

HCNA Pipeline Testing

Airport Hydrant System (AHS) Applications
40 CFR 280 Subpart K

Presented by:

Charlie Fenton
Karl M. Overman
HCNA, LLC



About HCNA

- ➔ EPA third-party certified leak detection for hydrant and pipeline systems.
- ➔ Almost two decades of experience with US DOD and commercial aviation customers.
- ➔ HCNA Leak Detection System (HCNA LDS) is the most advanced underground liquid pipeline leak detection system in the world.
- ➔ HCNA LDS utilizes real-time pressure measurement to detect leaks quickly, accurately and cost-effectively.
- ➔ The system can be included as a component of a new installation, as well as used or installed on existing fuel systems.

HCNA Leak Detection System (LDS)

Application:

- ➔ Pressurized, liquid filled piping.
- ➔ Typically, refined petroleum products.

Requirements:

- ➔ Isolation of pipe section to be tested (100% tight valves or flanges / skillets).
- ➔ One standard pressure transmitter for each pipeline section.
- ➔ Capacity to decrease / increase pressure.



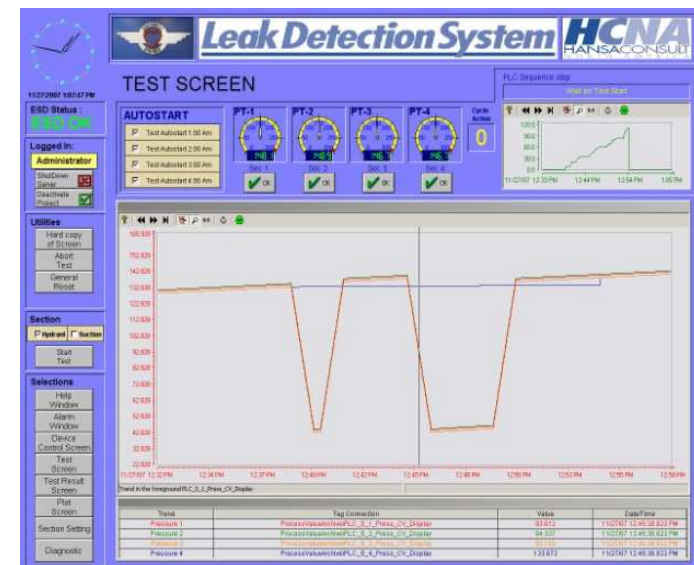
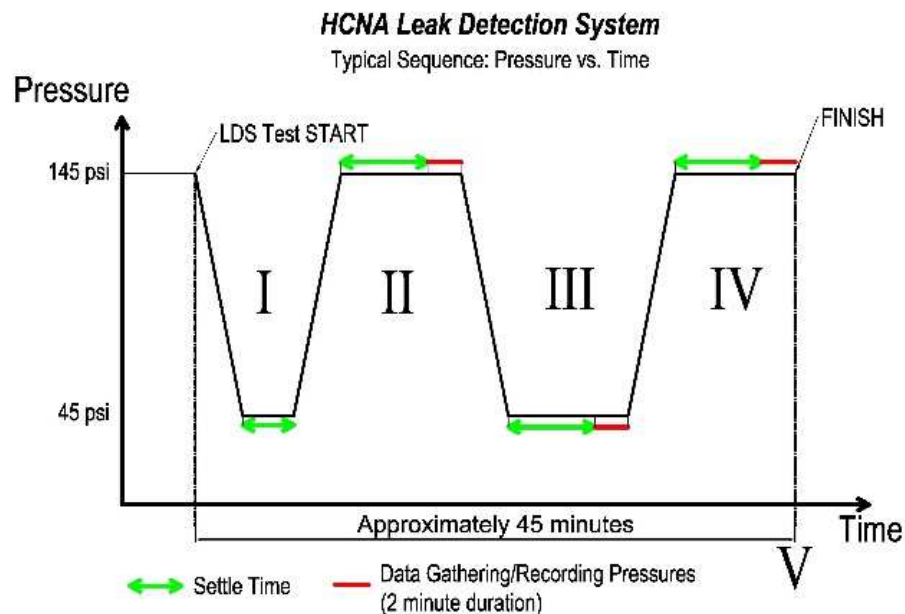
HCNA LDS Certifications

HCNA LDS is recognized and approved by the following authorities:

- ➔ U.S. EPA Protocol Third Party Certification
- ➔ National Work Group on Leak Detection Evaluations (NWGLDE)
- ➔ California EPA (State Water Resources Control Board)
- ➔ California Department of Forestry and Fire Protection Office of the State Fire Marshal
- ➔ Florida DEP Equipment Approval File No. EQ-642
- ➔ State of Maryland Department of the Environment
- ➔ Virginia Department of Environmental Quality
- ➔ Washington Department of Ecology
- ➔ New Jersey Department of Environmental Protection
- ➔ New York Department of Environmental Conservation
- ➔ Minnesota Pollution Control Agency

