Displaying 1 of 26 respondents

Jump To: 1 « Prev Next » Go » Collector: Response Type: Edit Response Delete Normal Response IEEE Substation Committee E2 Oil Containment Survey (Web Link) **Custom Value: IP Address:** 167.236.220.11 emply **Response Started: Response Modified:** Tuesday, March 15, 2011 10:28:25 AM Tuesday, March 15, 2011 10:34:38 AM Show this Page Only 1. What is the name of your Company? Waukesha Electric Systems 2. What is your Company's primary classification? Producer 3. How many sub/switching stations exist on your system? 2 4. At these stations, how many spill events have you had in the last 10 years? 0 5. Of these spills how many extended outside the property boundaries? 0 6. Who should we contact if any clarifications are required? Name - David L Harris Address - 400 S. Prairie Ave, Waukesha, WI 53186 Phone and Fax Number - tel: 262-521-0166. FAX: 262-521-0191

	Show this Page O
7. Of your fluid filled equipment approximately what percentage of equip following?	ment is filled with the
No Response	
8. Approximately what percent of the following sources are the cause of	your spills?
No Response	
9. For which of the following devices do you provide secondary oil contastructures to prevent discharged oil from exiting the station (e.g., berms drainage through oil/water separators, etc)? Also, please indicate the type MVA, etc, (examples: For transformers - 10 MVA and above, for Breakers type of equipment where your company deems the quantity of oil in the warrant secondary containment. If not used, this question is not applicate containment = a system designed to contain the oil discharged from an oin situations of primary oil-containment failure.	s, oil containment pits, pical breakpoint in voltage, s - 138 kV and above) for tha device high enough to ble. Note: secondary oil
No Response	
	Show this Page C
10. Which of the following criteria determines whether secondary contai substations. Please describe the criteria numerically in the third column from water, etc.)	nment is required at your
substations. Please describe the criteria numerically in the third column	nment is required at your
substations. Please describe the criteria numerically in the third column from water, etc.)	nment is required at your
substations. Please describe the criteria numerically in the third column from water, etc.)	nment is required at your (e.g., >1000 gals, ≤ 500 ft
substations. Please describe the criteria numerically in the third column from water, etc.) No Response 11. Which of the following secondary oil spill containment methods have	nment is required at your (e.g., >1000 gals, ≤ 500 ft
substations. Please describe the criteria numerically in the third column from water, etc.) No Response 11. Which of the following secondary oil spill containment methods have stations?	nment is required at your (e.g., >1000 gals, ≤ 500 ft
substations. Please describe the criteria numerically in the third column from water, etc.) No Response 11. Which of the following secondary oil spill containment methods have stations?	nment is required at your (e.g., >1000 gals, ≤ 500 ft
substations. Please describe the criteria numerically in the third column from water, etc.) No Response 11. Which of the following secondary oil spill containment methods have stations? No Response 12. If oil retention pits under large equipment such as transformers and	nment is required at your (e.g., >1000 gals, ≤ 500 ft
substations. Please describe the criteria numerically in the third column from water, etc.) No Response 11. Which of the following secondary oil spill containment methods have stations? No Response 12. If oil retention pits under large equipment such as transformers and are used:	nment is required at your (e.g., >1000 gals, ≤ 500 ft
substations. Please describe the criteria numerically in the third column from water, etc.) No Response 11. Which of the following secondary oil spill containment methods have stations? No Response 12. If oil retention pits under large equipment such as transformers and are used:	nment is required at your (e.g., >1000 gals, ≤ 500 ft been used in your oil filled circuit breakers

No Response	
	Show this Page Onl
15. Which of the following oil spill cleanup methods do you employ?	
No Response	

Displaying 2 of 26 respondents « Prev Next » Jump To: 2 Go » Collector: Response Type: Edit Response Delete Normal Response IEEE Substation Committee E2 Oil Containment Survey (Web Link) **Custom Value: IP Address:** 69.171.162.5 emply **Response Started: Response Modified:** Monday, March 21, 2011 6:58:04 AM Monday, March 21, 2011 7:08:30 AM Show this Page Only 1. What is the name of your Company? Burns & McDonnell 2. What is your Company's primary classification? General Interest 3. How many sub/switching stations exist on your system? client based 4. At these stations, how many spill events have you had in the last 10 years? 0 5. Of these spills how many extended outside the property boundaries? 0 6. Who should we contact if any clarifications are required? Name - Gary Engmann Address - Burns & McDonnell Phone and Fax Number - 8168224385

E-Mail - gengmann@burnsmcd.com	
	Show this Page Only
7. Of your fluid filled equipment approximately what percentage of equipment is fille following?	ed with the
Mineral Oil - 100	
Alternative Fluids - 0	
8. Approximately what percent of the following sources are the cause of your spills?	?
Equipment Failure - 100	
9. For which of the following devices do you provide secondary oil containment and structures to prevent discharged oil from exiting the station (e.g., berms, oil contain drainage through oil/water separators, etc)? Also, please indicate the typical breakp MVA, etc, (examples: For transformers - 10 MVA and above, for Breakers - 138 kV and type of equipment where your company deems the quantity of oil in the device high warrant secondary containment. If not used, this question is not applicable. Note: secontainment = a system designed to contain the oil discharged from an oil-filled pie in situations of primary oil-containment failure.	nment pits, point in voltage, ed above) for that enough to econdary oil
Power Transformers - yes	
Oil Circuit Breakers - no	
Shunt Reactors - yes	
Oil-Filled Cables (Including Terminal Stations) - no	
Three Phase Regulators - yes	
Single Phase Regulators - yes	
Mobile Transformers - yes	
Mobile Breakers - no	
Mobile Regulators - yes	
Mobile Substations - no	
Oil Filling/Transporting Equipment - no	
Station Service Transformers - no	
Potential Transformers - no	
Current Transformers - no	
Oil Circuit Reclosers - no	
Capacitor Banks - no	
Above Ground Oil Storage Tanks - NA	
Below Ground Oil Storage Tanks - NA	

10. Which of the following criteria determines whether secondary containment is required at your substations. Please describe the criteria numerically in the third column (e.g., >1000 gals, \leq 500 ft from water, etc.)

Laws and regulations - yes

11. Which of the following secondary oil spill containment methods have been used in your stations?

	New Installations	Effective	Retrofit Installations	Effectiv
Open Oil Retention Pit				
Fire Quenching & Oil Retention Pit				
Gravity Separator				
Oil-Water Separator				
Oil Trap				
Oil Absorbing Polymer Beads				
Perimeter or Equipment Berm				
Oil Detection-Triggered Sump Pump)			
Oil-Water Stop Valve				
Other (please describe)	X	X	X	X
Comments: Burns & McDonnell				
Comments: Burns & McDonnell 12. If oil retention pits under large of are used: No Response	equipment such as tra	ansformers	and oil filled circuit br	eakers
12. If oil retention pits under large are used:				
12. If oil retention pits under large of are used: No Response				
12. If oil retention pits under large of are used: No Response 13. Where an impervious material is	s used to line the pit,	what mate	rial is used? New Liner	Materials

Show this Page Only

No Response			

Displaying 3 of 26 respondents « Prev Next » Jump To: 3 Go » **Response Type:** Collector: Edit Response Delete Normal Response IEEE Substation Committee E2 Oil Containment Survey (Web Link) **IP Address: Custom Value:** 12.180.166.130 empty **Response Started: Response Modified:** Wednesday, March 23, 2011 12:53:22 PM Wednesday, March 23, 2011 12:54:05 PM Show this Page Only 1. What is the name of your Company? No Response 2. What is your Company's primary classification? Producer 3. How many sub/switching stations exist on your system? No Response 4. At these stations, how many spill events have you had in the last 10 years? No Response 5. Of these spills how many extended outside the property boundaries? No Response 6. Who should we contact if any clarifications are required? No Response

Show this Page Only

7. Of your fluid filled equipment approximately what percentage of equipment is filled with the

following?	
No Response	
8. Approximately what percent of the following sources are the cause of your spills?	
No Response	
9. For which of the following devices do you provide secondary oil containment and/or structures to prevent discharged oil from exiting the station (e.g., berms, oil containme drainage through oil/water separators, etc)? Also, please indicate the typical breakpoin MVA, etc, (examples: For transformers - 10 MVA and above, for Breakers - 138 kV and at type of equipment where your company deems the quantity of oil in the device high end warrant secondary containment. If not used, this question is not applicable. Note: second containment = a system designed to contain the oil discharged from an oil-filled piece of in situations of primary oil-containment failure.	nt pits, t in voltage, pove) for that ough to ndary oil
No Response	
	Show this Page
10. Which of the following criteria determines whether secondary containment is requir substations. Please describe the criteria numerically in the third column (e.g., >1000 gal from water, etc.)	
No Response	
11. Which of the following secondary oil spill containment methods have been used in y stations?	our our
No Response	
12. If oil retention pits under large equipment such as transformers and oil filled circuit are used:	breakers
	breakers
are used:	

15. Which of the following oil spill cleanup methods do you employ?

No Response

Addross DO BOY AT MANTIKECHA MICO 53197

Displaying 4 of 26 respondents		
« Prev Next » Jump To: 4 Go »		
Response Type: Normal Response	Collector: IEEE Substation Committee E2 Oil Containment Survey (Web Link)	Edit Response Delete
Custom Value:	IP Address:	
empty Startada	12.180.166.130	
Response Started: Thursday, March 24, 2011 5:18:32 AM	Response Modified: Thursday, May 26, 2011 9:02:27 AM	
		Show this Page Only
1. What is the name of your Company?		
American Transmission		
2. What is your Company's primary class	ification?	
User		
3. How many sub/switching stations exis	st on your system?	
approx 500		
4. At these stations, how many spill ever	nts have you had in the last 10 years?	
Based on spill records kept since 2005, Abeen less than 5 gallons (reporting thresh gallons most ranging from 25-100 gallons	old for WDNR) 21 spills have been grea	•
5. Of these spills how many extended or	utside the property boundaries?	
4		
6. Who should we contact if any clarifica	tions are required?	
Name - Nayo Parrett		

