



# Improving Norfolk Southern's Environmental Audit Program

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*Conference*

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# Outline

- Audit Program Manual
- Risk-Ranking/Site Evaluation
- Audit Criteria and Audit Tools
- Metrics and Key Performance Indicators
- Questions



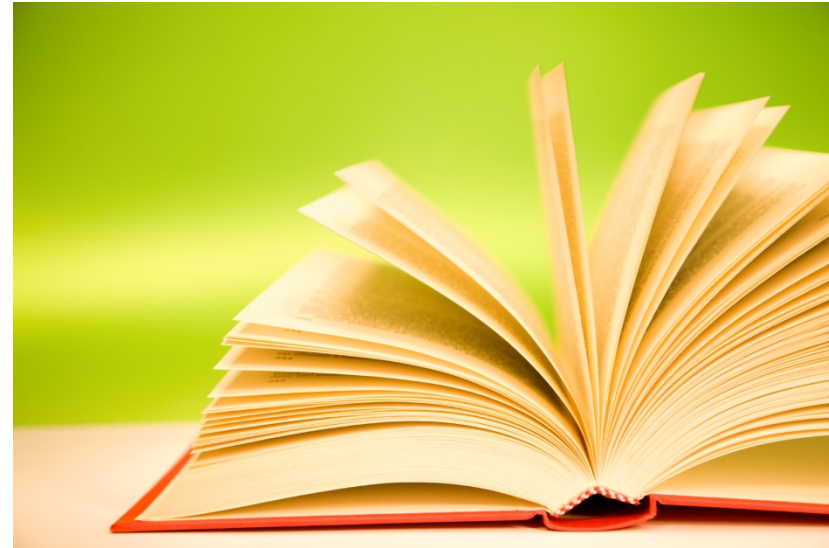
# *Audit Program Manual:*

## Purpose

- Define the environmental audit program
- Provide transparency
- Help stakeholders understand audit process and objectives
- Document audit process to:
  - Promote consistency
  - Sustain the program during times of change

# Audit Program Manual: Content

- Purpose and Objectives of the Program
- Audit Scope
  - *Who are we auditing and what standards are we auditing to?*
- Roles and Responsibilities
  - *“Stakeholders”*
- Risk-Ranking/Site Evaluation
- Audit Criteria and Tools:
  - Define and categorize a “finding”
  - Audit Protocols; Self-Assessment Checklists; Training
- Processes for Conducting the Audit
  - Pre audit: document review; audit notification; warm-up call
  - On-site: safety briefing; orientation and kick-off; site tour of operations; records review; closing meeting
  - Post-audit: data entry; audit reporting; corrective actions; follow up
- Audit Program Metrics/KPIs



# *Risk-Ranking/Site Evaluation*

Identified aspects of facilities that directly or indirectly factor into compliance risk

- Environmental aspects (examples):
  - Compliance plans: SPCC, FRP, SWPPP
  - # and size of ASTs
  - NPDES monitoring (DMRs) vs. inspections only
  - Hazardous waste generator status
- Non-traditional environmental aspects (examples):
  - # of Departments located at the yard
  - Site regulatory complexity and compliance history



# Risk-Ranking/Site Evaluation

- Each aspect is scored, and each facility has a total score.
- Total score describes the amount of risk at the facility
- Higher risk facilities have higher audit frequency

			NPDES Permit Reqts					Haz Waste Status			RISK SCORE
			Quarterly Visual Inspection	Quarterly Visual Jar Sampling	Quarterly Facility Inspection	Analytical Sampling	Discharge Monitoring Reports (DMRs)	CESQG	SQG	LQG	
Rail Yard/Site	City	STATE									
Yard 1	Macon	GA	5	3	5	5	5	1			542
Yard 2	Altoona	PA	5		5					5	539
Yard 3	Portsmouth	OH	5	3	5	5	5		3		502



# Audit Criteria and Audit Tools

## Define Audit Criteria

- Determine finding levels
- Categorize findings
  - (Root Cause Analysis “Lite”)