Pressure-Step Test Sequence

Five Phases

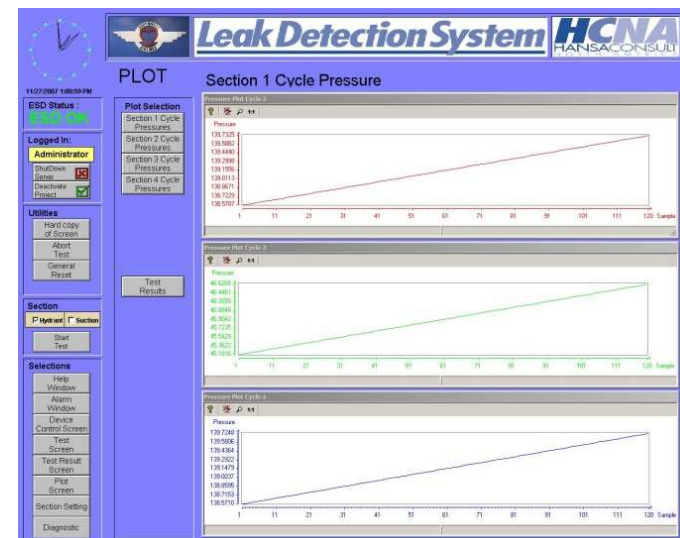
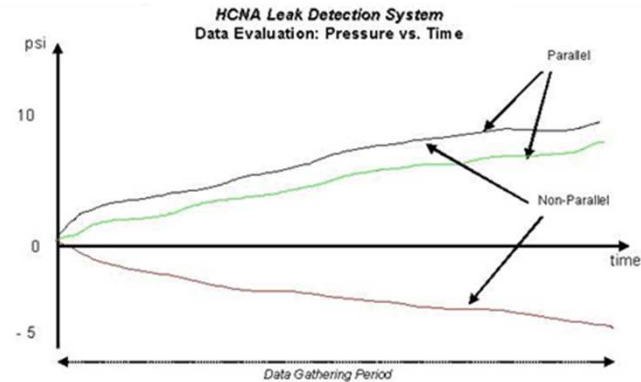


Pressure-Step Evaluation

The determination of a leak is most influenced by temperature and pressure changes over the duration of the test. The Pressure-Step method is based upon the physical reality that given a defined leak, the leak rate is proportionately larger at higher pressure than at lower pressure.

Because the leak rate is directly related to a change in pressure, tightness is determined by measuring the pressure gradients over the course of the test.

The Pressure-Step algorithm compares the pressure curves of these specific pressure levels to determine the tightness factor.



Leak Simulation

- ➔ Initiate the testing program.
- ➔ Release product through a known orifice over a known time period.
- ➔ Collect the removed product in a graduated cylinder, measure the product collected and calculate a leak rate.
- ➔ After testing complete, compare the system leak rate with the calculated rate (based on 145 psi).
- ➔ Repeat as appropriate, adjusting the size of the orifice.



HCNA LDS Accuracy: The Leak Rate

Test Section Volume (gal)	Sensitivity	Reference 40 CFR 280 Subpart K	HCNA 3 rd Party Certification/ NWGLDE Listing
< 5,000	Fixed 0.068 gal/hr	Meets Annual Leak Detection Rate Requirement	v2.1
≥ 5,000 to ≤ 25,000	0.002% of line volume	Meets Annual Leak Detection Rate Requirement	v2.0
> 25,000	0.002% of line volume	Meets <i>Semiannual</i> Leak Detection Rate Requirement	v2.0

HCNA Leak Sensitivity Sample

(Minimum Detectable Leak Rate - Jet Fuel)

Test Section Volume (gal)	Guaranteed HCNA MDLR (gal/hr)
100	0.068
1,000	0.068
3,000	0.068
5,000	0.068
10,000	0.20
25,000	0.50
50,000	1.00
75,000	1.50
100,000	2.00
150,000	3.00