AUUIESS - FO DOA 41 WAUNESHA, WISC 33101
Phone and Fax Number - 262-506-6788 262-506-6939
E-Mail - nparrett@atcllc.com
Show this Page Only
7. Of your fluid filled equipment approximately what percentage of equipment is filled with the following?
Mineral Oil - 100
Alternative Fluids - 0
8. Approximately what percent of the following sources are the cause of your spills?
Equipment Failure - 100
9. For which of the following devices do you provide secondary oil containment and/or diversionary structures to prevent discharged oil from exiting the station (e.g., berms, oil containment pits, drainage through oil/water separators, etc)? Also, please indicate the typical breakpoint in voltage, MVA, etc, (examples: For transformers - 10 MVA and above, for Breakers - 138 kV and above) for that type of equipment where your company deems the quantity of oil in the device high enough to warrant secondary containment. If not used, this question is not applicable. Note: secondary oil containment = a system designed to contain the oil discharged from an oil-filled piece of equipment in situations of primary oil-containment failure.
Power Transformers - yes
Oil Circuit Breakers - no
Shunt Reactors - yes
Three Phase Regulators - n/a
Single Phase Regulators - n/a
Mobile Breakers - n/a
Mobile Regulators - n/a
Mobile Substations - n/a
Station Service Transformers - no
Potential Transformers - no
Current Transformers - no
Oil Circuit Reclosers - n/a
Capacitor Banks - no
Above Ground Oil Storage Tanks - yes

10. Which of the following criteria determines whether secondary containment is required at your substations. Please describe the criteria numerically in the third column (e.g., >1000 gals, \leq 500 ft from water, etc.)

Volume of oil in individual device - we look at transformers for engineered containment

Total volume of oil in substation - 1320 gallons

Proximity to navigable waters - yes with 200ft of navigatable waters

Location of substation (urban, rural, etc) - no

Potential contamination of groundwater - yes

Age of station or equipment - yes

Emergency response time if a spill occurs - yes

Failure probability of the equipment - yes

Soil characteristics at and near the station - yes

Laws and regulations - yes

Cost of containment vs. cost of cleanup - no

Software analysis - by consultant only

11. Which of the following secondary oil spill containment methods have been used in your stations?

	New Installations	Effective	Retrofit Installations	Effective
Open Oil Retention Pit	X			
Fire Quenching & Oil Retention Pit	X			
Gravity Separator				
Oil-Water Separator				
Oil Trap				
Oil Absorbing Polymer Beads	X			
Perimeter or Equipment Berm	X			
Oil Detection-Triggered Sump Pump				
Oil-Water Stop Valve				
Other (please describe)				
Comments:				

12. If oil retention pits under large equipment such as transformers and oil filled circuit breakers are used:

What percent of the tank's oil volume is the pit designed to retain? What reason or criteria is the selected percentage based on? -100%

Do you include rainwater and/or water from the fire protection systems in sizing of spill containments and if so how much? - yes plus 100 year 24 hour storm

For transformers, how far beyond the edge of the tank/radiators does the pit normally extend? - 10 foot skirt around equipment foundation

For oil filled breakers, how far beyond the edge of the tank does the pit normally extend? - n/a

Do you evaluate the soil characteristics to determine if the pit should be lined? - consultant considers

If yes, what soil characteristic criteria are used to determine if a lining is necessary? - up to consultant to decide

13. Where an impervious material is used to line the pit, what material is used? New Liner Materials:

	Used	New Designs	Retrofit Designs	Effective
Rubber Liner				
Plastic Liner				
Geomembrane Liner		X		
Spray-On Liner				
Clay (Bentonite)			X	
Concrete		X		
Others (please specify)				
Comments:				

14. Do you fill containment pits with crushed rock or stone for fire suppression? If yes, what values are typically used for the following:

Design depth below the rock/stone surface the level of oil will reach to ensure fire quenching will be successful? - not a consideration

Design void ratio for oil containment volume? - 40%

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15. Which of the following oil spill cleanup methods do you employ?

	Used	Effective
River Boom Deflector		
Straw Skimming		
Expanded Straw Skimming		
Lake Boom Deflector		
Cover with Sand	X	X

Berm Cleanup Dike on Sloped Ground		
Stone Vacuum Truck	X	
Soil Removal	X	X
Other (please describe)		
Comments: American Transmission		

Address - 1407W North Temple NTO 230

Phone and Fax Number - 801-220-4534

Displaying 5 of 26 respondents		
« Prev Next » Jump To: 5 Go »		
Response Type: Normal Response	Collector: IEEE Substation Committee E2 Oil Containment Survey (Web Link)	Edit Response Delete
Custom Value: empty	IP Address: 208.186.200.6	
Response Started: Monday, March 28, 2011 1:44:41 PM	Response Modified: Monday, March 28, 2011 1:47:30 PM	
		Show this Page Onl
		Show this Page Offi
1. What is the name of your Company?		
2. What is your Company's primary class User	sification?	
3. How many sub/switching stations exis	st on your system?	
1000+		
4. At these stations, how many spill eve	nts have you had in the last 10 years?	
Others keep track		
5. Of these spills how many extended o	utside the property boundaries?	
Others keep track		
6. Who should we contact if any clarifica	ations are required?	
Name - Scott Greenberg		

E-Mail - Scott.Greenberg@PacifiCorp.com	
	Show this Page Onl
7. Of your fluid filled equipment approximately what percentage of equipment is fille following?	ed with the
No Response	
8. Approximately what percent of the following sources are the cause of your spills	?
No Response	
9. For which of the following devices do you provide secondary oil containment and structures to prevent discharged oil from exiting the station (e.g., berms, oil contain drainage through oil/water separators, etc)? Also, please indicate the typical break MVA, etc, (examples: For transformers - 10 MVA and above, for Breakers - 138 kV ar type of equipment where your company deems the quantity of oil in the device high warrant secondary containment. If not used, this question is not applicable. Note: s containment = a system designed to contain the oil discharged from an oil-filled pie in situations of primary oil-containment failure.	inment pits, point in voltage, nd above) for that n enough to econdary oil
No Response	
	Show this Page On
10. Which of the following criteria determines whether secondary containment is resubstations. Please describe the criteria numerically in the third column (e.g., >100 from water, etc.)	
No Response	
11. Which of the following secondary oil spill containment methods have been used stations?	d in your
No Response	
12. If oil retention pits under large equipment such as transformers and oil filled cir are used:	rcuit breakers
No Response	
13. Where an impervious material is used to line the pit, what material is used? Nev	v Liner Materials:

No Response	
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15. Which of the following oil spill cleanup methods do you employ?	
No Response	

Displaying	6 of	26	respondents

-1 - 7 3 -			
« Prev Next »	Jump To:	6	Go »

Response Type: Collector:
Normal Response IEEE Subst

IEEE Substation Committee E2 Oil

Containment Survey

(Web Link)

Custom Value: IP Address: empty 204.126.92.108

Response Started: Response Modified:

Wednesday, March 30, 2011 2:07:18 PM Wednesday, March 30, 2011 2:16:01 PM

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Edit Response

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1. What is the name of your Company?	
Wisconsin Public Service	
O Mile et in very Common de mineral electification 2	
2. What is your Company's primary classification?	
User	
3. How many sub/switching stations exist on your system?	
5. How many sub/switching stations exist on your system?	
203	
4. At these stations, how many spill events have you had in the last 10 years?	
1-2	
5. Of these spills how many extended outside the property boundaries?	
0	
6. Who should we contact if any clarifications are required?	
o. Who should we contact if any clarifications are required:	
Name - Don Wengerter	
Address - 700 North Adams Green Bay WI 54307	
Phone and Fax Number - 920-433-1706 920-433-1009	
F-Mail - dewengerter@wisconsinnublicservice.com	

Show this Page Only

7.	Of your fluid filled equipment approximately what percentage of equipment is filled w	vith the
fol	llowing?	

Mineral Oil - 100

8. Approximately what percent of the following sources are the cause of your spills?

Equipment Failure - 90

Human Error - 10

9. For which of the following devices do you provide secondary oil containment and/or diversionary structures to prevent discharged oil from exiting the station (e.g., berms, oil containment pits, drainage through oil/water separators, etc)? Also, please indicate the typical breakpoint in voltage, MVA, etc, (examples: For transformers - 10 MVA and above, for Breakers - 138 kV and above) for that type of equipment where your company deems the quantity of oil in the device high enough to warrant secondary containment. If not used, this question is not applicable. Note: secondary oil containment = a system designed to contain the oil discharged from an oil-filled piece of equipment in situations of primary oil-containment failure.

Power Transformers - yes- Hish risk sites such as hydro generators on case by case

Oil Circuit Breakers - no

Shunt Reactors - no

Oil-Filled Cables (Including Terminal Stations) - no

Three Phase Regulators - no

Single Phase Regulators - no

Mobile Transformers - no

Mobile Breakers - no

Mobile Regulators - no

Mobile Substations - no

Oil Filling/Transporting Equipment - no

Station Service Transformers - no

Potential Transformers - no

Current Transformers - no

Oil Circuit Reclosers - no

Capacitor Banks - no

Above Ground Oil Storage Tanks - yes

Below Ground Oil Storage Tanks - no

10. Which of the following criteria determines whether secondary containment is required at your substations. Please describe the criteria numerically in the third column (e.g., >1000 gals, ≤ 500 ft from water, etc.)

