



Approval # 20070001

Environmental & Regulatory Services Division
Bureau of Petroleum Products and Tanks
201 West Washington Avenue
P.O. Box 7837
Madison, WI 53707-7837

Wisconsin COMM 10 Material Approval

Equipment: TotalSIR Version 1.0

Manufacturer: TotalSIR, LLC
20468-M Chartwell Center Dr.
Cornelius, NC 28031

Expiration of Approval: December 31, 2010

SCOPE OF EVALUATION

The TotalSIR Version 1.0 Statistical Inventory Reconciliation System, manufactured by TotalSIR LLC, for leak detection of tanks and connected piping, has been evaluated for use as a method of monthly monitoring complying with **ss. COMM 10.61 (8) and 10.615 (3)** of the current edition of the Wisconsin Flammable and Combustible Liquids Code.

This evaluation summary is condensed to provide the specific installation, application and operation parameters necessary to maintain the subject systems in compliance with the Wisconsin Administrative Code – Comm 10.

DESCRIPTION AND USE

The TotalSIR Version 1.0 Statistical Inventory Reconciliation System is a quantitative method that analyzes tank inventory records to detect leaks. The method estimates the leak rate and interprets the data as one of the following: Pass, Fail or Inconclusive.

The SIR system is capable of identifying and/or compensating for:

- Leak Rates
(Identified and Quantified)
- Delivery Errors (Identify only)
- Unexplained Gains Or Losses
(Identify only)
- Dispensing Meter Errors
- Calibration Errors
- Dipstick or Gauging Errors
(Identify only)
- Conversion Chart Miscalibration
- Water Inflow Or Outflow
(Identify only)
- Thermal Effects

Inventory data may be recorded manually or by use of an electronic or other tank monitor. Data that must be reported for leak detection analysis include:

- Measurement of product height and /or associated volume conversions for the days the tanks are in active operation.
- Deliveries or amount of product transferred to the tank by date and amount.
- A record of the amount of product dispensed from the tank system during each day of active use.

Leaks from either the tank or piping will show as losses. If a leak is indicated, the leak could be located in any portion of the tank system, including piping. Additional testing will be needed to isolate the location of the leak.

Inventory data may be submitted to TotalSIR recorded manually on paper or sent electronically via email.

The facility may be closed for one or more consecutive days during the week, but the inventory record under analysis must contain data from a minimum of 23 days of active use of the facility. Properly calibrated meters are required for use of the SIR system. This method is inadequate if there is an insufficient number of usable records or too much daily variability in the inventory records.

The TotalSIR Version 1.0 Statistical Inventory Reconciliation System may be used with gasoline, diesel fuel, kerosene, and other liquids with known coefficients of expansion and density after consultation with the manufacturer.

TESTS AND RESULTS

The performance of the TotalSIR Version 1.0 Statistical Inventory Reconciliation System was determined in accordance with the EPA protocol for statistical inventory reconciliation methods. The system was found capable of detecting a 0.20- gph leak with a probability of detection greater than 99.9 percent and a probability of false alarm of less than 0.1 percent.

SIR REPORT OUTPUT

Detailed here are examples of the typical report provided by TotalSIR to the SIR customer:



SIR MONTHLY EVALUATION REPORT

002 SIR Monthly Tank Evaluation Report		Date of Report: 08-11-2006														
FACILITY NAME		Jack & Jill's Country Store	ID# 25-001111													
TANK		1111 Down Hill Lane														
LOCATION		Nowhere, NC 29642	Tel:													
TANK OWNER		Smith Oil														
LOCATION		123 Main Street														
		Nowhere, NC 29642	Tel: 704-999-5555													
TANK OPERATOR		Tel:														
SIR Provider		TotalSIR P.O. Box 2040 Cornelius, NC 28031														
SIR Version		TotalSIR 1.0 <ID:SIR71005>	Site Dir:													
Period Covered		09/00	23 usable days per month required.													
TANK		Current	Month 08/00 07/00													
Tank ID.	Product	Max. SIR size (gal)	size (gal)	Leak Thres hold (gph)	MDL rate (gph)	Calc. Leak rate (gph)	Water (in)	Pass, Fail, or Inconclusive								
								P	F	I	P	F	I	P	F	I
J & J/ Unl	Unleaded	45 K	10028	0.176	0.048	-0.079		X			X			X		
J & J/ Pls	Plus	45 K	10028	0.168	0.064	-0.018		X			X			X		
J & J/ Prm	Premium	45 K	6017	0.159	0.083	-0.008		X			X			X		
J & J/ Dsl	Diesel	45 K	2006	0.177	0.046	-0.019		X			X			X		
J & J/ Kero	Kero	45 K	10028	0.153	0.095	0.002		X			X			X		

Person conducting evaluation			
Signature		Date	
<p>I certify under penalty of law that I am familiar with the information submitted on this form and that based on my inquiry of those individuals immediately responsible for obtaining the information I believe that the information is true, accurate, and complete</p>			
Signature of owner/operator: _____		Date: _____	



EVALUATION REPORT

P.O. Box 2040 • Cornelius, NC 28031

Dates Analyzed : 09/00
 Facility Name : Jack & Jill's Country Store
 Address : 1111 Down Hill Lane Nowhere, NC 29642
 Site Directory :
 Tank Number : 004
 Tank ID : J & J/ Uni
 Tank Type : Steel
 Diameter (inch) : 96
 Capacity (gal) : 10,028
 Total Capacity : 10,028
 Contents : Unleaded