HCNA LDS Applications

Permanent

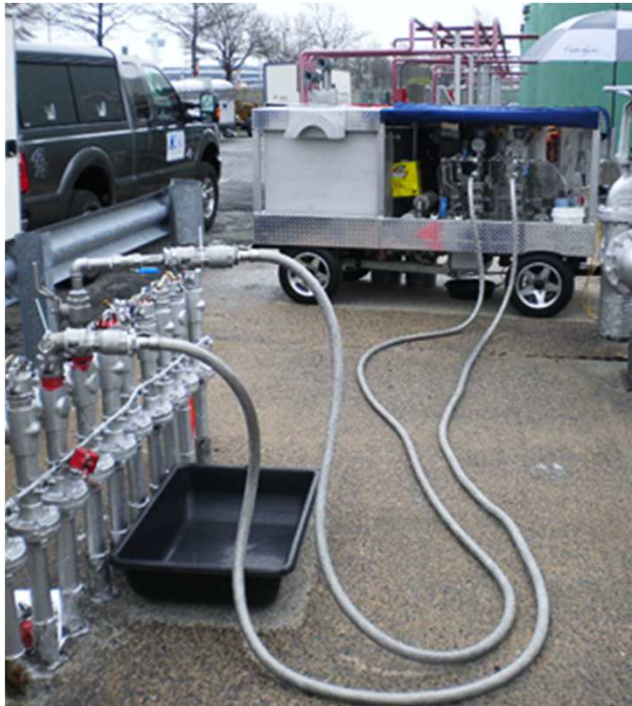
- ➔ Automated
- ➔ Skid mounted
- ➔ Hydrant Tight®

Point in Time – Service

- ➔ Mobile Trailer
- ➔ Mobile Cart
- ➔ Suitcase



HCNA LDS Summary



- ➔ Pressure Step Methodology
- ➔ Leak Rate Accuracy
 - ➔ 0.068 gph below 5,000gal
 - ➔ 0.002% of line volume above 5,000gal
- ➔ Leak Simulation – validate test for each section
- ➔ Simultaneous Testing on multiple Test Sections

Contact Information

Hansa Consult of North America, LLC

200 International Drive, Bldg. 120

Portsmouth, NH 03801

PH (603) 422 8833

FAX (603) 422 8865

info@hcna-llc.com

Karl M. Overman, President

koverman@hcna-llc.com

Charles Fenton, Program Manager

cfenton@hcna-llc.com

Appendix

U.S. EPA



- ➔ Regulates over 500,000 UST systems
- ➔ Office of Underground Storage Tanks formed in early 1980's
- ➔ 1988: UST regulation deferred specific UST systems
 - ➔ Field Constructed Tank (FCT)
 - ➔ Airport Hydrant Systems (AHS)
- ➔ July 15, 2015: Eliminated Deferral
 - ➔ 40 CFR 280 Subpart K

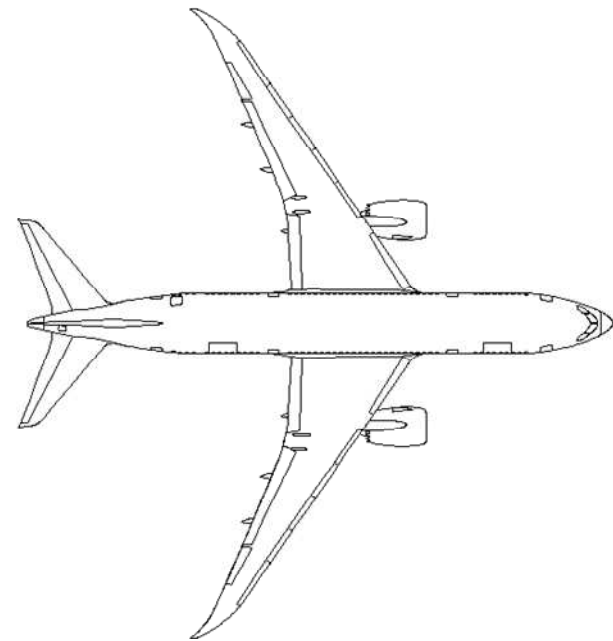
40 CFR 280

- ➔ Requires owners and operators of UST systems to:
 - ➔ Prevent releases
 - ➔ Detect releases
 - ➔ Correct problems created by releases
 - ➔ Maintain documentation
- ➔ Subpart K
 - ➔ As of July 15, 2015 includes specific requirements for FCTs and AHSs