Proximity to navigable waters - mangement decision

Emergency response time if a spill occurs - one site 4 hours from service territory (wind farm)

11. Which of the following secondary oil spill containment methods have been used in your stations?

	New Installations	Effective	Retrofit Installations	Effective
Open Oil Retention Pit	X	X		
Fire Quenching & Oil Retention Pit				
Gravity Separator				
Oil-Water Separator				
Oil Trap				
Oil Absorbing Polymer Beads			X	X
Perimeter or Equipment Berm			X	X
Oil Detection-Triggered Sump Pump				
Oil-Water Stop Valve				
Other (please describe)	X	X		
Comments: Wisconsin Public Service				

12. If oil retention pits under large equipment such as transformers and oil filled circuit breakers are used:

What percent of the tank's oil volume is the pit designed to retain? What reason or criteria is the selected percentage based on? -110

Do you include rainwater and/or water from the fire protection systems in sizing of spill containments and if so how much? - yes- 25 year rain event

For transformers, how far beyond the edge of the tank/radiators does the pit normally extend? - depends on volume required and site. Not designing for a spray from a puncture

Do you evaluate the soil characteristics to determine if the pit should be lined? - yes

If yes, what soil characteristic criteria are used to determine if a lining is necessary? - always line

13. Where an impervious material is used to line the pit, what material is used? New Liner Materials:

Used	New Designs	Retrofit Designs	Effective
	•	_	

Rubber Liner Plastic Liner				
Geomembrane Liner		X	X	X
Spray-On Liner				
Clay (Bentonite)	X			
Concrete		X		
Others (please specify)				
Comments:				

14. Do you fill containment pits with crushed rock or stone for fire suppression? If yes, what values are typically used for the following:

Design depth below the rock/stone surface the level of oil will reach to ensure fire quenching will be successful? - not sure. Pits are allowed to fil most of the way

Design void ratio for oil containment volume? - 40% void

Show this Page Only

15. Which of the following oil spill cleanup methods do you employ?

	Used	Effective	
River Boom Deflector	X	Х	
Straw Skimming			
Expanded Straw Skimming			
Lake Boom Deflector			
Cover with Sand	X	X	
Berm Cleanup	X	X	
Dike on Sloped Ground	X	Х	
Stone Vacuum Truck	X	Х	
Soil Removal	X	Х	
Other (please describe)			
Comments:			

Displaying 7 of 26 respondents Review Next Jump To: 7 7 7 7 7 7 7 7 7	Go »		
camp re.			
Response Type: Normal Response	Collector: IEEE Substation Committee E2 Oil Containment Survey (Web Link)	Edit Response	Delete
Custom Value: empty	IP Address: 4.79.200.34		
Response Started: Monday, April 4, 2011 7:50:48 AM	Response Modified: Thursday, November 10, 2011 11:33:48 AM		
		Ol di	B 0 1
		Show this	Page On
1. What is the name of your Compan	ny?		
Progress Energy			
2. What is your Company's primary c	classification?		
User			
3. How many sub/switching stations	exist on your system?		
approximately 500			
4. At these stations, how many spill	events have you had in the last 10 years?		
5 or so. I'm going on memory and do	n't have the data available.		
5. Of these spills how many extende	ed outside the property boundaries?		
0			
C Miles alequid was south at it and	vifications are resulted 10		
6. Who should we contact if any clar	rincations are required?		
Name - Robert Holsonback			

Address - 299 First Avenue North, St. Petersburg, FL 33701

Phone and Fax Number - (727) 820-5274

E-Mail - robert.holsonback@pgnmail.com	
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7. Of your fluid filled equipment approximately what percentage of equipment is fille following?	ed with the
No Response	
8. Approximately what percent of the following sources are the cause of your spills	?
No Response	
9. For which of the following devices do you provide secondary oil containment and structures to prevent discharged oil from exiting the station (e.g., berms, oil contain drainage through oil/water separators, etc)? Also, please indicate the typical break MVA, etc, (examples: For transformers - 10 MVA and above, for Breakers - 138 kV are type of equipment where your company deems the quantity of oil in the device high warrant secondary containment. If not used, this question is not applicable. Note: secontainment = a system designed to contain the oil discharged from an oil-filled pied in situations of primary oil-containment failure.	inment pits, point in voltage, nd above) for that n enough to econdary oil
No Response	
10. Which of the following criteria determines whether secondary containment is re substations. Please describe the criteria numerically in the third column (e.g., >100 from water, etc.)	
No Response	
11. Which of the following secondary oil spill containment methods have been used stations?	d in your
No Response	
12. If oil retention pits under large equipment such as transformers and oil filled cir are used:	rcuit breakers
No Response	
13. Where an impervious material is used to line the pit, what material is used? New	v Liner Materials
No Response	

No Response	
	Show this Page Onl
15. Which of the following oil spill cleanup methods do you employ?	
No Response	

Address - 27175 Energy Way, Novi, MI 48377

Displaying 8 of 26 respondents		
« Prev Next » Jump To: 8 Go »		
Response Type: Normal Response	Collector: IEEE Substation Committee E2 Oil Containment Survey (Web Link)	Edit Response Delete
Custom Value: empty	IP Address: 12.106.168.131	
Response Started: Monday, April 4, 2011 12:16:07 PM	Response Modified: Monday, April 4, 2011 12:58:59 PM	
		Show this Page Only
1. What is the name of your Company?		
ITC Holdings Corp		
2. What is your Company's primary class User	ification?	
3. How many sub/switching stations exis	st on your system?	
500-600		
4. At these stations, how many spill eve	nts have you had in the last 10 years?	
approximately 100, most minor in nature		
5. Of these spills how many extended o	utside the property boundaries?	
None; a couple have made their way to the property.	ne permiter drainage ditch which was sti	ll on our actual
6. Who should we contact if any clarifica	ations are required?	
Name - Mike McNulty		

E-Mail - mmcnulty@itctransco.com

Show this Page Only

7. Of your fluid filled equipment approximately what percentage of equipment is filled with the following?

Mineral Oil - 99

Alternative Fluids - 1

8. Approximately what percent of the following sources are the cause of your spills?

Equipment Failure - 80

Vandalism - 0

Human Error - 20

Other (Please explain in comments at end of survey) - 0

9. For which of the following devices do you provide secondary oil containment and/or diversionary structures to prevent discharged oil from exiting the station (e.g., berms, oil containment pits, drainage through oil/water separators, etc)? Also, please indicate the typical breakpoint in voltage, MVA, etc, (examples: For transformers - 10 MVA and above, for Breakers - 138 kV and above) for that type of equipment where your company deems the quantity of oil in the device high enough to warrant secondary containment. If not used, this question is not applicable. Note: secondary oil containment = a system designed to contain the oil discharged from an oil-filled piece of equipment in situations of primary oil-containment failure.

Power Transformers - We provide containment for all power transformers (we operate 34.5 kV and above; most is 69 kV -345 kV)

Oil Circuit Breakers - We retro-fit containment around OCBs where they are next to underdrains, adjacent to fencelines, etc. Otherwise, we relay on may if containment does not already exist

Shunt Reactors - Yes - all oil-filled reactors

Oil-Filled Cables (Including Terminal Stations) - No containment on cables themesleves, but we do procide secondary containment on pumping stations

Three Phase Regulators - N/A

Single Phase Regulators - N/A

Mobile Transformers - N/A

Mobile Breakers - N/A

Mobile Regulators - N/A

Mobile Substations - N/A

Oil Filling/Transporting Equipment - No containment provided on processing trailer or for hoses; but do stage frac tanks/tankmers inside mobile containment

Station Service Transformers - Very rarely

Cianon Control manoremier very rarely

Potential Transformers - Rarely, but we may provide drainage controls if underdrains are adjacent to PTs

Current Transformers - Rarely, but we will provide drainage controls if underdrains are adjacent to CTs

Oil Circuit Reclosers - N/A

Capacitor Banks - No containment provided

Above Ground Oil Storage Tanks - Yes - all ASTs are equipped with containment and/or are double-walled

Below Ground Oil Storage Tanks - Yes, all USTs have double-walled.

Other (Please Describe) - N/A

Show this Page Only

10. Which of the following criteria determines whether secondary containment is required at your substations. Please describe the criteria numerically in the third column (e.g., >1000 gals, \leq 500 ft from water, etc.)