-- select --
3 - Legal Exception
2 - Observation
1 - BMP

Finding Category
SPCC/FRP
Used Oil
Hazardous Waste

Finding Sub-Category 1
Inspections
Labeling
Recordkeeping

Finding Sub-Category 2
Regulation
Site Conditions
Training

## Audit Tools:

- Protocols
- Self-Assessment Checklists



# Protocols and Self-Assessment Checklists

	A	B	C	D	E	F	G	H	I
	ID	Requirement	Citation	Notes	Jurisdiction	Yes	No	N/A	Comments
1	SPCC-SPCC Plans-1	Is the facility located where there is reasonable expectation for discharging oil into or upon navigable waters in quantities that may be harmful, and does the facility have: - More than 1,320 gallons of oil aggregate above ground (excluding oil in containers smaller than 55-gallons), or - More than 42,000 gallons in USTs (excluding tanks regulated by 40 CFR 280 or an approved state program); or - More than 1 million gallons in uncontained storage or in a location where a release might impact fish, wildlife or drinking water sources?	40 CFR 112.1	Note: Facilities in existence prior to August 16, 2002 must continue to implement their existing plan until the revised plan is implemented. Facilities that came into existence after November 10, 2011 that have the potential for a discharge that meets the criteria for implementation of an SPCC plan must prepare and implement a plan prior to commencing operations. (40 CFR 112.3(a-b))	US	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
2	SPCC-SPCC Plans-3	Was the facility's SPCC plan reviewed and certified by a licensed professional engineer?	40 CFR 112.3(d)	Note: If the facility stores less than 10,000 gallons and meets the qualifications in 40 CFR 112.1, the facility has the option to self-certify the SPCC Plan. (40 CFR 112.3(g))	US	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3	SPCC-SPCC Plans-4	Were all releases reported and was the SPCC plan amended following a release, if necessary?	40 CFR 110.3, 110.6 and 112.4		US	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4	SPCC-SPCC Plans-5	Was the SPCC Plan reviewed and updated if necessary, within the past five years?	40 CFR 112.5(b)		US	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
5	SPCC-SPCC Plans-5a	Is the site reviewed each year to identify any changes to oil storage, including the addition or removal of containers or tanks, changes to secondary containment, changes to volumes of oil storage, etc.?	Our World, Our Choice, Section 3.10, "Oil Spill Prevention and Response"		Norfolk Southern	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6	SPCC-SPCC Plans-6	Does the SPCC Plan include a signed statement as to whether the plan will be amended, either at the beginning or end of the plan, or in a log or an appendix to the plan?	40 CFR 112.5(b)		US	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
7	SPCC-SPCC Plans-7	Were amendments to the SPCC Plan made within six months of the Plan's review, and implemented within another six months of the Plan's amendment?	40 CFR 112.5(b) and 112.5(c)		US	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
8	SPCC-SPCC Plans-7a	Did the local environmental compliance team members and the team leader recognize changes in operations that affect the spill control plans and update the plans within two weeks of the change?	Our World, Our Choice, Section 3.10, "Oil Spill Prevention and Response"	Note: Updates may be manually (hand-written) into the plan if they are relatively minor, including: Compliance team members change (due to retirement or relocation), contact phone number change, and/or the amount of spill response equipment (sorber, booms, etc.) on hand increases	Norfolk Southern	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
9	SPCC-SPCC Plans-7b	Were significant revisions submitted as soon as possible (without regard to the 5-year update cycle) to NS Environmental Protection headquarters for updating the plan and obtaining new Professional Engineer seals as required?	Our World, Our Choice, Section 3.10, "Oil Spill Prevention and Response"	Note: Significant revisions requiring NS Environmental Protection headquarters updates include (but are not limited to): a large petroleum spill (10 gallons or more); total storage capacity of petroleum products changes; storage tanks are added, removed, or change location; modifications to the table listing the tanks to ensure the plan agrees with the locations of the tanks shown on the site map in the plan; compliance schedule changes; amount of spill response equipment (sorber, booms, etc.) on hand decreases or its	Norfolk Southern	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

## OIL SPILL PREVENTION AND CONTROL AUDIT PROTOCOL

which required review and/or amendment of the SPCC plan? (NOTE: A reportable spill event is defined as: 1) A single spill event with more than 1000 gallons of oil or petroleum product discharged to or upon navigable waters or adjoining shorelines; or 2) Two spill events in a 12-month period where more than 42 gallons for each discharge of oil or petroleum were discharged to navigable waters or adjoining shorelines. 40CFR112.4(a)

**SPCC7.** Within 60 days of each spill, was a report submitted to the EPA Regional Administrator and the state water pollution control agency that included all of the following: 1) The name and location of the site, name of the owner/operator, and date of initial facility operation; 2) Maximum facility storage or handling capacity and normal daily throughput; 3) A description of the facility including maps and flow diagrams; 4) A copy of the SPCC plan; 5) Cause(s) of the spill including a failure analysis of the system in which the failure occurred; 6) Corrective actions and/or countermeasures taken; and 7) Preventive measures taken to prevent recurrence?  
40CFR112.4(a)/B40CFR112.4(a)(1)/40CFR112.4(a)(5)/40CFR112.4(a)(6)/40CFR112.4(a)(7)/40CFR112.4(a)(8)/Y

