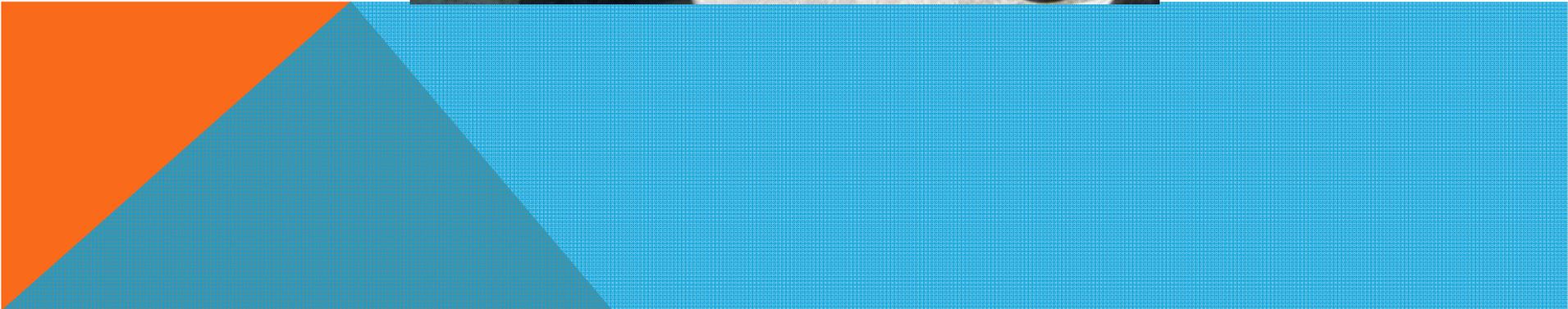
SUCTION PIPING



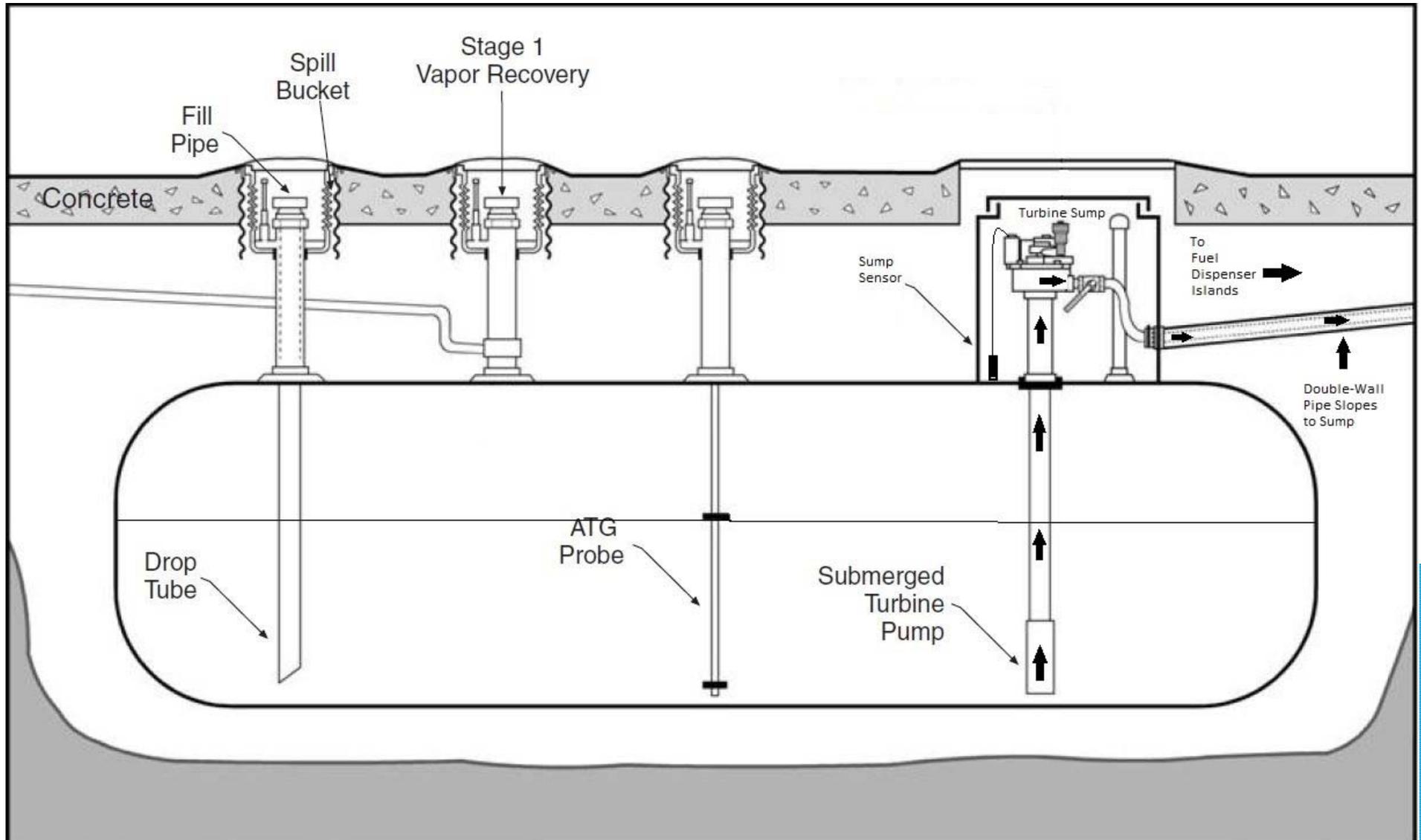
SAFE/EUROPEAN/EXEMPT SUCTION



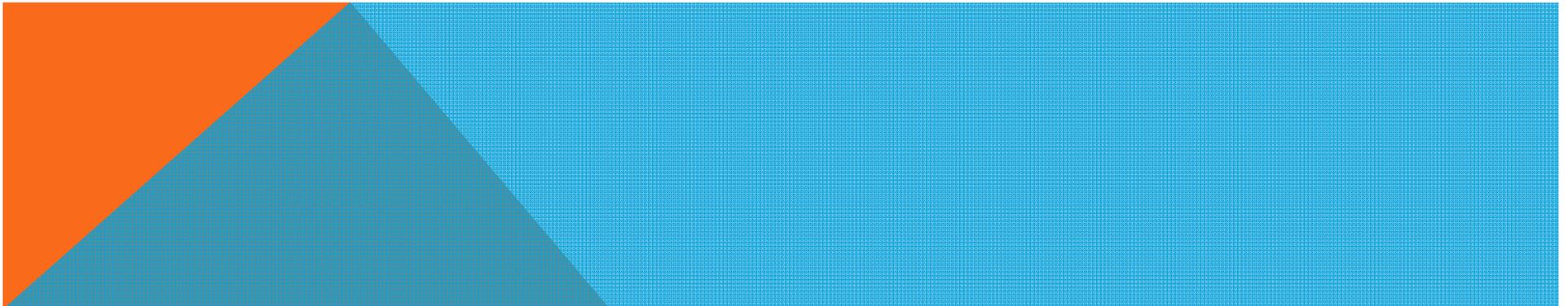
US SUCTION



PRESSURIZED PIPING



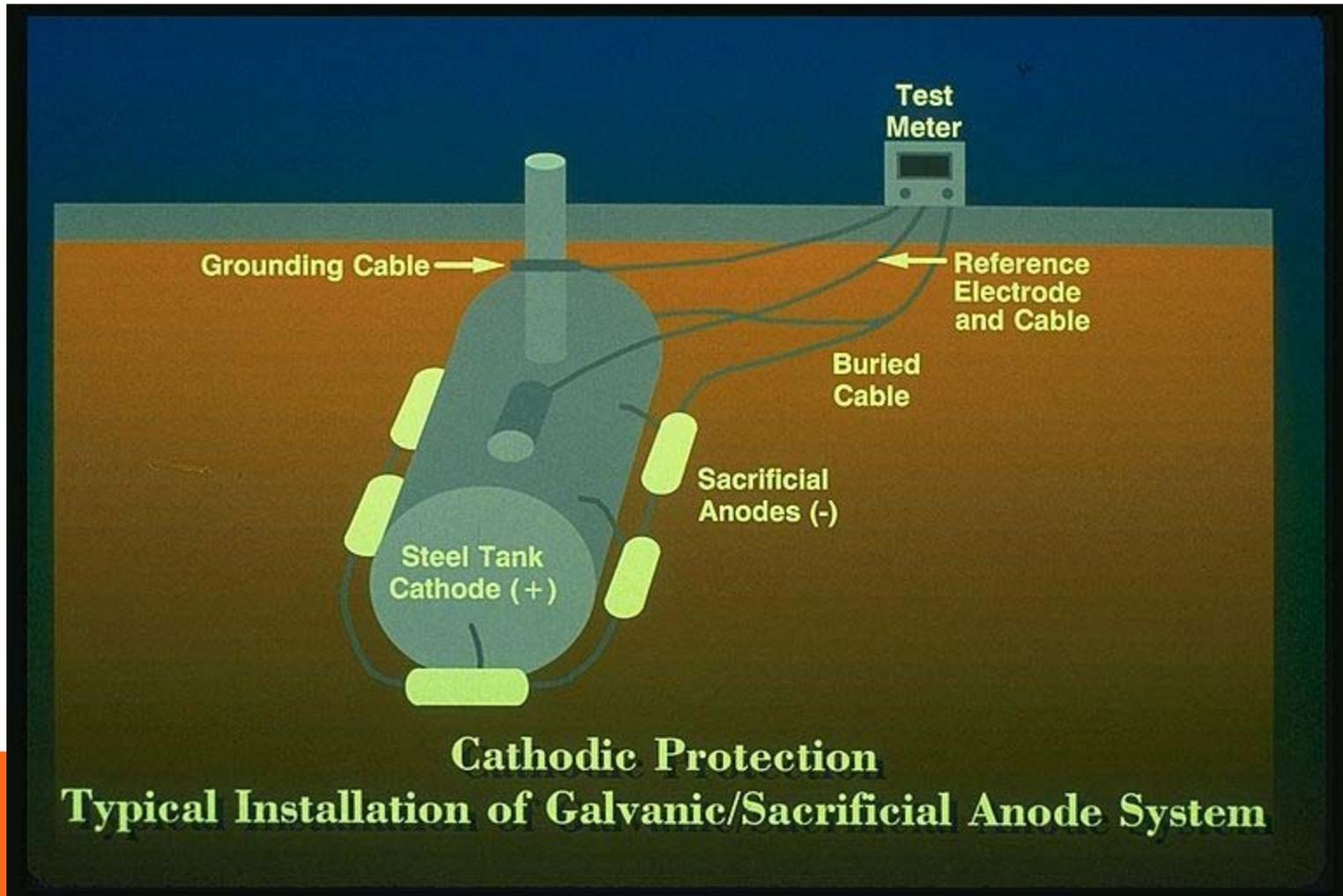
CATHODIC PROTECTION (CP) SYSTEM (STEEL TANKS/PIPING ONLY)