Volume of oil in individual device - Yes but no definitive threshold defined

Total volume of oil in substation - No

Proximity to navigable waters - Yes but no definitive distance defined

Location of substation (urban, rural, etc) - Yes - proxmitty to sensitive environmental receptors

Potential contamination of groundwater - Yes

Age of station or equipment - No

Emergency response time if a spill occurs - Yes

Failure probability of the equipment - Yes - primarily power transformers versus OCBs and other oilfilled equipment

Soil characteristics at and near the station - Yes

Laws and regulations - Yes

Cost of containment vs. cost of cleanup - No

Software analysis - No

11. Which of the following secondary oil spill containment methods have been used in your stations?

	New Installations	Effective	Retrofit Installations	Effective
Open Oil Retention Pit	X	X		
Fire Quenching & Oil Retention Pit	X	X	X	X
Gravity Separator				
Oil-Water Separator	X			
Oil Tran	Y			

Οιι τιαρ	^			
Oil Absorbing Polymer Beads	X	X	X	
Perimeter or Equipment Berm				
Oil Detection-Triggered Sump Pump	X	X	X	X
Oil-Water Stop Valve			X	
Other (please describe)				
Comments: ITC Holdings Corp				

12. If oil retention pits under large equipment such as transformers and oil filled circuit breakers are used:

What percent of the tank's oil volume is the pit designed to retain? What reason or criteria is the selected percentage based on? -110% on average (rule of thum criteria we have used as substitute for 25 year 24-hr storm)

Do you include rainwater and/or water from the fire protection systems in sizing of spill containments and if so how much? - Yes - see above

For transformers, how far beyond the edge of the tank/radiators does the pit normally extend? - For new installs, at least 10 -15 feet

For oil filled breakers, how far beyond the edge of the tank does the pit normally extend? - 4-5 feet

Do you evaluate the soil characteristics to determine if the pit should be lined? - Yes

If yes, what soil characteristic criteria are used to determine if a lining is necessary? - Effectively impervious clays (10^-3 cm/s hydraulic conductivity)

13. Where an impervious material is used to line the pit, what material is used? New Liner Materials:

	Used	New Designs	Retrofit Designs	Effective
Rubber Liner				
Plastic Liner				
Geomembrane Liner				
Spray-On Liner	Х	X	X	X
Clay (Bentonite)	Х		X	X
Concrete	Х	X		Х
Others (please specify)	Х			
Comments: ITC Holdings C	orp			

14. Do you fill containment pits with crushed rock or stone for fire suppression? If yes, what values are typically used for the following:

Design void ratio for oil containment volume? - 30-40%

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15. Which of the following oil spill cleanup methods do you employ?

	Used	Effective
River Boom Deflector	Х	Х
Straw Skimming		
Expanded Straw Skimming		
Lake Boom Deflector		
Cover with Sand		
Berm Cleanup		
Dike on Sloped Ground		
Stone Vacuum Truck	X	Х
Soil Removal	Х	Х
Other (please describe)		
Comments: ITC Holdings Corp		

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Jump To: 9 « Prev Next » Go » Collector: Response Type: Edit Response Delete Normal Response IEEE Substation Committee E2 Oil Containment Survey (Web Link) **Custom Value: IP Address:** 70.162.147.2 emply **Response Started: Response Modified:** Monday, April 18, 2011 3:55:34 PM Monday, April 18, 2011 4:13:12 PM Show this Page Only 1. What is the name of your Company? Salt River Project 2. What is your Company's primary classification? User 3. How many sub/switching stations exist on your system? ~200 4. At these stations, how many spill events have you had in the last 10 years? 2 5. Of these spills how many extended outside the property boundaries? 1 6. Who should we contact if any clarifications are required? Name - Thomas LaRose, P.E. Address - 998 W Washington, Phoenix, AZ 85281 Phone and Fax Number - v: 602-236-3741 f: 602-681-2733

E-Mail - Tom.LaRose@srpnet.com	
	Show this Page On
7. Of your fluid filled equipment approximately what percentage of equip following?	ment is filled with the
Mineral Oil - 99	
Alternative Fluids - 1	
8. Approximately what percent of the following sources are the cause of	your spills?
Equipment Failure - 100	
Vandalism - 0	
Human Error - 0	
Other (Please explain in comments at end of survey) - 0	
containment = a system designed to contain the oil discharged from an o in situations of primary oil-containment failure. Power Transformers - 10 MVA and above	m-med piece of equipment
Oil Circuit Breakers - none	
Shunt Reactors - all	
Oil-Filled Cables (Including Terminal Stations) - n/a	
Three Phase Regulators - n/a	
Single Phase Regulators - n/a	
Mobile Transformers - none	
Mobile Breakers - n/a	
Mobile Regulators - n/a	
Mobile Substations - none	
Oil Filling/Transporting Equipment - none	
Station Service Transformers - 1 MVA	
Potential Transformers - only if positioned in water retention areas	
Current Transformers - none	
Oil Circuit Reclosers - n/a	

Capacitor Banks - none
Above Ground Oil Storage Tanks - all
Below Ground Oil Storage Tanks - n/a
Other (Please Describe) - n/a

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10. Which of the following criteria determines whether secondary containment is required at your substations. Please describe the criteria numerically in the third column (e.g., >1000 gals, ≤ 500 ft from water, etc.)

Volume of oil in individual device - >500 gal.

Proximity to navigable waters - drainage to water

Location of substation (urban, rural, etc) - all

Potential contamination of groundwater - all

Age of station or equipment - any

Emergency response time if a spill occurs - all

Failure probability of the equipment - all

Soil characteristics at and near the station - determines if a lined pit is used

Laws and regulations - n/a

Cost of containment vs. cost of cleanup - n/a

Software analysis - n/a

Comments:

11. Which of the following secondary oil spill containment methods have been used in your stations?

	New Installations	Effective	Retrofit Installations	Effective
Open Oil Retention Pit			X	
Fire Quenching & Oil Retention Pit	X	X	X	X
Gravity Separator				
Oil-Water Separator				
Oil Trap				
Oil Absorbing Polymer Beads				
Perimeter or Equipment Berm				
Oil Detection-Triggered Sump Pump				
Oil-Water Stop Valve				
Other (please describe)				

12. If oil retention pits under large equipment such as transformers and oil filled circuit breakers are used:

What percent of the tank's oil volume is the pit designed to retain? What reason or criteria is the selected percentage based on? -150% for new installations, oil plus rain runoff

Do you include rainwater and/or water from the fire protection systems in sizing of spill containments and if so how much? - 50% freeboard

For transformers, how far beyond the edge of the tank/radiators does the pit normally extend? - minimum half the height of the oil tank

For oil filled breakers, how far beyond the edge of the tank does the pit normally extend? - n/a

Do you evaluate the soil characteristics to determine if the pit should be lined? - yes

If yes, what soil characteristic criteria are used to determine if a lining is necessary? - percolation rates (specific value not available at this time)

13. Where an impervious material is used to line the pit, what material is used? New Liner Materials:

	Used	New Designs	Retrofit Designs	Effective
Rubber Liner				
Plastic Liner				
Geomembrane Liner	X	X		
Spray-On Liner				
Clay (Bentonite)				
Concrete	X	X	X	
Others (please specify)				
Comments: Salt River Project				

14. Do you fill containment pits with crushed rock or stone for fire suppression? If yes, what values are typically used for the following:

Design depth below the rock/stone surface the level of oil will reach to ensure fire quenching will be successful? - 6"

Design void ratio for oil containment volume? - depends on the rock size, for 1" river rock ,30% void is used.

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15. Which of the following oil spill cleanup methods do you employ?

Use	∍d	Effective

River Boom Deflector		
Straw Skimming		
Expanded Straw Skimming		
Lake Boom Deflector		
Cover with Sand		
Berm Cleanup		
Dike on Sloped Ground		
Stone Vacuum Truck		
Soil Removal	X	X
Other (please describe)		
Comments:		

Displaying 10 of 26 respondents « Prev Next » Jump To: 10 Go » Collector: Response Type: Edit Response Delete Normal Response IEEE Substation Committee E2 Oil Containment Survey (Web Link) **Custom Value: IP Address:** 204.124.193.191 emply **Response Started: Response Modified:** Thursday, April 28, 2011 12:29:30 PM Thursday, April 28, 2011 3:04:00 PM Show this Page Only 1. What is the name of your Company? MidAmerican Energy Company 2. What is your Company's primary classification? User 3. How many sub/switching stations exist on your system? 400 4. At these stations, how many spill events have you had in the last 10 years? 3 5. Of these spills how many extended outside the property boundaries? None 6. Who should we contact if any clarifications are required? Name - Steve Haacke Address - 102 E. Second Street, Davenport, IA 52801

Phone and Fax Number - 563-333-8388. 563-333-8112

E-Mail - slhaacke@midamerican.com	
	Show this Page On
7. Of your fluid filled equipment approximately what percentage of equip following?	ment is filled with the
Mineral Oil - 100	
Alternative Fluids - 0	
8. Approximately what percent of the following sources are the cause of	your spills?
Equipment Failure - 100	
9. For which of the following devices do you provide secondary oil contastructures to prevent discharged oil from exiting the station (e.g., berms drainage through oil/water separators, etc)? Also, please indicate the typ MVA, etc, (examples: For transformers - 10 MVA and above, for Breakers type of equipment where your company deems the quantity of oil in the dwarrant secondary containment. If not used, this question is not applicabe containment = a system designed to contain the oil discharged from an oin situations of primary oil-containment failure.	s, oil containment pits, pical breakpoint in voltage, - 138 kV and above) for that device high enough to ple. Note: secondary oil
Power Transformers - Yes, all power transformers	
Oil Circuit Breakers - Yes, 69 kV and higher voltages	
Shunt Reactors - Yes, all	
Oil-Filled Cables (Including Terminal Stations) - No	
Three Phase Regulators - Yes, all	
Single Phase Regulators - Yes, all	
Mobile Transformers - NA	
Mobile Breakers - NA	
Mobile Regulators - Yes, all	
Mobile Substations - Yes, all	
Oil Filling/Transporting Equipment - Yes, all	
Station Service Transformers - No	
Potential Transformers - No	
Current Transformers - No	
Oil Circuit Reclosers - No	
Capacitor Banks - No	
Above Ground Oil Storage Tanks - Yes	
Below Ground Oil Storage Tanks - NA	

10. Which of the following criteria determines whether secondary containment is required at your substations. Please describe the criteria numerically in the third column (e.g., >1000 gals, \leq 500 ft from water, etc.)