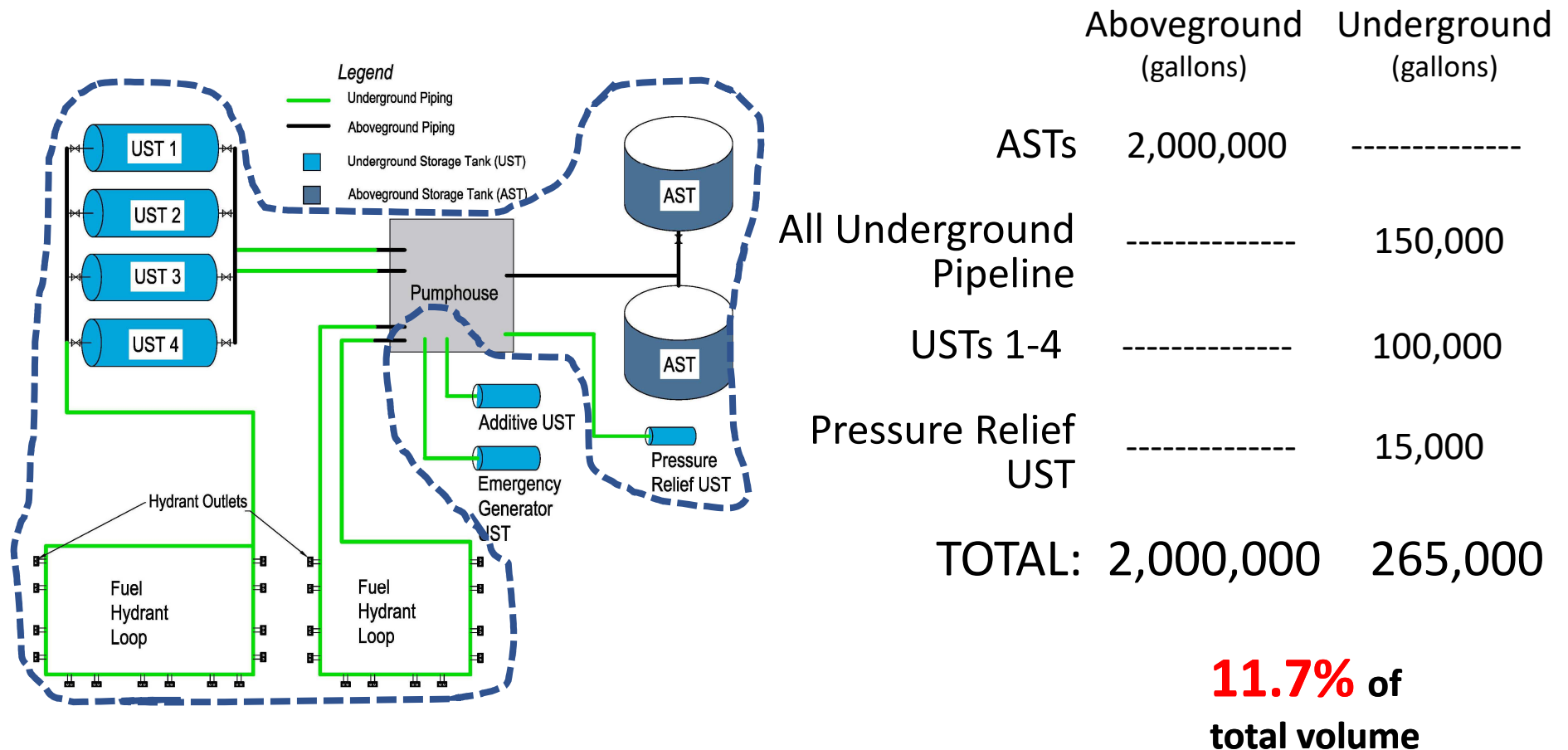


Airport Hydrant System (AHS) – Leak Detection Regulations

- ➔ Define Airport Hydrant System
 - ➔ Fuels aircraft, operates under high pressure, large diameter pipeline, terminates at hydrant(s)
 - ➔ Multiple AST/USTs
 - ➔ Connected underground piping
- ➔ US EPA Rule 40 CFR 280, Subpart K – 15 July 2015
 - ➔ Eliminated Deferral for Airport Hydrant Systems
 - ➔ Classification of UST based systems: UG capacity is greater than 10% of total system capacity
 - ➔ Variable Freq./Sensitivity – up to 3.0 gph w/ semi annual test



The 10% Rule: Is this AHS Regulated?



Release Detection Requirements

→ When?

- FCTs and AHSs installed before October 13, 2015
 - Deadline: October 13, 2018
- FCTs and AHSs installed after October 13, 2015
 - Must meet release detection requirements at installation

→ What are the requirements?

- < 50,000 gallons
 - ALLD + release detection method (annual tightness test)
- > 50,000 gallons
 - *Tightness testing*, tracer testing, Inventory control + Tightness testing, another approved method

Line Tightness Testing Frequency & Sensitivity

For AHSs/FCTs greater than 50,000 gallons

Max Leak Detection Rate per Test Section Volume		
Test Section Volume (gal)	<i>Semiannual</i> Test: Leak Detection Rate NTE (gal/hr)	<i>Annual</i> Test: Leak Detection Rate NTE (gal/hr)
< 50,000	1.0	0.5
≥ 50,000 to < 75,000	1.5	0.75
≥ 75,000 to < 100,000	2.0	1.0
≥ 100,000	3.0	1.5

Taken from 40 CFR 280.252 (Subpart K)