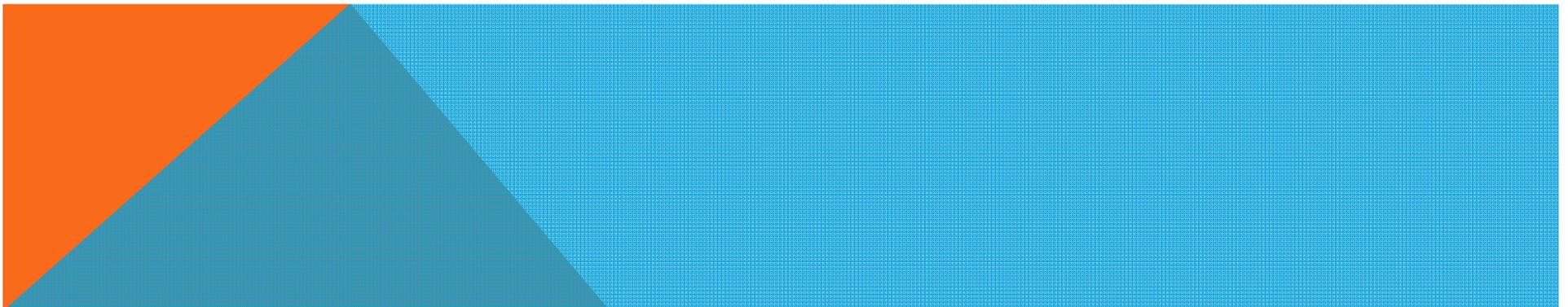
STI P3 TANK (MOST COMMON SACP SYSTEM)



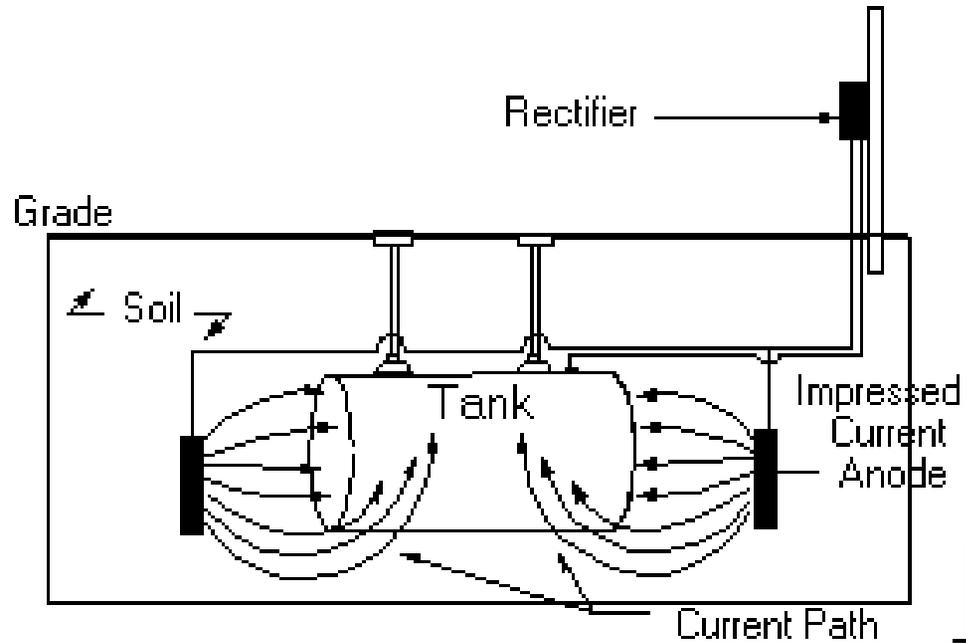
GALVANIC/SACRIFICIAL ANODE SYSTEM



IMPRESSED CURRENT CP SYSTEM



IMPRESSED CURRENT CP SYSTEM





BENCHMARK POWER SUPPLIES, INC.

OUTPUT VOLTS

OUTPUT AMPS

DC OUTPUT FUSE

CIRCUIT BREAKER
ON
OFF



AC
OK

ELAPSED HOURS



AMPS = mV x 0.30

B
C
D
E
1
2
3
4
5

ANODE POSITIVE

STRUCTURE NEGATIVE

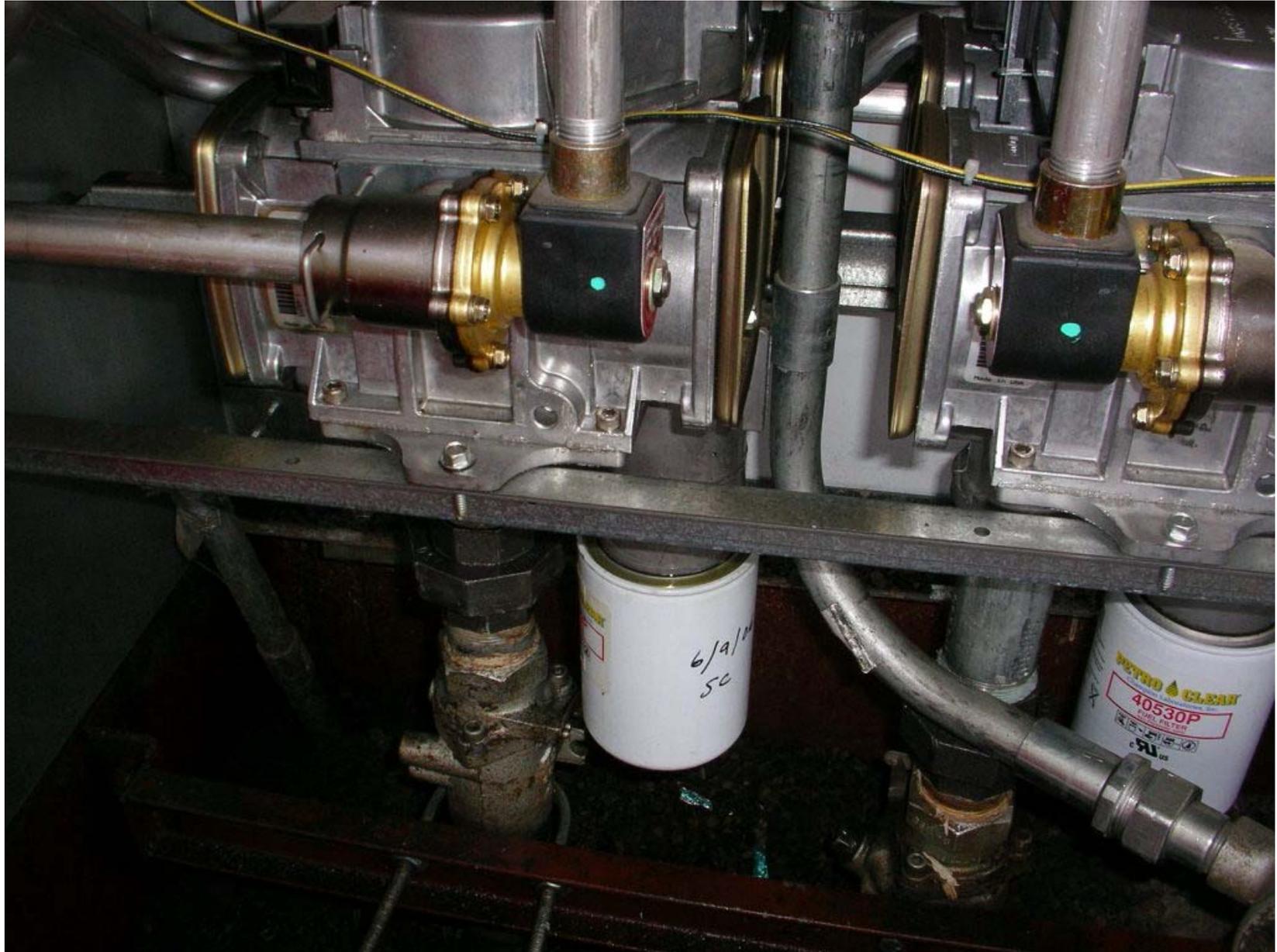
Benchmark Power Supplies
CATHODIC PROTECTION TECHNOLOGY
MODEL NO. 1
AC VOLTS
DC VOLTS
WATTS = DC VOLTS X DC AMPERES
SERIAL NO.
PO. BOX 1734, BOULDER, CO 80501