Volume of oil in individual device - >55 gal but depends on location within sub

Total volume of oil in substation - >1320 gal

Proximity to navigable waters - Yes

Proximity to havigable waters - res

Location of substation (urban, rural, etc) - No

Potential contamination of groundwater - Yes

Age of station or equipment - No

Emergency response time if a spill occurs - No

Failure probability of the equipment - No

Soil characteristics at and near the station - No

Laws and regulations - Yes

Cost of containment vs. cost of cleanup - No

Software analysis - No

11. Which of the following secondary oil spill containment methods have been used in your stations?

	New Installations	Effective	Retrofit Installations	Effective
Open Oil Retention Pit				
Fire Quenching & Oil Retention Pit	X	X	X	X
Gravity Separator				
Oil-Water Separator				
Oil Trap				
Oil Absorbing Polymer Beads				
Perimeter or Equipment Berm			X	X
Oil Detection-Triggered Sump Pump				
Oil-Water Stop Valve				
Other (please describe)				
Comments:				

12. If oil retention pits under large equipment such as transformers and oil filled circuit breakers are used:

What percent of the tank's oil volume is the pit designed to retain? What reason or criteria is the

selected percentage based on? -100% plus 6" for rain water allowance

Do you include rainwater and/or water from the fire protection systems in sizing of spill containments and if so how much? - Yes, see above

For transformers, how far beyond the edge of the tank/radiators does the pit normally extend? - Varies, at least 2 feet

For oil filled breakers, how far beyond the edge of the tank does the pit normally extend? - Varies, at least 2 feet

Do you evaluate the soil characteristics to determine if the pit should be lined? - No, all pits are lined

13. Where an impervious material is used to line the pit, what material is used? New Liner Materials:

	Used	New Designs	Retrofit Designs	Effective
Rubber Liner				
Plastic Liner				
Geomembrane Liner	Х	X	X	Х
Spray-On Liner				
Clay (Bentonite)				
Concrete	Х			Х
Others (please specify)				
Comments:				

14. Do you fill containment pits with crushed rock or stone for fire suppression? If yes, what values are typically used for the following:

Design depth below the rock/stone surface the level of oil will reach to ensure fire quenching will be successful? - Varies

Design void ratio for oil containment volume? - 40%

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15. Which of the following oil spill cleanup methods do you employ?

	Used	Effective
River Boom Deflector		
Straw Skimming		
Expanded Straw Skimming		
Lake Boom Deflector		
Cover with Sand		

Berm Cleanup Dike on Sloped Ground		
Stone Vacuum Truck		
Soil Removal	X	X
Other (please describe)	X	Х
Comments: MidAmerican Energy Company		

Displaying 11 of 26 respondents

Phone and Fax Number - 919-807-5086

« Prev Next » Jump To: 11 Go » Collector: Response Type: Edit Response Delete Normal Response IEEE Substation Committee E2 Oil Containment Survey (Web Link) **Custom Value: IP Address:** 138.226.68.8 emply **Response Started: Response Modified:** Thursday, May 12, 2011 12:43:29 PM Thursday, May 12, 2011 1:42:38 PM Show this Page Only 1. What is the name of your Company? ABB Power Systems 2. What is your Company's primary classification? Producer 3. How many sub/switching stations exist on your system? We deliver approx. 10 to 15 turnkey sub/switching station projects a year to various customers. 4. At these stations, how many spill events have you had in the last 10 years? none 5. Of these spills how many extended outside the property boundaries? none 6. Who should we contact if any clarifications are required? Name - Paason Rojanatavorn Address - 940 Main Campus Drive, Suite 400, Raleigh NC 27612

E-Mail - paason.rojanatavorn@us.abb.com	
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	Chow this rage of
7. Of your fluid filled equipment approximately what percentage of equipment if following?	s filled with the
No Response	
8. Approximately what percent of the following sources are the cause of your s	pills?
No Response	
9. For which of the following devices do you provide secondary oil containment structures to prevent discharged oil from exiting the station (e.g., berms, oil containage through oil/water separators, etc)? Also, please indicate the typical be MVA, etc, (examples: For transformers - 10 MVA and above, for Breakers - 138 type of equipment where your company deems the quantity of oil in the device warrant secondary containment. If not used, this question is not applicable. No containment = a system designed to contain the oil discharged from an oil-fille in situations of primary oil-containment failure.	ontainment pits, reakpoint in voltage, kV and above) for that high enough to te: secondary oil
No Response	
10. Which of the following criteria determines whether secondary containment substations. Please describe the criteria numerically in the third column (e.g., from water, etc.)	
No Response	
11. Which of the following secondary oil spill containment methods have been	used in your
stations?	
No Response	
12. If oil retention pits under large equipment such as transformers and oil fille are used:	ed circuit breakers
No Response	
13. Where an impervious material is used to line the pit, what material is used?	New Liner Materials:
No Response	
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No Response	
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15. Which of the following oil spill cleanup methods do you employ?	
No Response	

Displaying 12 of 26 respondents « Prev Next » Jump To: 12 Go » Collector: Response Type: Edit Response Delete Normal Response IEEE Substation Committee E2 Oil Containment Survey (Web Link) **Custom Value: IP Address:** 206.227.160.13 emply **Response Started: Response Modified:** Friday, May 20, 2011 6:30:48 AM Monday, June 6, 2011 12:04:46 PM Show this Page Only 1. What is the name of your Company? Oncor Electric Delivery Company 2. What is your Company's primary classification? User 3. How many sub/switching stations exist on your system? 1700 4. At these stations, how many spill events have you had in the last 10 years? 463 5. Of these spills how many extended outside the property boundaries? 8 4 of these are underground transmission related 6. Who should we contact if any clarifications are required? Name - Thomas Yamin

Phone and Fax Number - 817-876-8432. FAX 817-215-6959

Address - 115 W. Seventh Street, Fort Worth, TX 76102

E-Mail - Thomas.Yamin@oncor.com	
	Show this Page Only
7. Of your fluid filled equipment approximately what percentage of equipment is fille following?	ed with the
Mineral Oil - 99	
Alternative Fluids - 1	
8. Approximately what percent of the following sources are the cause of your spills:	?
Equipment Failure - 95	
Vandalism - 3	
Human Error - 2	
Other (Please explain in comments at end of survey) - 0	
9. For which of the following devices do you provide secondary oil containment and structures to prevent discharged oil from exiting the station (e.g., berms, oil containment and drainage through oil/water separators, etc)? Also, please indicate the typical break MVA, etc, (examples: For transformers - 10 MVA and above, for Breakers - 138 kV are type of equipment where your company deems the quantity of oil in the device high warrant secondary containment. If not used, this question is not applicable. Note: secontainment = a system designed to contain the oil discharged from an oil-filled pie in situations of primary oil-containment failure.	nment pits, point in voltage, ad above) for that enough to econdary oil
Power Transformers - 69 kV or greater, 50 gallons or more of oil	
Oil Circuit Breakers - 138 kV or greater, 50 gallons or more of oil	
Shunt Reactors - 100 MVA or greater, 50 gallons or more of oil	
Oil-FIlled Cables (Including Terminal Stations) - 138 kV or greater	
Mobile Transformers - 69 kV or greater, 50 gallons or more of oil	
Oil Filling/Transporting Equipment - 69 kV or greater, 50 gallons or more of oil	
10. Which of the following criteria determines whether secondary containment is re substations. Please describe the criteria numerically in the third column (e.g., >1000 from water, etc.)	
Volume of oil in individual device - Greater than 50 gallons.	
Proximity to navigable waters - Less than 1000 feet	
Location of substation (urban, rural, etc) - Less than 1000 feet	
Potential contamination of groundwater - Yes	

.....

Age of station or equipment - No	
Emergency response time if a spill occurs - Yes	
Failure probability of the equipment - No	
Soil characteristics at and near the station - No	
Laws and regulations - Yes	
Cost of containment vs. cost of cleanup - Yes	
Software analysis - In some substations	

11. Which of the following secondary oil spill containment methods have been used in your stations?

ı	New Installations	Effective	Retrofit Installations	Effective
Open Oil Retention Pit	Х	X		
Fire Quenching & Oil Retention Pit				
Gravity Separator				
Oil-Water Separator	X	X	X	X
Oil Trap				
Oil Absorbing Polymer Beads	X	Х	X	X
Perimeter or Equipment Berm	Х	Х	X	X
Oil Detection-Triggered Sump Pump				
Oil-Water Stop Valve				
Other (please describe)				
Comments: Oncor Electric Delivery Co	mpany			

12. If oil retention pits under large equipment such as transformers and oil filled circuit breakers are used:

What percent of the tank's oil volume is the pit designed to retain? What reason or criteria is the selected percentage based on? -Unknown, these are old designs

13. Where an impervious material is used to line the pit, what material is used? New Liner Materials:

	Used	New Designs	Retrofit Designs	Effective
Rubber Liner				
Plastic Liner				
Geomembrane Liner				
Spray-On Liner				

Clay (Bentonite)				
Concrete				
Others (please specify)	X	X	X	X
Comments: Oncor Electric D	elivery Compan	у		

14. Do you fill containment pits with crushed rock or stone for fire suppression? If yes, what values are typically used for the following:

Design depth below the rock/stone surface the level of oil will reach to ensure fire quenching will be successful? - 2" depth of 1" diameter rock, not designed for supprestion

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15. Which of the following oil spill cleanup methods do you employ?