YES \_\_\_\_\_ NO \_\_\_\_\_

**SPCC8.** Is the SPCC Plan reviewed, updated, and if necessary, amended by a registered engineer for ANY of the following circumstances: 1) Every five years; 2) If a change in facility design, construction, operation, or maintenance affects the facility's potential to discharge oil; 3) If more effective prevention and control technology has been demonstrated and field-proven to significantly reduce the likelihood of a spill event; or 4) As the result of a spill event(s)?  
40CFR112.5(a)/40CFR112.5(b)/A/40CFR112.5(b)/B40CFR112.5(c)/40CFR112.4(d)/40CFR112.4(c)

YES \_\_\_\_\_ NO \_\_\_\_\_

**SPCC9** Have there required amendments or changes to the SPCC Plan been implemented no later than six months after the event(s) that triggered the amendments?  
40CFR112.4(e)

YES \_\_\_\_\_ NO \_\_\_\_\_

**SPCC10.** Is secondary containment along with sufficient free-board provided for all oil storage containers?  
"SPCC Plan"/40CFR112.7(a)(2)

YES \_\_\_\_\_ NO \_\_\_\_\_

**SPCC11.** If secondary containment is not provided has periodic integrity testing of containers and periodic

YES \_\_\_\_\_ NO \_\_\_\_\_

Revised January 2010

2



# *Metrics and Key Performance Indicators*

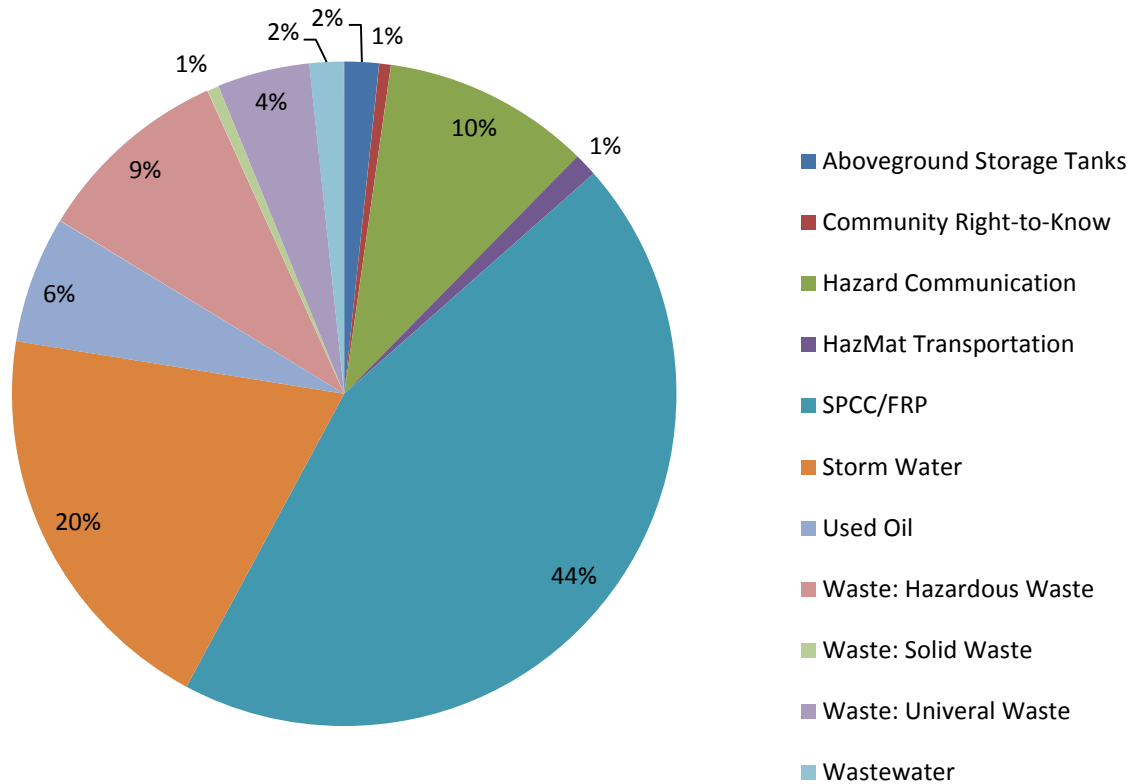
- Metrics need to be:
  - Timely
  - Performance-oriented
  - A driver for continual improvement
  - Graphical, easy to understand
  - Consistent and comparable over time
- KPIs:
  - Valuable metrics used to evaluate factors that are crucial to the success of an organization.



# *Metrics and Key Performance Indicators:*

## Graphical Example

**Mechanical Department Findings by Category**



# *What Questions Do You Have?*



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