ANODES

1 2 3 4 5 6

DISPENSERS AND HANGING HARDWARE





FIRE/IMPACT/SHEER VALVE











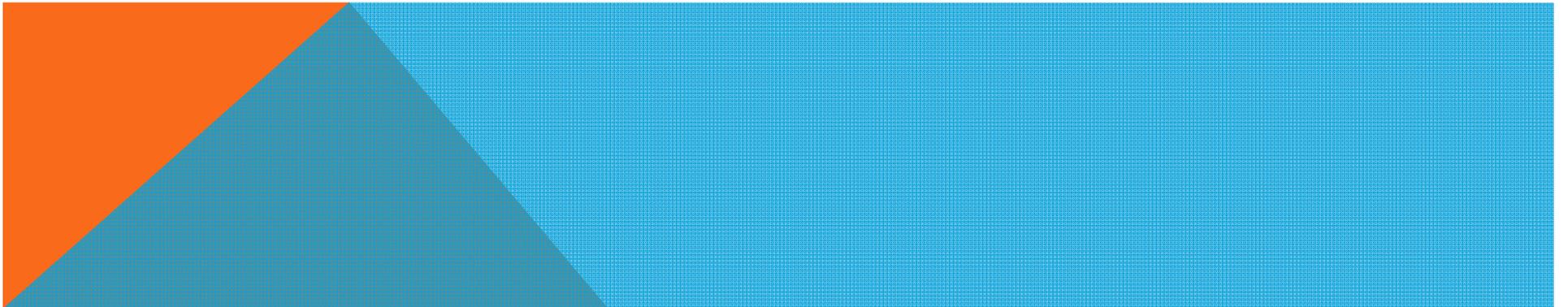






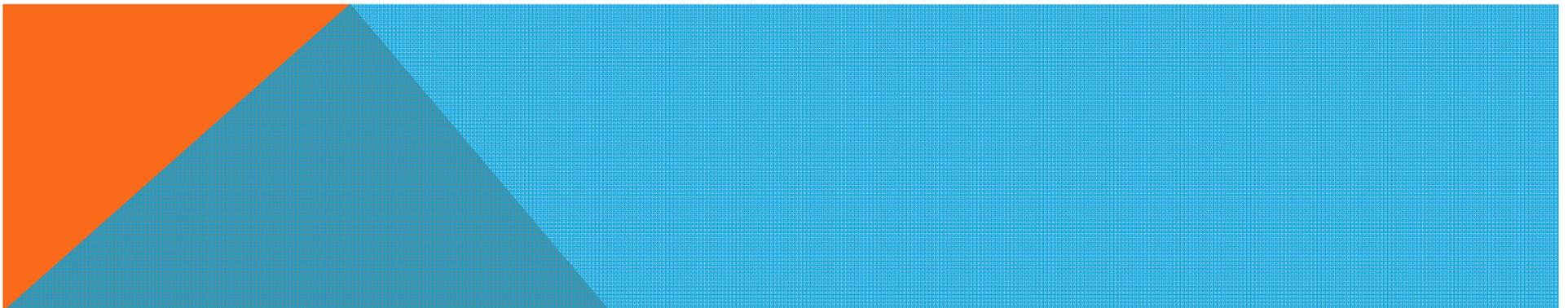


UST OPERATIONAL REQUIREMENTS



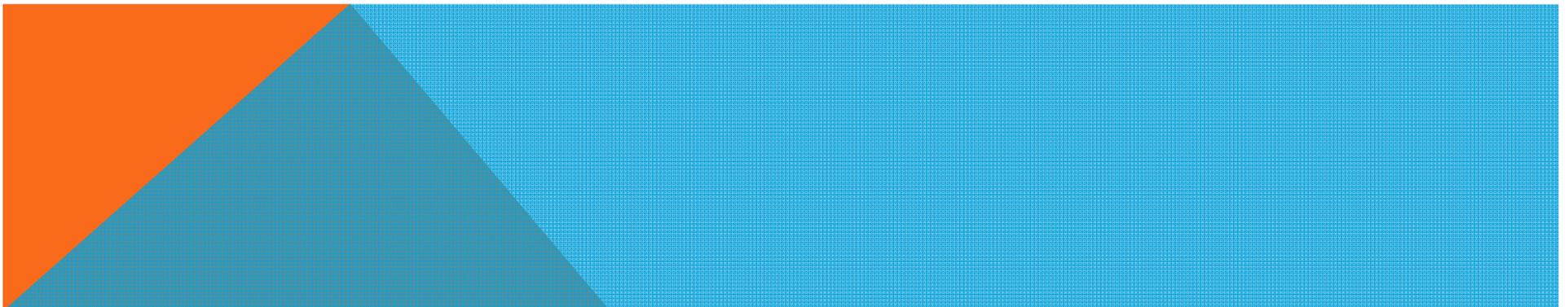
REPORTING AND INVESTIGATING A SUSPECTED RELEASE

- Anytime you fail to obtain passing tank leak detection results during a month (except inventory control)
- You fail line tightness testing
- Unusual operating conditions
- Must report within 24 hours
- Must investigate within seven (7) days



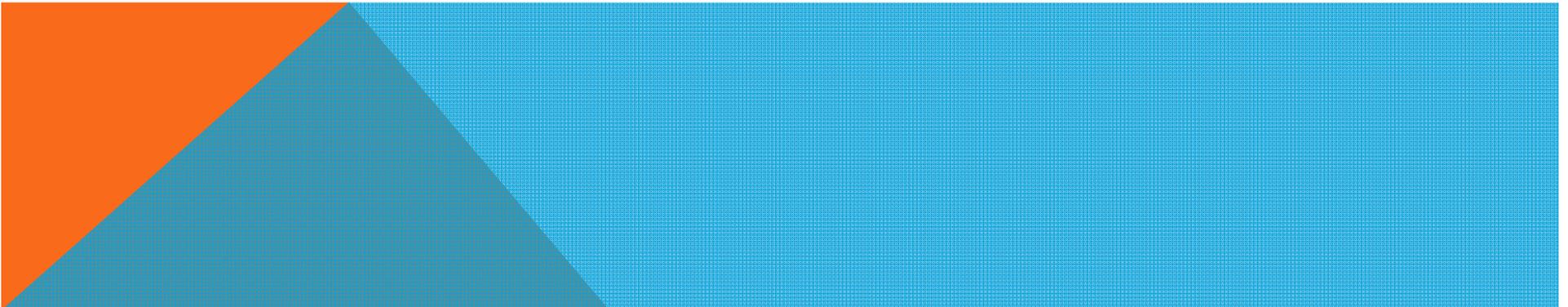
TANK LEAK DETECTION

Required for all tanks (WWQRR, Chapter 17 Part D)