Day	Delivery	Sales	In-Tank	On-Books	Variance	Cumm.
1		468.0	7,151.0	7,146.0	5.0	5.0
2		785.0	6,347.0	6,366.0	-19.0	-14.0
3		1,030.0	5,309.0	5,317.0	-8.0	-22.0
4		717.0	4,539.0	4,592.0	-53.0	-75.0
5		770.0	3,786.0	3,769.0	17.0	-58.0
6	4,100.0	1,072.0	6,836.0	6,814.0	22.0	-36.0
7						
8		319.0	6,515.0	6,517.0	-2.0	-38.0
9		856.0	5,640.0	5,659.0	-19.0	-57.0
10		900.0	4,671.0	4,740.0	-69.0	-126.0
11		651.0	4,072.0	4,020.0	52.0	-74.0
12		989.0	3,088.0	3,083.0	-5.0	-89.0
13	4,500.0	924.0	6,670.0	6,644.0	26.0	-63.0
14						
15		445.0	6,212.0	6,225.0	-13.0	-76.0
16		1,010.0	5,181.0	5,202.0	-21.0	-97.0
17		771.0	4,398.0	4,410.0	-12.0	-109.0
18		1,002.0	3,390.0	3,396.0	-6.0	-115.0
19		850.0	2,584.0	2,540.0	44.0	-91.0
20		686.0	1,880.0	1,878.0	2.0	-89.0
21						
22		396.0	1,478.0	1,484.0	-6.0	-97.0
23		119.0	1,339.0	1,357.0	-18.0	-115.0
24		114.0	1,221.0	1,225.0	-4.0	-119.0
25						
26		200.0	1,010.0	1,021.0	-11.0	-130.0
27		203.0	821.0	807.0	14.0	-116.0
28						
29		61.0	731.0	760.0	-29.0	-145.0
30	2,000.0	72.0	2,662.0	2,659.0	3.0	-142.0

Sum: 10,600.0 15,410.0

Dates Entered : 30
 Data Quality : EXCELLENT
 Leak Rate : -0.079
 MDL : 0.048
 Threshold : 0.176
 Conclusion : PASS (0.2 gph criteria)
 Meet Inventory Control Procedures: Yes

LIMITATIONS / CONDITIONS OF APPROVAL

- All monitoring equipment shall be installed, calibrated, operated, and maintained in accordance with the manufacturer instructions, and verified every 12 months for operability, proper operating condition, and proper calibration by a certified technician. Records of sampling, testing, or monitoring shall be maintained in accordance with **Comm 10.625**.
- The manufacturer shall submit for a revision to this Wisconsin Material Approval application if any of the functional performance capabilities of this equipment are revised. This would include, but not be limited to changes in software, hardware, or methodology.
- While third-party testing does determine a required minimum tank level, EPA leak detection regulations require testing of the portion of the tank system which routinely contains product. Consistent testing at low levels could allow a leak to remain undetected.

During leak testing, a minimum level of product in tank shall be maintained so as to ensure testing of the portion of the tank and/or piping that routinely contains product, regardless of testing system capability. For instance, if product levels are routinely maintained at 60%, but the leak detection system is capable of testing at 15% product level, then testing shall be performed at 60% levels.

- Before a tank system, which includes all tank(s) and all product piping connected within the system, can be switched to SIR from another leak detection methodology, a third-party approved precision tightness test shall be performed on the portion of the tank system to be monitored by the SIR system.
- Critical performance parameters for the **TotalSIR Version 1.0 Statistical Inventory Reconciliation System** (0.20 gph monthly monitoring):

Parameter	Value
Maximum Tank Size ¹	45,000 gallons (Single Tank) 45,000 gallons (Manifolded Tanks)
Maximum No. of Manifolded Tanks	4
Minimum number of days for analysis	23

1: Manifolded tank capacity is an aggregate capacity of all tanks (maximum of four tanks).

- The TotalSIR Version 1.0 Statistical Inventory Reconciliation System may be used as a method of monthly monitoring for tanks and connected piping complying with **ss. COMM 10.61 (8) and 10.615 (3)**.
- **Mechanical or electronic line leak detectors capable of detecting, at a minimum, a leak rate of 3.0 gph at 10 psi within one hour, shall be installed in the piping system to detect catastrophic failures per Comm 10.615(1).**
- If for two consecutive months, the test results indicate that a tank system is not tight (fails), or the results are inconclusive (to be considered a fail), the suspected release investigation and confirmation procedures specified under **ss. COMM 10.63 and 10.64** shall be followed.

- If a second test is required to confirm the status of a tank system, that test shall be an approved tightness test in accordance with **ss. COMM 10.635 (2)(a)**.

This approval will be valid through December 31, 2010, unless manufacturing modifications are made to the product or a re-examination is deemed necessary by the department. The Wisconsin Material Approval Number must be provided when plans that include this product are submitted for review.

DISCLAIMER

The Department is in no way endorsing or advertising this product. This approval addresses only the specified applications for the product and does not waive any code requirement unless specified in this document.

Effective Date: April 1, 2007

Reviewed by: _____

Greg Bareta, P. E.
Engineering Consultant
Bureau of Petroleum Products and Tanks

Approved by: _____ Date: _____