	Used	Effective
River Boom Deflector		
Straw Skimming		
Expanded Straw Skimming		
Lake Boom Deflector		
Cover with Sand		
Berm Cleanup		
Dike on Sloped Ground		
Stone Vacuum Truck		
Soil Removal	X	X
Other (please describe)		
Comments: Oncor Electric Delivery Company		

Phone and Fax Number - 313.235.6524

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« Prev Next » Jump To: 13 Go »		
Response Type: Normal Response	Collector: IEEE Substation Committee E2 Oil Containment Survey (Web Link)	Edit Response Delete
Custom Value: empty	IP Address: 63.77.247.10	
Response Started: Friday, October 14, 2011 5:40:16 AM	Response Modified: Monday, March 5, 2012 7:43:12 AM	
		Show this Page Onl
1. What is the name of your Company?		
DTE Energy		
2. What is your Company's primary class	sification?	
Producer		
3. How many sub/switching stations exis	st on your system?	
Approx 750		
4. At these stations, how many spill eve	nts have you had in the last 10 years?	
Approx 50		
5. Of these spills how many extended o	utside the property boundaries?	
Approx 10		
6. Who should we contact if any clarifica	ations are required?	
Name - Jim Rachwal		
Address - One Energy Plaza, 655 GO		

E-Mail - rachwalj@dteenergy.com	
	Show this Page Only
7. Of your fluid filled equipment approximately what percentage of equipment is fille following?	d with the
Mineral Oil - 95	
Alternative Fluids - 5	
8. Approximately what percent of the following sources are the cause of your spills?)
Equipment Failure - 50	
Vandalism - 2	
Human Error - 3	
Other (Please explain in comments at end of survey) - 45	
MVA, etc, (examples: For transformers - 10 MVA and above, for Breakers - 138 kV an type of equipment where your company deems the quantity of oil in the device high warrant secondary containment. If not used, this question is not applicable. Note: secontainment = a system designed to contain the oil discharged from an oil-filled pied in situations of primary oil-containment failure. Power Transformers - Approx 80%	enough to econdary oil
Mobile Substations - 100%	
Station Service Transformers - 30%	
Above Ground Oil Storage Tanks - 100%	
Below Ground Oil Storage Tanks - 60%	
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10. Which of the following criteria determines whether secondary containment is resubstations. Please describe the criteria numerically in the third column (e.g., >1000 from water, etc.)	
Total volume of oil in substation - 1320	
Proximity to navigable waters - Impact to	
Location of substation (urban, rural, etc) - Impact to Nav Water	
Potential contamination of groundwater - Impact to Nav Water	
Emergency response time if a spill occurs - Impact to Nav Water	

Failure probability of the equipment - Impact to Nav Water

Soil characteristics at and near the station - Impact to Nav Water

Laws and regulations - Impact to Nav Water

Software analysis - Use MOSES

11. Which of the following secondary oil spill containment methods have been used in your stations?

	New Installations	Effective Retrofit Installations	Effective
Open Oil Retention Pit			
Fire Quenching & Oil Retention Pit			
Gravity Separator	X	X	
Oil-Water Separator	X	X	
Oil Trap			
Oil Absorbing Polymer Beads	X	X	
Perimeter or Equipment Berm	X	X	
Oil Detection-Triggered Sump Pump	X	X	
Oil-Water Stop Valve	X	Х	
Other (please describe)			
Comments:			

12. If oil retention pits under large equipment such as transformers and oil filled circuit breakers are used:

What percent of the tank's oil volume is the pit designed to retain? What reason or criteria is the selected percentage based on? -110% + Freeboard

Do you include rainwater and/or water from the fire protection systems in sizing of spill containments and if so how much? - yes, 25 year, 24 storm event

For transformers, how far beyond the edge of the tank/radiators does the pit normally extend? - typically 10 feet

Do you evaluate the soil characteristics to determine if the pit should be lined? - yes

If yes, what soil characteristic criteria are used to determine if a lining is necessary? - peramability

13. Where an impervious material is used to line the pit, what material is used? New Liner Materials:

	Used	New Designs	Retrofit Designs	Effective
Rubber Liner	X	X		
Plastic Liner	X	X		

Geomembrane Liner	X	X
Spray-On Liner	X	X
Clay (Bentonite)	X	X
Concrete	X	X
Others (please specify)		
Comments:		

14. Do you fill containment pits with crushed rock or stone for fire suppression? If yes, what values are typically used for the following:

Design depth below the rock/stone surface the level of oil will reach to ensure fire quenching will be successful? - yes,

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15. Which of the following oil spill cleanup methods do you employ?

	Used	Effective
River Boom Deflector	Х	Х
Straw Skimming		
Expanded Straw Skimming		X
Lake Boom Deflector	X	X
Cover with Sand	X	X
Berm Cleanup	X	Х
Dike on Sloped Ground	X	X
Stone Vacuum Truck	X	X
Soil Removal	Х	Х
Other (please describe)	X	Х
Comments: DTE Energy		

E-Mail - donald.russell@pgnmail.com

Displaying 14 of 26 respondents Jump To: 14 « Prev Next » Go » Collector: Response Type: Edit Response Delete Normal Response IEEE Substation Committee E2 Oil Containment Survey (Web Link) **Custom Value: IP Address:** 65.121.155.222 emply **Response Started: Response Modified:** Monday, October 31, 2011 4:13:21 AM Monday, October 31, 2011 4:30:27 AM Show this Page Only 1. What is the name of your Company? **Progress Energy** 2. What is your Company's primary classification? User 3. How many sub/switching stations exist on your system? ~ 600 4. At these stations, how many spill events have you had in the last 10 years? two or three significant spills 5. Of these spills how many extended outside the property boundaries? one maybe two. 6. Who should we contact if any clarifications are required? Name - Don Russell Phone and Fax Number - 546.546.5885

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7. Of your fluid filled equipment approximately what percentage of equipment is fille following?	ed with the
Mineral Oil - 100	
8. Approximately what percent of the following sources are the cause of your spills:	?
Equipment Failure - 50	
Vandalism - 50	
9. For which of the following devices do you provide secondary oil containment and structures to prevent discharged oil from exiting the station (e.g., berms, oil contain drainage through oil/water separators, etc)? Also, please indicate the typical break MVA, etc, (examples: For transformers - 10 MVA and above, for Breakers - 138 kV are type of equipment where your company deems the quantity of oil in the device high warrant secondary containment. If not used, this question is not applicable. Note: secontainment = a system designed to contain the oil discharged from an oil-filled pied in situations of primary oil-containment failure.	nment pits, point in voltage, nd above) for that n enough to econdary oil
No Response	
	Show this Page Only
10. Which of the following criteria determines whether secondary containment is resubstations. Please describe the criteria numerically in the third column (e.g., >100 from water, etc.)	
Volume of oil in individual device - 50 gal	
11. Which of the following secondary oil spill containment methods have been used stations? New Installations Effective Retrofit Install	
Open Oil Retention Pit	
Fire Quenching & Oil Retention Pit X	
Gravity Separator	
Oil-Water Separator	
Oil Trap	
Oil Absorbing Polymer Beads	
Perimeter or Equipment Berm X	

Oil Detection-Triggered Sump F	oump			
Oil-Water Stop Valve		X	X	
Other (please describe)				
Comments: Progress Energy				
12. If oil retention pits under la are used:	arge equi	pment such as tra	nsformers and oi	l filled circuit breakers
What percent of the tank's oil vo selected percentage based on?				on or criteria is the
13. Where an impervious mate	rial is use	ed to line the pit, v	vhat material is us	sed? New Liner Materials:
	Used	New Designs	Retrofit Des	signs Effective
Rubber Liner		X		
Plastic Liner				
Geomembrane Liner				
Spray-On Liner				
Clay (Bentonite)				
Concrete		X		
Others (please specify)				
Comments: Progress Energy				
14. Do you fill containment pits are typically used for the follow Design depth below the rock/sto successful? - 3 feet	wing:			•
Design void ratio for oil contain	ment volu	me? - 40%		
15. Which of the following oil s	pill clean	up methods do vo	u emplov?	Show this Page Only
or the removing on a				
			Used	Effective
River Boom Deflector				
Straw Skimming				
Expanded Straw Skimming				

Lake Boom Deflector

Cover with Sand Berm Cleanup X Dike on Sloped Ground Stone Vacuum Truck Soil Removal X Other (please describe) Comments:

Phone and Fax Number - 425 456-2228

Displaying 15 of 26 respondents « Prev Next » Jump To: 15 Go » Collector: Response Type: Edit Response Delete Normal Response IEEE Substation Committee E2 Oil Containment Survey (Web Link) **Custom Value: IP Address:** 204.61.48.20 emply **Response Started: Response Modified:** Monday, March 26, 2012 11:47:03 AM Monday, March 26, 2012 11:48:38 AM Show this Page Only 1. What is the name of your Company? Puget Sound Energy 2. What is your Company's primary classification? User 3. How many sub/switching stations exist on your system? >450 4. At these stations, how many spill events have you had in the last 10 years? <50 5. Of these spills how many extended outside the property boundaries? 0 6. Who should we contact if any clarifications are required? Name - John Rork Address - P.O. Box 90868 PSE-11N

E-Mail - john.rork@pse.com	
	Show this Page On
7. Of your fluid filled equipment approximately what percentage following?	of equipment is filled with the
No Response	
8. Approximately what percent of the following sources are the	cause of your spills?
No Response	
9. For which of the following devices do you provide secondary structures to prevent discharged oil from exiting the station (e drainage through oil/water separators, etc)? Also, please indica MVA, etc, (examples: For transformers - 10 MVA and above, for type of equipment where your company deems the quantity of warrant secondary containment. If not used, this question is no containment = a system designed to contain the oil discharged in situations of primary oil-containment failure.	g., berms, oil containment pits, ate the typical breakpoint in voltage, Breakers - 138 kV and above) for that bil in the device high enough to be applicable. Note: secondary oil
No Response	
10. Which of the following criteria determines whether seconda substations. Please describe the criteria numerically in the thir from water, etc.)	
No Response	
11. Which of the following secondary oil spill containment meth stations?	ods have been used in your
No Response	
12. If oil retention pits under large equipment such as transformare used:	mers and oil filled circuit breakers
No Response	
13. Where an impervious material is used to line the pit, what m	naterial is used? New Liner Materials:
13. Where an impervious material is used to line the pit, what m	naterial is used? New Liner Materials