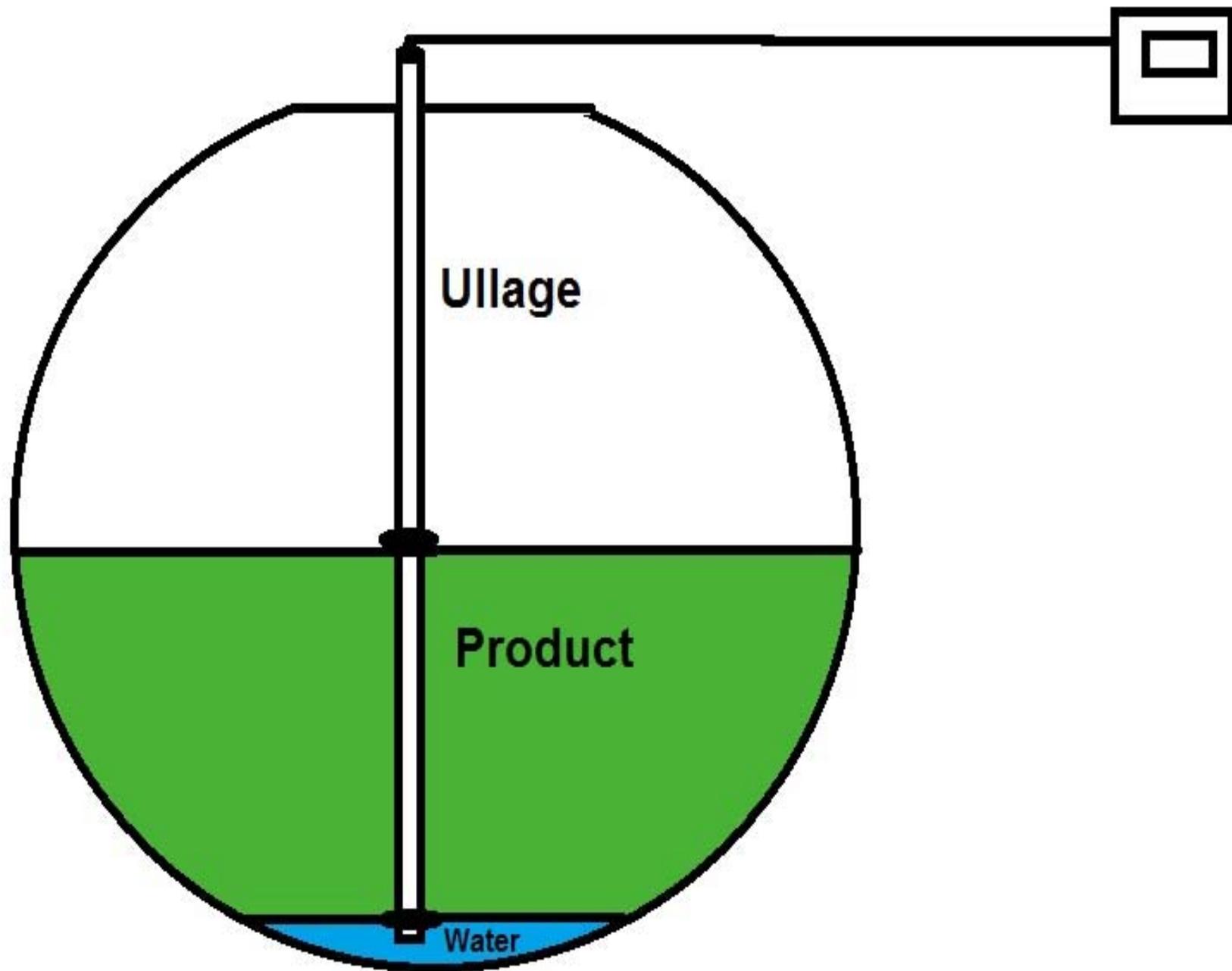
AUTOMATIC TANK GAUGING

- Must obtain a passing test printout for each tank/compartment each month
- Must conduct inventory control as well at fueling facilities
- Tank must have enough fuel to pass



ATG MONITORS





START IN-TANK LEAK TEST
TEST BY PROGRAMMED TIME
FEB 7, 2005 12:30 AM

TEST LENGTH 4 HOURS

T 3:DIESEL
VOLUME = 3046 GALS
ULLAGE = 4861 GALS
90% ULLAGE = 4088 GALS
TC VOLUME = 3070 GALS
HEIGHT = 39.22 INCHES
WATER VOL = 0 GALS
WATER = 0.00 INCHES
TEMP = 42.1 DEG F

STOP IN-TANK LEAK TEST
T 3:DIESEL
FEB 7, 2005 4:30 AM

REFS 19
EXXON
RIVERTON, WY

FEB 7, 2005 4:30 AM

LEAK TEST REPORT

T 3:DIESEL
PROBE SERIAL NUM 739182

TEST STARTING TIME:
FEB 7, 2005 12:30 AM

TEST LENGTH = 4.0 HRS
STRT VOLUME = 3070.0 GAL

LEAK TEST RESULTS
0.10 GAL/HR TEST PASS

START IN-TANK LEAK TEST
TEST BY PROGRAMMED TIME
FEB 7, 2005 12:30 AM

TEST LENGTH 4 HOURS

T 2:PREM
VOLUME = 2154 GALS
ULLAGE = 5146 GALS
90% ULLAGE = 4416 GALS
TC VOLUME = 2178 GALS
HEIGHT = 32.26 INCHES
WATER VOL = 0 GALS
WATER = 0.00 INCHES
TEMP = 43.6 DEG F

STOP IN-TANK LEAK TEST
T 2:PREM
FEB 7, 2005 4:30 AM

REFS 19
EXXON
RIVERTON, WY

FEB 7, 2005 4:30 AM

LEAK TEST REPORT

T 2:PREM
PROBE SERIAL NUM 739181

TEST STARTING TIME:
FEB 7, 2005 12:30 AM

TEST LENGTH = 4.0 HRS
STRT VOLUME = 2178.5 GAL

LEAK TEST RESULTS
0.10 GAL/HR TEST PASS

START IN-TANK LEAK TEST
TEST BY PROGRAMMED TIME
FEB 7, 2005 12:30 AM

TEST LENGTH 4 HOURS

T 1:NOLEAD
VOLUME = 4149 GALS
ULLAGE = 11110 GALS
90% ULLAGE = 9584 GALS
TC VOLUME = 4195 GALS
HEIGHT = 30.40 INCHES
WATER VOL = 0 GALS
WATER = 0.00 INCHES
TEMP = 43.9 DEG F

STOP IN-TANK LEAK TEST
T 1:NOLEAD
FEB 7, 2005 4:30 AM

REFS 19
EXXON
RIVERTON, WY

FEB 7, 2005 4:30 AM

LEAK TEST REPORT

T 1:NOLEAD
PROBE SERIAL NUM 739180

TEST STARTING TIME:
FEB 7, 2005 12:30 AM

TEST LENGTH = 4.0 HRS
STRT VOLUME = 4195.5 GAL

LEAK TEST RESULTS
0.10 GAL/HR TEST PASS

START IN-TANK LEAK TEST
TEST BY PROGRAMMED TIME
JAN 17. 2005 12:30 AM

TEST LENGTH 4 HOURS

T 2:PREM
VOLUME = 1892 GALS
ULLAGE = 5408 GALS
90% ULLAGE = 4678 GALS
TC VOLUME = 1916 GALS
HEIGHT = 29.36 INCHES
WATER VOL = 0 GALS
WATER = 0.00 INCHES
TEMP = 41.4 DEG F

0.10 GAL/HR FLAGS:
LOW LEVEL TEST ERROR

STOP IN-TANK LEAK TEST
T 2:PREM
JAN 17. 2005 4:30 AM

REFS 19
EXXON
RIVERTON, WY

JAN 17. 2005 4:30 AM

LEAK TEST REPORT

T 2:PREM
PROBE SERIAL NUM 739181

TEST STARTING TIME:
JAN 17. 2005 12:30 AM

TEST LENGTH = 4.0 HRS
STRT VOLUME = 1916.5 GAL

LEAK TEST RESULTS
0.10 GAL/HR TEST INVL

0.10 GAL/HR FLAGS:
LOW LEVEL TEST ERROR

INVENTORY CONTROL

- Required for all UST fueling facilities by International Fire Code
- Must be conducted in conjunction with automatic tank gauging at fueling facilities
- Must balance within 1% of throughput PLUS 130 gallons
- IF OVER 20 DAILY READINGS ARE POSITIVE OR NEGATIVE DURING CONSECUTIVE MONTHS, A SUSPECTED RELEASE MUST BE REPORTED!!!

Date of this Month's Water Level Check _____

FACILITY NAME: _____
 TANK CONTENTS: _____
 AMOUNT OF WATER (INCHES): _____

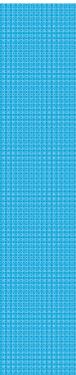
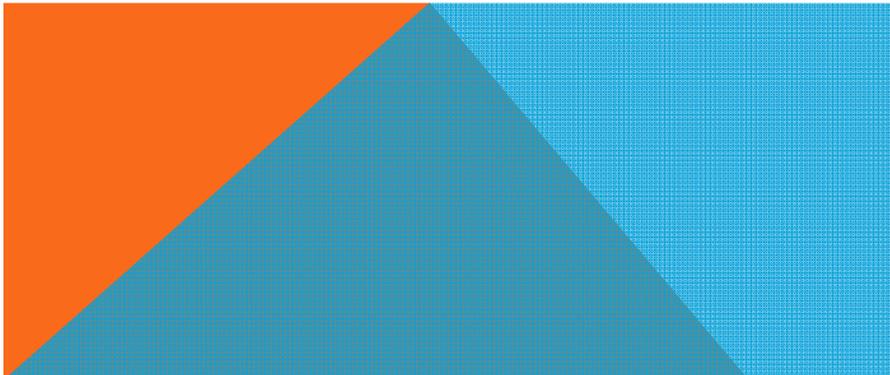
Date	Start ATG Inventory +	Gallons Delivered -	Gallons Pumped =	Book Inventory	End Inventory		Daily Over or <Short>	Initials	
					Inches	Gallons			
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									
Total Gallons Pumped					Total Gallons Over or Short				

$$\text{LEAK CHECK } \left(\frac{\text{Total Gallons Pumped}}{\text{Total Gallons Over or Short}} \right) \times 0.01 + 130 = \dots$$

Total of "Daily Over or Short" is Larger than the "Leak Check" Result:

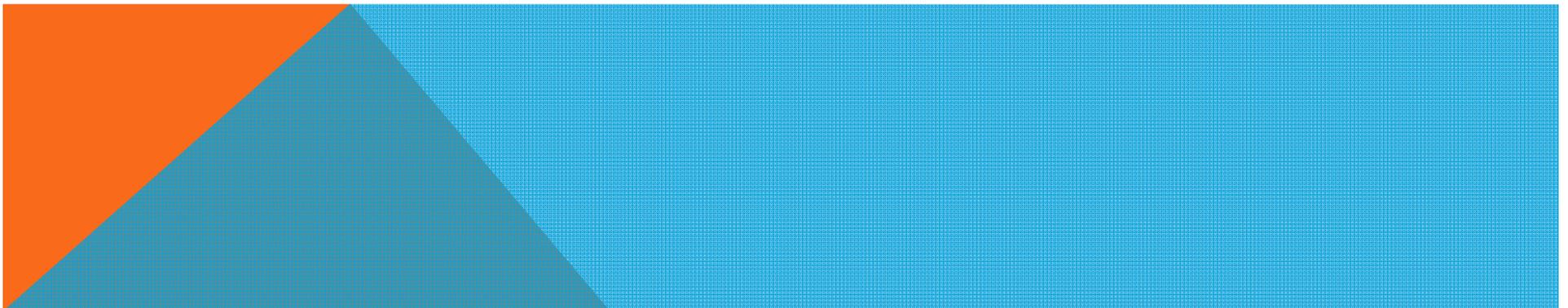
If Answer is "YES" Two Months in a Row, Notify Regulatory Agency

Keep this Piece of Paper on File for at Least One Year

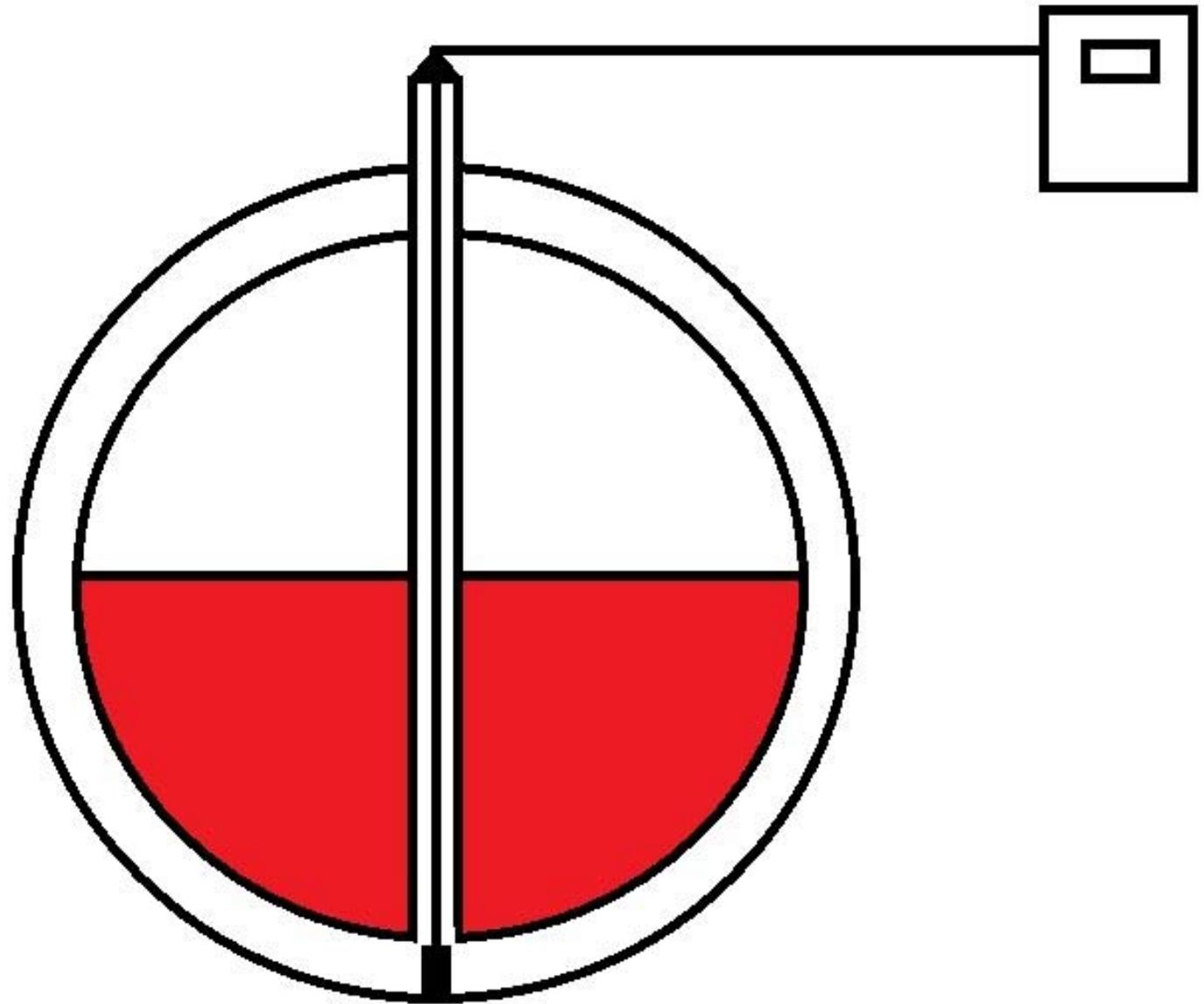


INTERSTITIAL MONITORING

- Must be conducted every 30 days
- Must be documented, either by a log or by printout
- Monthly inspection is perfect time to perform this



INTERSTITIAL MONITORING SYSTEM

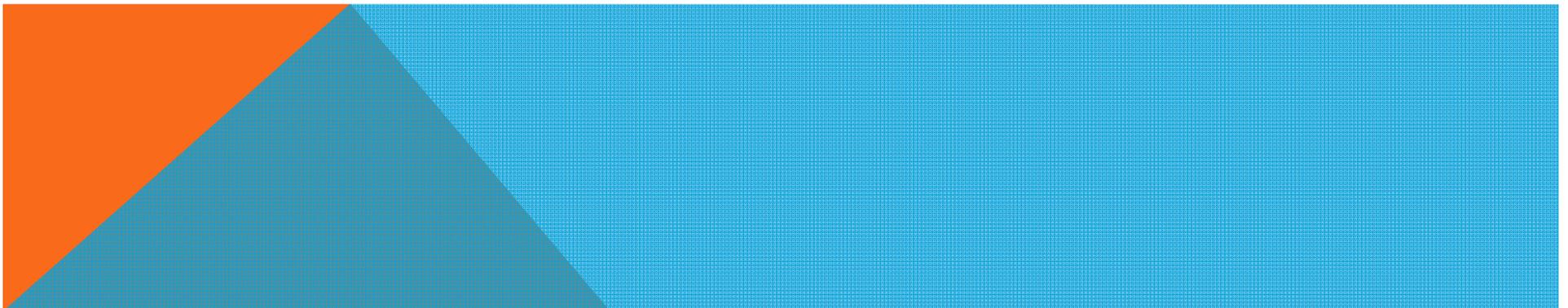






STATISTICAL INVENTORY RECONCILIATION (SIR)

- Performed by a third party
- Analyzed using computer software that searches for trends
- Must meet requirements for inventory for control
- Must pass each month
- Inconclusive results must be investigated and treated as a failure if second inconclusive issued
- Maximum 500,000 gallon per month throughput, then required to use an additional method (ATG)



Yearly Summary

May, 2001

Tank	Product	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
050	Unleaded	P	P	P	P	P	P	P	P	Inc	P	P	P
050	Diesel #1	P	P	P	Inc	P	P	P	P	*F*	P	P	P
050	Diesel	P	P	P	Inc	P	P	P	P	*F*	P	P	P
05	Diesel	P	P	P	Inc	P	P	P	P	*F*	P	P	P
0:	Diesel	P	P	P	Inc	P	P	P	P	*F*	P	P	P
050	Premium			P	P	P	Inc	Inc	P	P	P	P	P
050	Gasohol			P	P	P	P	P	P	P	P	P	P
050	Unleaded			P	P	P	*F*	*F*	P	*F*	Inc	P	P
050	Diesel #2			P	P	P	P	P	P	P	P	Inc	P
05	Diesel #2			P	P	P	P	P	P	P	P	Inc	P
0:	Diesel #2			P	P	P	P	P	P	P	P	Inc	P
0501	Diesel #2	P	P	P	P	P	P	P	P	P	P	P	P
0501	Diesel #2	P	P	P	P	P	P	P	P	P	P	P	P
0501	Diesel #2	P	P	P	P	P	P	P	P	P	P	P	P
0501	Unleaded	P	P	P	P	P	P	P	P	Inc	P	P	P
0501	Premium	P	P	P	P	P	P	P	P	P	P	P	P
0501	Unleaded	P	P	P	P	P	P	P	P	Inc	P	P	P
0501	Diesel	P	P	P	P	P	P	Inc	P	P	P	P	Inc
0501	Diesel	P	P	P	P	P	P	Inc	P	P	P	P	Inc
0501	Diesel	P	P	P	P	P	P	Inc	P	P	P	P	Inc
0501	Diesel #1	Inc	P	P	Inc	P	P	P	P	P	P	P	P
0501	Unleaded	P	P	P	P	Inc	P	P	P	P	P	P	P
0501	Premium	P	P	P	P	P	P	Inc	P	P	Inc	P	Inc
0501	Plus	P	P	Inc	P	Inc	P	P	P	P	P	P	P
05021	Diesel	P	P	P	P	P	P	P	P	P	P	P	P
05021	Diesel	P	P	P	P	P	P	P	P	P	P	P	P
05021	Diesel	P	P	P	P	P	P	P	P	P	P	P	P
05021	Unleaded	P	P	P	P	P	P	P	P	P	P	P	P
05021	Premium	P	P	P	P	P	P	P	P	P	P	P	P
05021	Unleaded	P	P	P	P	P	P	P	P	P	P	P	P
05050	Diesel	P	P	P	P	P	P	P	P	P	P	Inc	P
05050	Diesel	P	P	P	P	P	P	P	P	P	P	Inc	P
05050	Diesel	P	P	P	P	P	P	P	P	P	P	Inc	P
05050	Premium	P	P	P	P	P	P	P	P	P	P	P	P
05050	Unleaded	P	P	P	P	P	P	P	P	Inc	P	P	P
05050	Unleaded	P	P	P	P	P	P	P	P	Inc	P	P	P