No Response	
	Show this Page Onl
15. Which of the following oil spill cleanup methods do you employ?	
No Response	

Phone and Fax Number - 626-462-8728

Displaying 16 of 26 respondents Jump To: 16 « Prev Next » Go » Response Type: Collector: Edit Response Delete Normal Response IEEE Substation Committee E2 Oil Containment Survey (Web Link) **Custom Value: IP Address:** 192.212.253.129 emply **Response Started: Response Modified:** Tuesday, May 1, 2012 4:37:06 PM Tuesday, May 1, 2012 4:44:50 PM Show this Page Only 1. What is the name of your Company? Southern California Edison 2. What is your Company's primary classification? Producer 3. How many sub/switching stations exist on your system? ~1200 4. At these stations, how many spill events have you had in the last 10 years? ~50 5. Of these spills how many extended outside the property boundaries? ~5 6. Who should we contact if any clarifications are required? Name - Mark Passarini Address - 1218 S 5th Ave, Monrovia, CA 91016

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7. Of your fluid filled equipment approximately what percentage of equipment is filled with the following?

Mineral Oil - 100

8. Approximately what percent of the following sources are the cause of your spills?

Equipment Failure - 50

Vandalism - 50

9. For which of the following devices do you provide secondary oil containment and/or diversionary structures to prevent discharged oil from exiting the station (e.g., berms, oil containment pits, drainage through oil/water separators, etc)? Also, please indicate the typical breakpoint in voltage, MVA, etc, (examples: For transformers - 10 MVA and above, for Breakers - 138 kV and above) for that type of equipment where your company deems the quantity of oil in the device high enough to warrant secondary containment. If not used, this question is not applicable. Note: secondary oil containment = a system designed to contain the oil discharged from an oil-filled piece of equipment in situations of primary oil-containment failure.

Power Transformers - nearly all are generally contained

Oil Circuit Breakers - nearly all are generally contained

Shunt Reactors - nearly all are generally contained

Oil-Filled Cables (Including Terminal Stations) - nearly all are generally contained

Three Phase Regulators - nearly all are generally contained

Single Phase Regulators - nearly all are generally contained

Mobile Transformers - nearly all are generally contained

Mobile Breakers - nearly all are generally contained

Mobile Regulators - nearly all are generally contained

Mobile Substations - nearly all are generally contained

Oil Filling/Transporting Equipment - nearly all are generally contained

Station Service Transformers - nearly all are generally contained

Potential Transformers - nearly all are generally contained

Current Transformers - nearly all are generally contained

Oil Circuit Reclosers - nearly all are generally contained

Capacitor Banks - nearly all are generally contained

Above Ground Oil Storage Tanks - all are double wall or secondarily contained

Below Ground Oil Storage Tanks - all are double wall

10. Which of the following criteria determines whether secondary containment is re substations. Please describe the criteria numerically in the third column (e.g., >100 from water, etc.)	
No Response	
11. Which of the following secondary oil spill containment methods have been used stations?	d in your
No Response	
12. If oil retention pits under large equipment such as transformers and oil filled cir are used:	rcuit breakers
No Response	
13. Where an impervious material is used to line the pit, what material is used? New	v Liner Materials:
No Response	
14. Do you fill containment pits with crushed rock or stone for fire suppression? If y are typically used for the following:	yes, what values
No Response	
	Show this Page Only
15. Which of the following oil spill cleanup methods do you employ?	
No Response	

Phone and Fax Number - 423-751-4811

Displaying 17 of 26 respondents « Prev Next » Jump To: 17 Go » Collector: Response Type: Edit Response Delete Normal Response IEEE Substation Committee E2 Oil Containment Survey (Web Link) **Custom Value: IP Address:** 152.85.8.33 emply **Response Modified: Response Started:** Tuesday, May 1, 2012 5:01:14 PM Tuesday, May 1, 2012 5:14:20 PM Show this Page Only 1. What is the name of your Company? Tennessee Valley Authority 2. What is your Company's primary classification? User 3. How many sub/switching stations exist on your system? >500 4. At these stations, how many spill events have you had in the last 10 years? None that reached waters of the US 5. Of these spills how many extended outside the property boundaries? None 6. Who should we contact if any clarifications are required? Name - Andrew Polahar Address - 1101 Market St, BR4A, Chattanooga, TN 37402

E-Mail - afpolahar@tva.gov				
			SI	now this Page Only
7. Of your fluid filled equipment apprefollowing?	oximately what per	centage of equi	pment is filled w	rith the
Mineral Oil - 100				
8. Approximately what percent of the	following sources	are the cause o	f your spills?	
Equipment Failure - 100				
9. For which of the following devices structures to prevent discharged oil drainage through oil/water separator MVA, etc, (examples: For transformer type of equipment where your compawarrant secondary containment. If no containment = a system designed to in situations of primary oil-containment	from exiting the starts, etc)? Also, pleases - 10 MVA and aboung deems the quant used, this questicontain the oil disc	ation (e.g., bern se indicate the t ove, for Breaker ntity of oil in the on is not applica	ns, oil containme ypical breakpoin rs - 138 kV and al device high end able. Note: secol	nt pits, t in voltage, pove) for that ough to ndary oil
Oil Filling/Transporting Equipment - 10	00%			
Above Ground Oil Storage Tanks - 100	0%			
			SI	now this Page Onl
10. Which of the following criteria des substations. Please describe the crit from water, etc.)				
Other (please describe) - Substations	do not require seco	ondary containm	ent.	
11. Which of the following secondary stations?	oil spill containme	nt methods hav	e been used in y	your
	New Installations	s Effective Re	trofit Installatio	ns Effective
Open Oil Retention Pit				
Fire Quenching & Oil Retention Pit				
Gravity Separator				
Oil-Water Separator	X	X	X	X
Oil Trap				
Oil Absorbing Polymer Beads				

Perimeter or Equipment Berm		
Oil Detection-Triggered Sump Pump		
Oil-Water Stop Valve		
Other (please describe)		
Comments: Tennessee Valley Authority		
12. If oil retention pits under large equipment such as trare used:	ansformers and oil	filled circuit breakers
What percent of the tank's oil volume is the pit designed to selected percentage based on? -Tanks not part of survey		on or criteria is the
Do you include rainwater and/or water from the fire protect and if so how much? - Used when justifying size of O/W S	,	g of spill containments
For transformers, how far beyond the edge of the tank/rad	iators does the pit n	ormally extend? - NA
For oil filled breakers, how far beyond the edge of the tank	k does the pit norma	lly extend? - NA
13. Where an impervious material is used to line the pit. No Response 14. Do you fill containment pits with crushed rock or sto are typically used for the following:		
No Response		
15. Which of the following oil spill cleanup methods do y	ou employ?	Show this Page Only
	Used	Effective
River Boom Deflector	X	X
Straw Skimming		
Expanded Straw Skimming		
Lake Boom Deflector		
Cover with Sand		
Berm Cleanup		
Dike on Sloped Ground		

X

Stone Vacuum Truck

Soil Removal



No Response

Displaying 18 of 26 respondents « Prev Next » Jump To: 18 Go » Collector: Response Type: Edit Response Delete Normal Response IEEE Substation Committee E2 Oil Containment Survey (Web Link) **Custom Value: IP Address:** 158.106.48.10 empty **Response Started: Response Modified:** Wednesday, May 2, 2012 3:34:42 AM Wednesday, May 2, 2012 3:37:38 AM Show this Page Only 1. What is the name of your Company? No Response 2. What is your Company's primary classification? General Interest 3. How many sub/switching stations exist on your system? No Response 4. At these stations, how many spill events have you had in the last 10 years? No Response 5. Of these spills how many extended outside the property boundaries? No Response 6. Who should we contact if any clarifications are required?