Legend: P - Pass *F* - Fail Inc - Inconclusive ND - No Data Submitted NA - Not

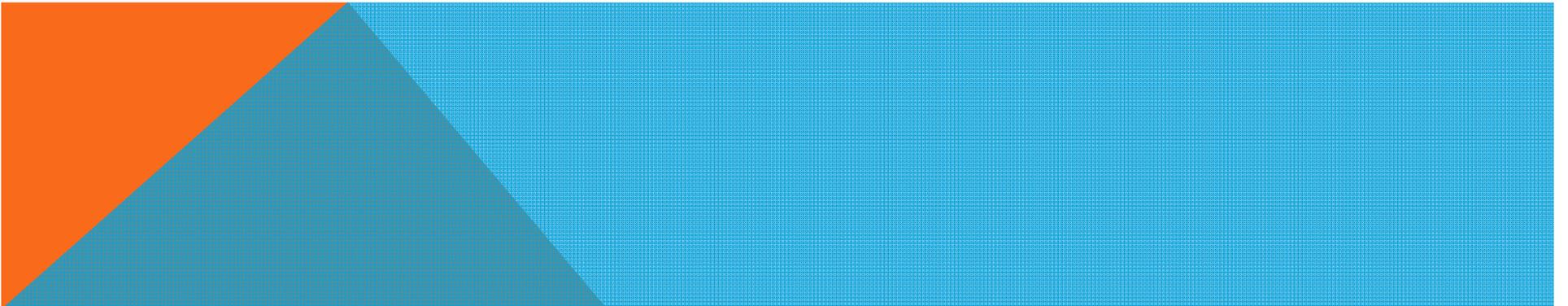
Printed: June 06, 2001

Page: 2

Veeder-Root Services Company dba/USTMAN
 12265 W. Bayaud Ave. * Suite 300 * Lakewood, CO 80228
 1-800-253-8034 * (303) 986-8011 * FAX (303) 986-8227

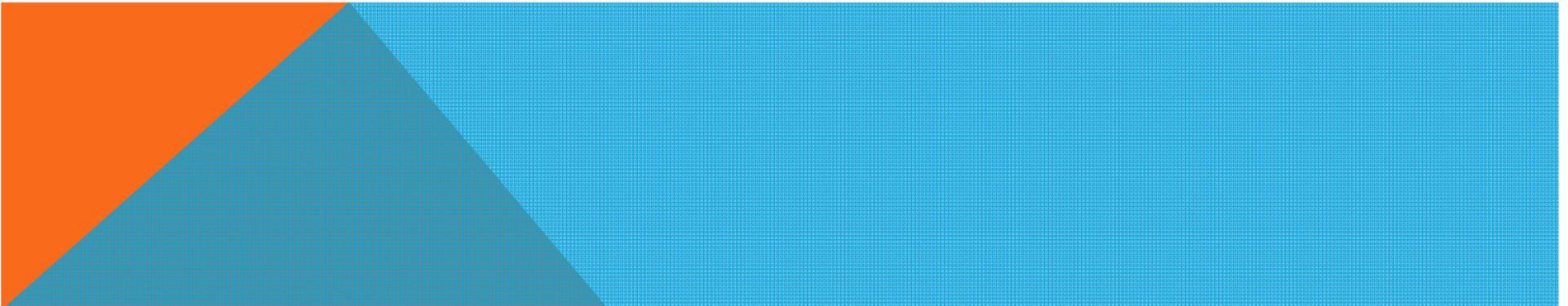
CITLDS

- Used by large truck stops
- Conducted by third party
- Trends analyzed by software
- Must pass each month



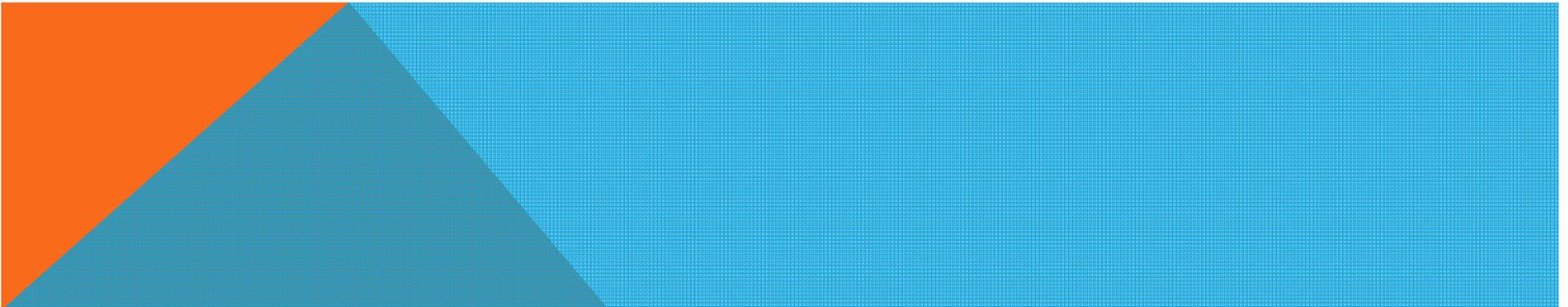
LINE LEAK DETECTION

- Leak detectors required for all pressurized piping (suction systems lose their prime)
- Annual line tightness testing or an approved tank leak detection method (SIR/Interstitial/CITLDS) required for all pressurized systems (half of the piping systems in Wyoming) or an automatic system that performs tightness testing is used (ELLDs)
- US suction must be pressure tested every three years, unless an approved tank leak detection method (SIR/interstitial/CITLDS) is used



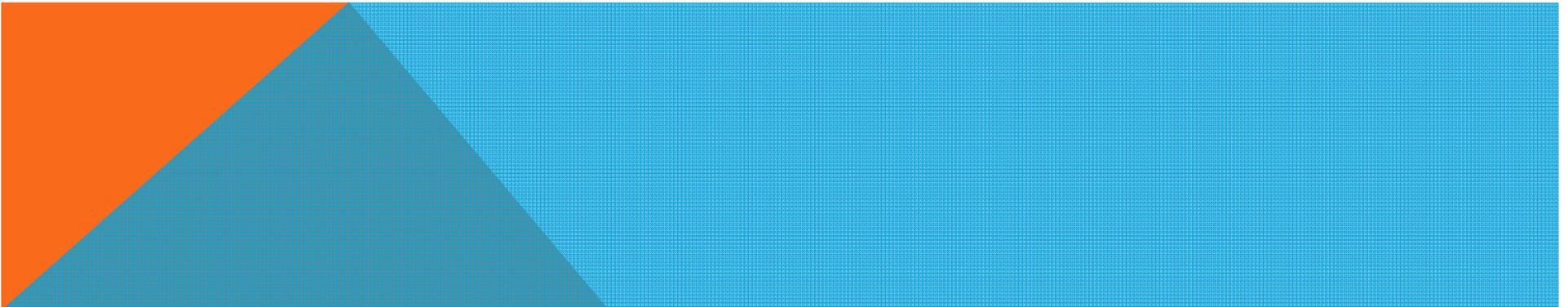
LINE TIGHTNESS TESTING

- Must be performed by a licensed tester
- Must be able to detect a leak at .1 gallons per hour at 1 ½ times operating pressure
- Must be conducted annually



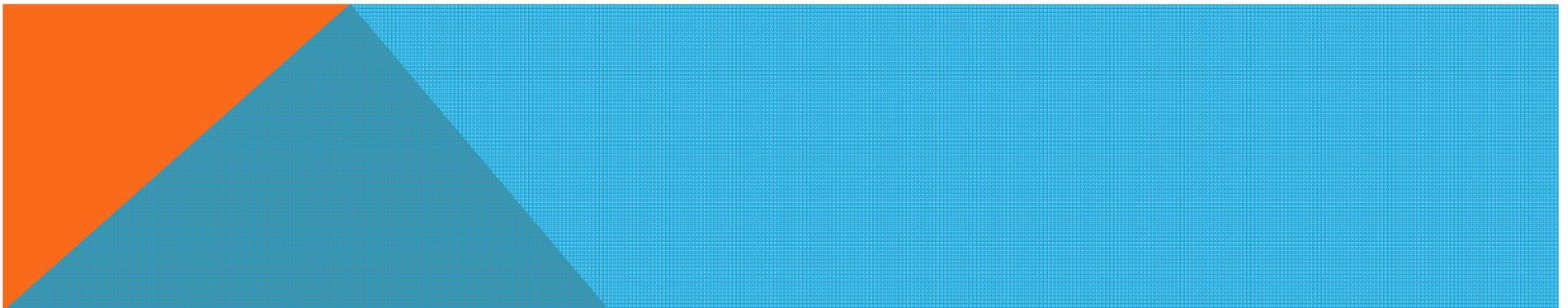
LINE LEAK DETECTORS

- Must be function tested annually
- All new and replacement piping (including suction systems) must be interstitially monitored (sump sensors)
- Must be able to detect a leak at 3 gallons per hour at 10 PSI



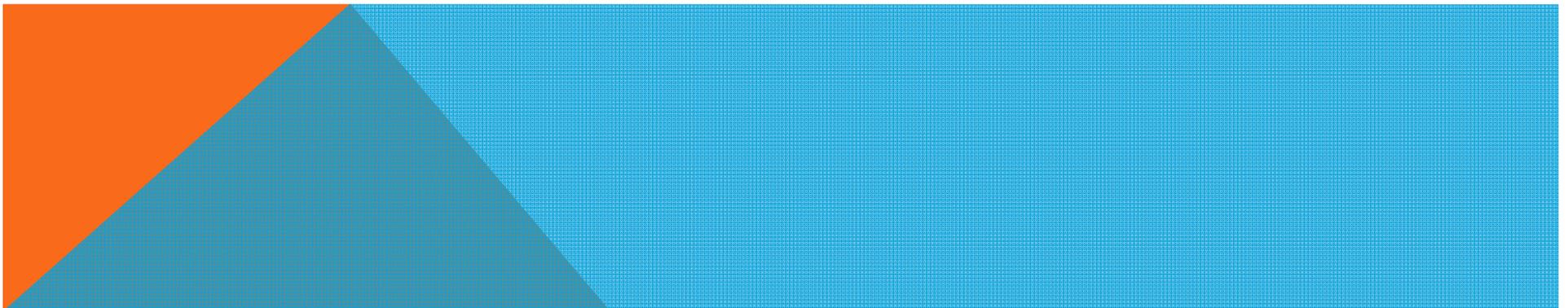
THREE TYPES OF LINE LEAK DETECTORS

- Sump sensors (interstitial monitoring)
- Electronic line leak detectors
- Mechanical line leak detectors



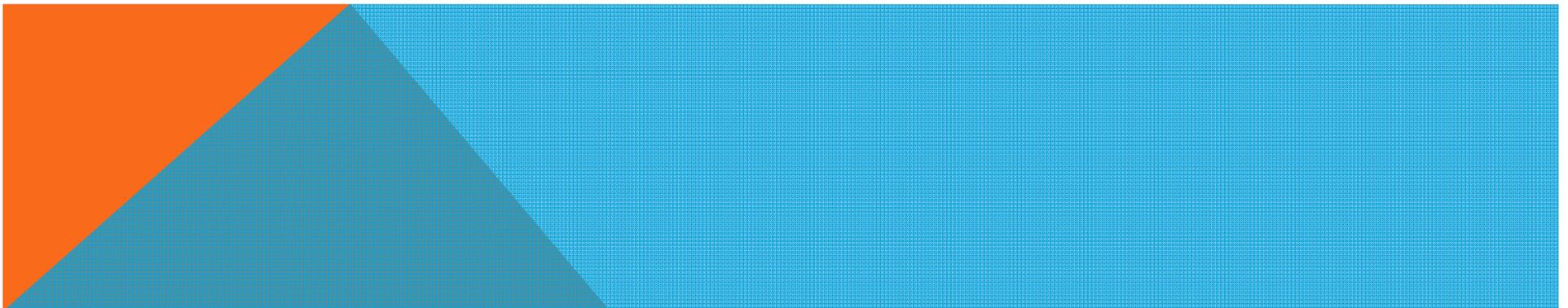
SUMP SENSORS (INTERSTITIAL MONITORING)

- Form of interstitial monitoring and so line tightness testing not required
- May only be used with double wall pipe
- Must be function tested annually
- May be function tested by owner and/or operator or licensed tester



SUMP SENSORS (INTERSTITIAL MONITORING)

- Must be placed at lowest point of sump or under dispenser containment pan
- Must be in contact with the bottom of the sump in order to detect a 3 gallon per hour leak





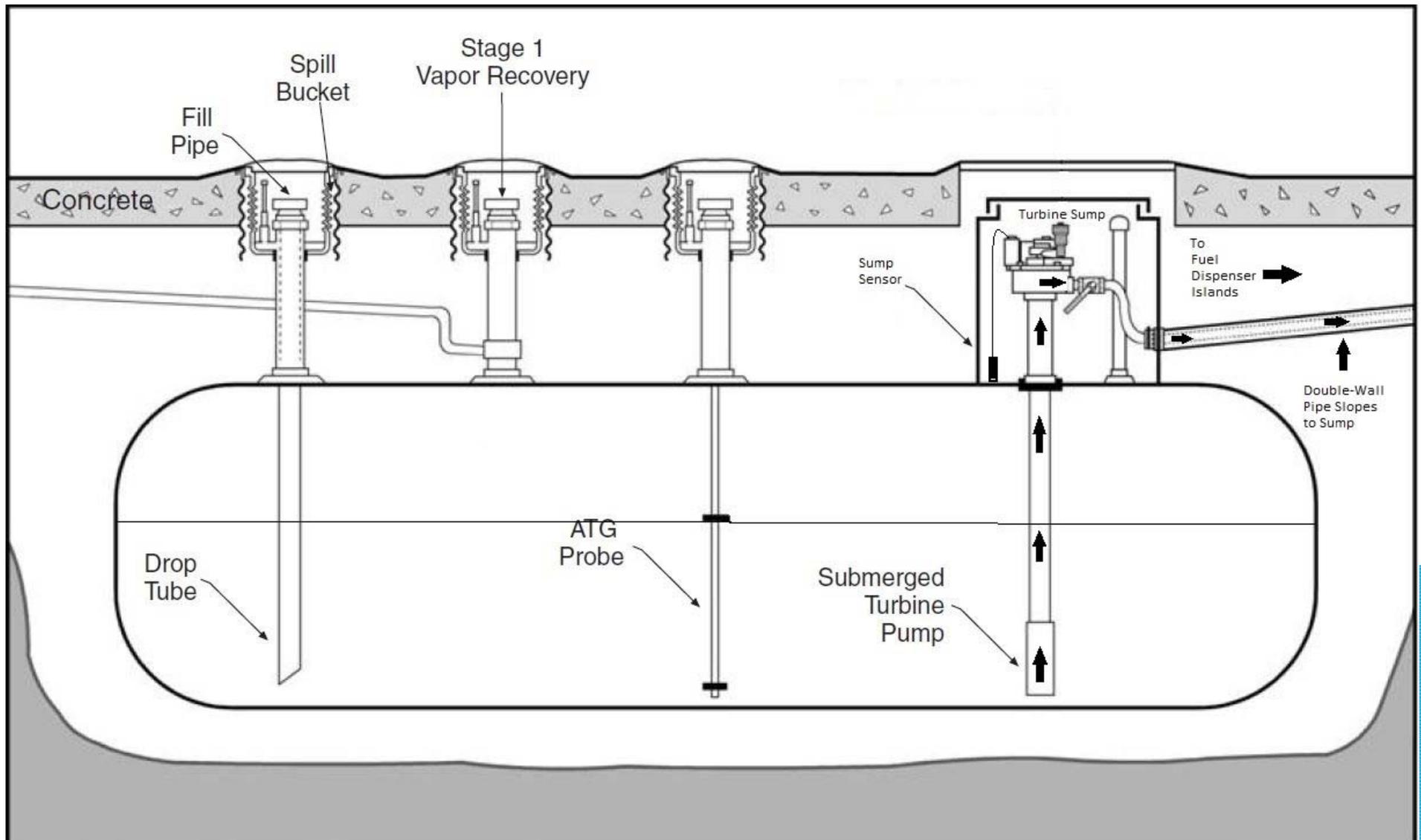


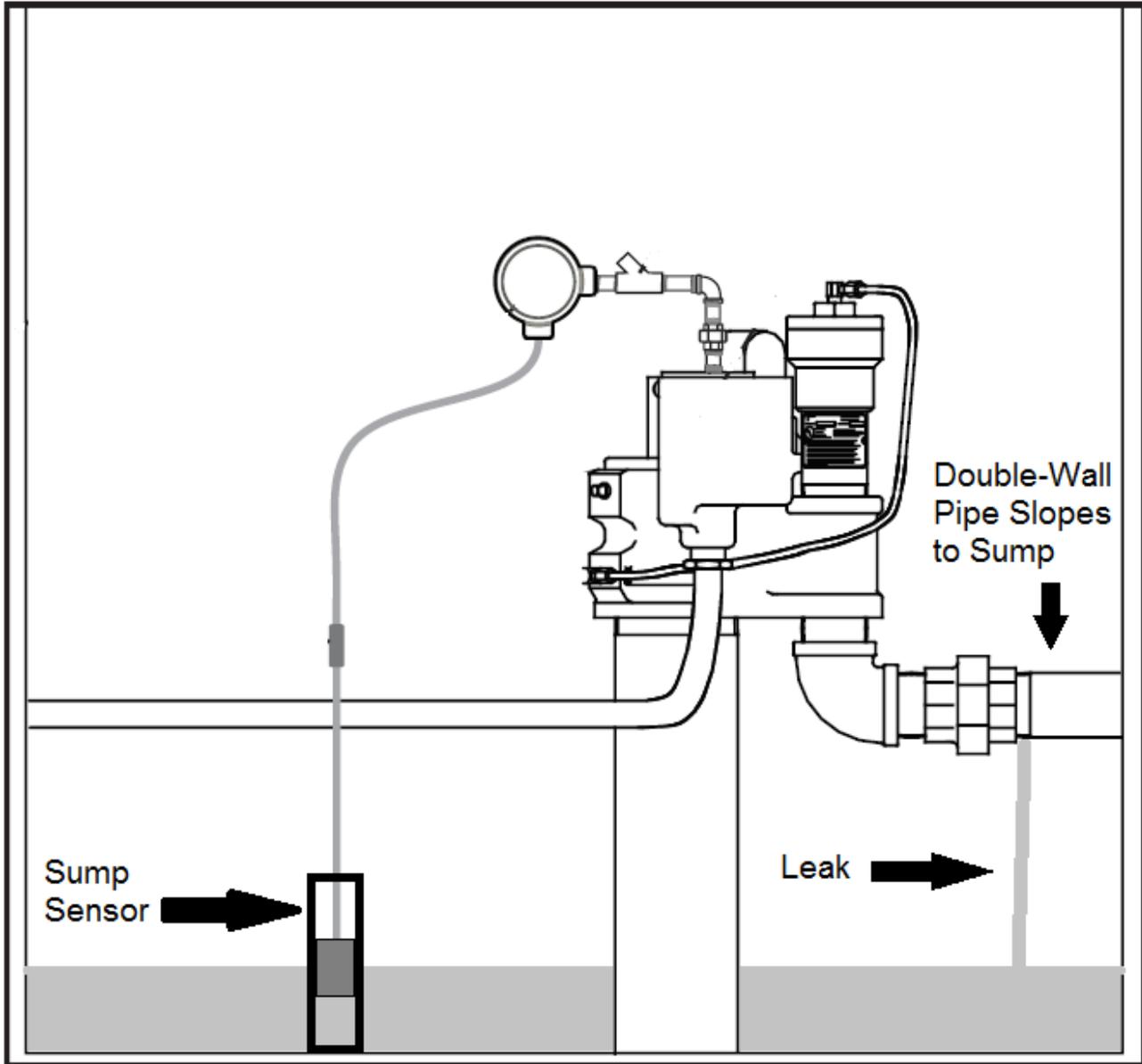
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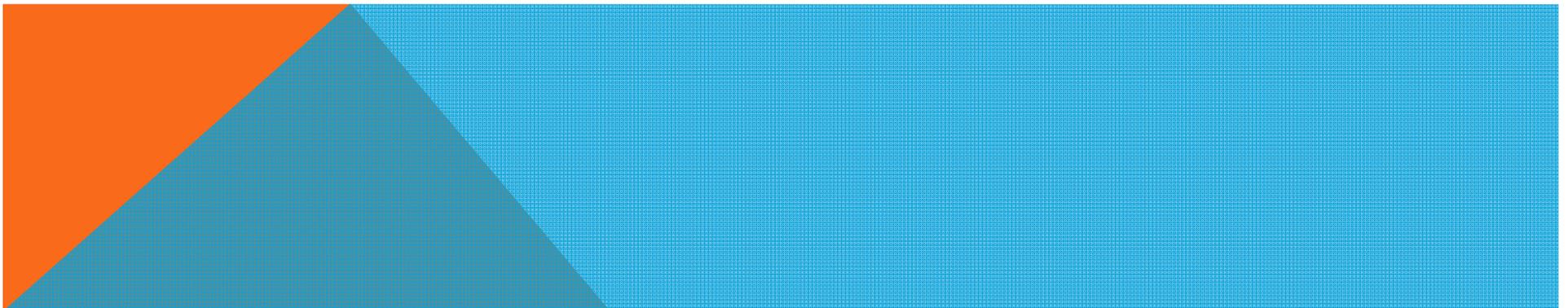
PRESSURIZED PIPING





ELECTRONIC LINE LEAK DETECTORS (ELLD OR PLLD)

- **Must be connected to a monitor**
- **Must be function tested annually**
- **Line tightness testing only required for volumetric (older model) ELLDs**



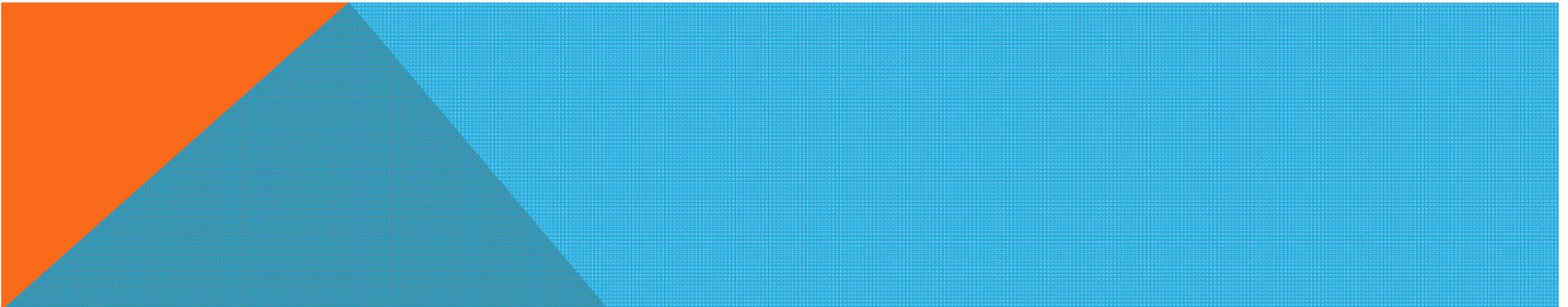


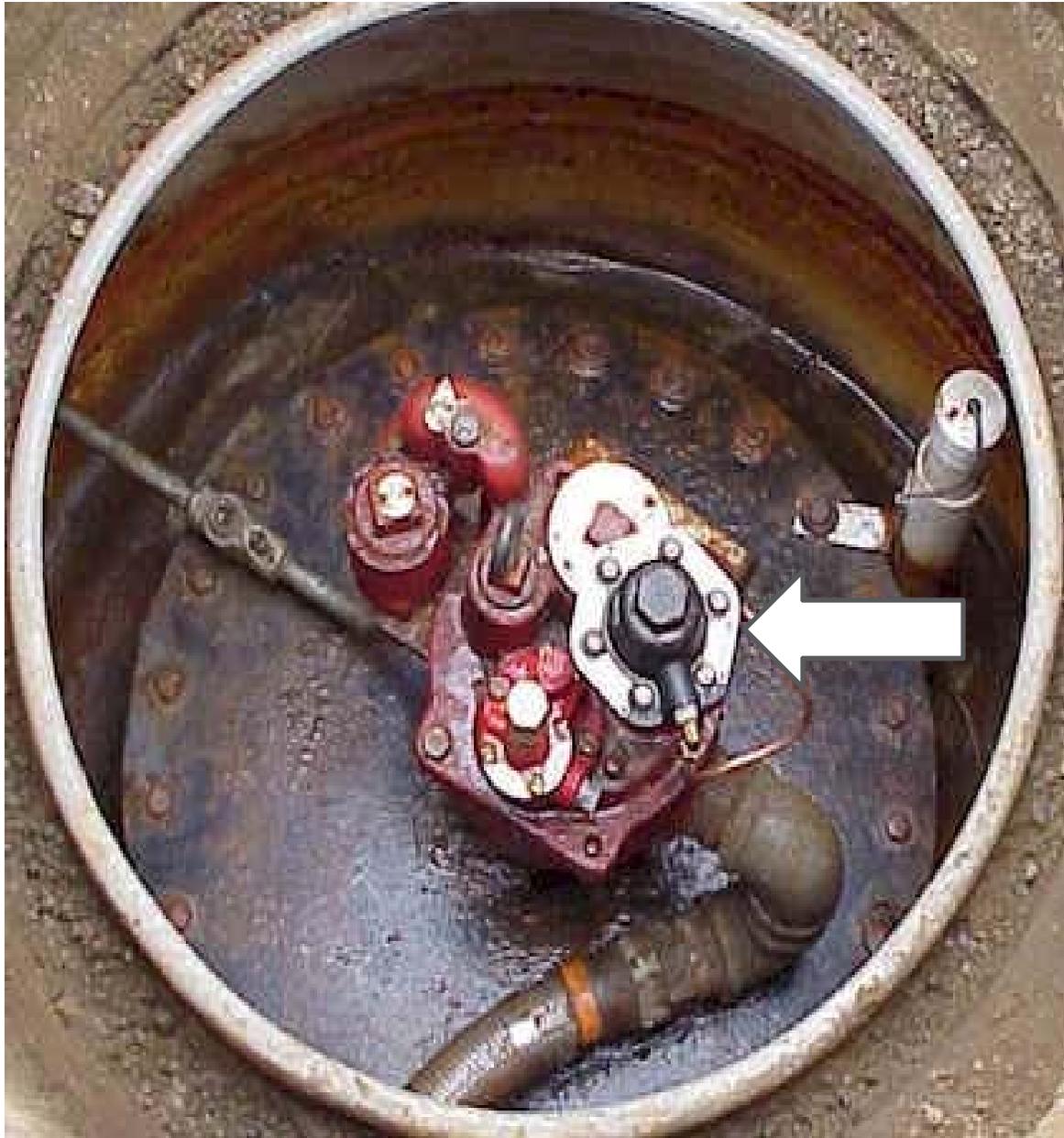
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MECHANICAL LINE LEAK DETECTORS

- Must be function tested annually
- Must also perform line tightness testing or an equivalent method must be in place (SIR, CITLDS, Etc.)





Red Jacket



Vaporless Manufacturing

FE Petro