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7. Of your fluid filled equipment approximately what percentage of equipment is filled with the following?
No Response
8. Approximately what percent of the following sources are the cause of your spills?
No Response
9. For which of the following devices do you provide secondary oil containment and/or diversionary structures to prevent discharged oil from exiting the station (e.g., berms, oil containment pits, drainage through oil/water separators, etc)? Also, please indicate the typical breakpoint in voltage, MVA, etc, (examples: For transformers - 10 MVA and above, for Breakers - 138 kV and above) for that type of equipment where your company deems the quantity of oil in the device high enough to warrant secondary containment. If not used, this question is not applicable. Note: secondary oil containment = a system designed to contain the oil discharged from an oil-filled piece of equipment in situations of primary oil-containment failure.
No Response
Show this Page Onle 10. Which of the following criteria determines whether secondary containment is required at your substations. Please describe the criteria numerically in the third column (e.g., >1000 gals, ≤ 500 ft from water, etc.)
No Response
11. Which of the following secondary oil spill containment methods have been used in your stations?
No Response
12. If oil retention pits under large equipment such as transformers and oil filled circuit breakers are used:
No Response
13. Where an impervious material is used to line the pit, what material is used? New Liner Materials:
No Response

14. Do you fill containment pits with crushed rock or stone for fire suppression? If yes, what values are typically used for the following:

No Response

Show this Page Only

15. Which of the following oil spill cleanup methods do you employ?

No Response

Phone and Fax Number - 724-626-5108

Displaying 19 of 26 respondents « Prev Next » Jump To: 19 Go » Collector: Response Type: Edit Response Delete Normal Response IEEE Substation Committee E2 Oil Containment Survey (Web Link) **Custom Value: IP Address:** 205.132.74.4 emply **Response Started: Response Modified:** Wednesday, May 2, 2012 4:36:34 AM Wednesday, May 2, 2012 4:46:48 AM Show this Page Only 1. What is the name of your Company? Allegheny Power 2. What is your Company's primary classification? Producer 3. How many sub/switching stations exist on your system? 1700 4. At these stations, how many spill events have you had in the last 10 years? 73 5. Of these spills how many extended outside the property boundaries? 15 6. Who should we contact if any clarifications are required? Name - Corey Giles Address - 311 S 7th St. Connellsville, PA 15425

E-Mail - cgiles2@firstenergycorp.com	
	Show this Page Or
7. Of your fluid filled equipment approximately what percentage of equipment following?	ent is filled with the
No Response	
8. Approximately what percent of the following sources are the cause of yo	our spills?
No Response	
9. For which of the following devices do you provide secondary oil contain structures to prevent discharged oil from exiting the station (e.g., berms, of drainage through oil/water separators, etc)? Also, please indicate the typic MVA, etc, (examples: For transformers - 10 MVA and above, for Breakers - type of equipment where your company deems the quantity of oil in the development secondary containment. If not used, this question is not applicable containment = a system designed to contain the oil discharged from an oil-in situations of primary oil-containment failure.	oil containment pits, cal breakpoint in voltage, 138 kV and above) for that vice high enough to . Note: secondary oil
No Response	
	Show this Page Or
10. Which of the following criteria determines whether secondary contains substations. Please describe the criteria numerically in the third column (e from water, etc.)	
No Response	
11. Which of the following secondary oil spill containment methods have be stations?	een used in your
No Response	
12. If oil retention pits under large equipment such as transformers and oil are used:	filled circuit breakers
No Response	
13. Where an impervious material is used to line the pit, what material is us	sed? New Liner Materials:

No Response	
	Show this Page Onl
15. Which of the following oil spill cleanup methods do you employ?	
No Response	

Displaying 20 of 26 respondents « Prev Next » Jump To: 20 Go » Collector: Response Type: Edit Response Delete Normal Response IEEE Substation Committee E2 Oil Containment Survey (Web Link) **Custom Value: IP Address:** 74.5.204.40 emply **Response Modified: Response Started:** Wednesday, May 2, 2012 5:29:33 AM Wednesday, May 2, 2012 5:32:38 AM Show this Page Only 1. What is the name of your Company? Wolf Creek Nuclear Operating Corp 2. What is your Company's primary classification? Producer 3. How many sub/switching stations exist on your system? 1 4. At these stations, how many spill events have you had in the last 10 years? 0 5. Of these spills how many extended outside the property boundaries? 0 6. Who should we contact if any clarifications are required? Name - Daniel Williamson Address - WCNOC PO Box 411 Burlington, Ks 66839 Phone and Fax Number - (620) 364-8831 (620) 364-4154

E-Mail - dawilli2@WCNOC.com	
	Show this Page Or
7. Of your fluid filled equipment approximately what percentage of equipment is following?	s filled with the
No Response	
8. Approximately what percent of the following sources are the cause of your sp	oills?
No Response	
9. For which of the following devices do you provide secondary oil containment structures to prevent discharged oil from exiting the station (e.g., berms, oil codrainage through oil/water separators, etc)? Also, please indicate the typical br MVA, etc, (examples: For transformers - 10 MVA and above, for Breakers - 138 k type of equipment where your company deems the quantity of oil in the device warrant secondary containment. If not used, this question is not applicable. Not containment = a system designed to contain the oil discharged from an oil-filled in situations of primary oil-containment failure.	ntainment pits, eakpoint in voltage, V and above) for that high enough to e: secondary oil
lo Response	
10. Which of the following criteria determines whether secondary containment is substations. Please describe the criteria numerically in the third column (e.g., > from water, etc.)	
No Response	
11. Which of the following secondary oil spill containment methods have been ເ stations?	used in your
lo Response	
12. If oil retention pits under large equipment such as transformers and oil fille are used:	d circuit breakers
	d circuit breakers
are used:	

No Response	
	Show this Page Onl
15. Which of the following oil spill cleanup methods do you employ?	
No Response	

Phone and Fax Number - 412-393-7905

Displaying 21 of 26 respondents « Prev Next » Jump To: 21 Go » Collector: Response Type: Edit Response Delete Normal Response IEEE Substation Committee E2 Oil Containment Survey (Web Link) **Custom Value: IP Address:** 167.77.0.11 emply **Response Started: Response Modified:** Wednesday, May 2, 2012 5:47:36 AM Wednesday, May 2, 2012 6:15:55 AM Show this Page Only 1. What is the name of your Company? **Duquesne Light Company** 2. What is your Company's primary classification? No Response 3. How many sub/switching stations exist on your system? ~200 4. At these stations, how many spill events have you had in the last 10 years? ~10 5. Of these spills how many extended outside the property boundaries? None 6. Who should we contact if any clarifications are required? Name - John Bigi Address - 2825 New Beaver Avenue, N6-E, Pittsburgh, PA 15233

E-Mail - jbigi@duqlight.com	
	Show this Page Only
7. Of your fluid filled equipment approximately what percentage of equipment is following?	filled with the
Mineral Oil - 100	
Alternative Fluids - 0	
8. Approximately what percent of the following sources are the cause of your sp	ills?
Equipment Failure - 98	
Vandalism - 1	
Human Error - 1	
Other (Please explain in comments at end of survey) - 0	
drainage through oil/water separators, etc)? Also, please indicate the typical brown MVA, etc, (examples: For transformers - 10 MVA and above, for Breakers - 138 kN type of equipment where your company deems the quantity of oil in the device hwarrant secondary containment. If not used, this question is not applicable. Note containment = a system designed to contain the oil discharged from an oil-filled in situations of primary oil-containment failure.	V and above) for that nigh enough to e: secondary oil
Power Transformers - oil containment pits	
Oil Circuit Breakers - oil containment pits	
Shunt Reactors - slagged surface area	
Oil-Filled Cables (Including Terminal Stations) - Full secondary caontainment for ta	nks, NA for pipeline
Three Phase Regulators - oil containment pits	
Single Phase Regulators - oil containment pits	
Mobile Transformers - NA	
Mobile Breakers - NA	
Mobile Regulators - NA	
Mobile Substations - Use substation containment devices or lots with total secondary	ary containment
Oil Filling/Transporting Equipment - Usually parked empty. When in use, substation sufficient. If parked full, then parked in lot with secondary containment.	n surface area is
Station Service Transformers - Generally small and use slagged surface area of su	ubstation. If inside, oil-

Current Transformers - Generally small and use slagged surface area of substation

Potential Transformers - Generally small and use slagged surface area of substation.

stop is used in drains.

Carrotic fractionaliticio. Contorally official and accollagged carrace area of cabolations

Capacitor Banks - Generally small and use slagged surface area of substation.

Above Ground Oil Storage Tanks - Secondarily contained with no exceptions

Below Ground Oil Storage Tanks - Double walled Fiberglass.

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10. Which of the following criteria determines whether secondary containment is required at your substations. Please describe the criteria numerically in the third column (e.g., >1000 gals, \leq 500 ft from water, etc.)

Volume of oil in individual device - All Transformers, OCBs, Regulators require secondary containment in substations

11. Which of the following secondary oil spill containment methods have been used in your stations?

	New Installations	Effective	Retrofit Installations	Effective
Open Oil Retention Pit				
Fire Quenching & Oil Retention Pit	X			
Gravity Separator				
Oil-Water Separator				
Oil Trap			X	
Oil Absorbing Polymer Beads			X	
Perimeter or Equipment Berm			X	
Oil Detection-Triggered Sump Pump			X	
Oil-Water Stop Valve			X	
Other (please describe)			X	
Comments: Duquesne Light Compar	ny			

12. If oil retention pits under large equipment such as transformers and oil filled circuit breakers are used:

What percent of the tank's oil volume is the pit designed to retain? What reason or criteria is the selected percentage based on? -100-110%. Even though "General Secondary Containment" is warranted, we still size or oversize the pits.

Do you include rainwater and/or water from the fire protection systems in sizing of spill containments and if so how much? -Generally 10% extra volume

For transformers, how far beyond the edge of the tank/radiators does the pit normally extend? - Varies

For oil filled breakers, how far beyond the edge of the tank does the pit normally extend? - 3 feet or more (varies)

13. Where an impervious material is used to line the pit, what material is used? New Liner Materials:

No Response

14. Do you fill containment pits with crushed rock or stone for fire suppression? If yes, what values are typically used for the following:

Design depth below the rock/stone surface the level of oil will reach to ensure fire quenching will be successful? - According to EPRI study we had conducted, oil must be 12 inches below slag surface to provide sufficient fire quenching. This is based on #2 Duquesne Slag.

Design void ratio for oil containment volume? - 40 % porosity factor is used for #2 Duquesne Slag.

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15. Which of the following oil spill cleanup methods do you employ?

	Used	Effective
River Boom Deflector		
Straw Skimming		
Expanded Straw Skimming		
Lake Boom Deflector		
Cover with Sand	X	
Berm Cleanup	X	
Dike on Sloped Ground	Х	
Stone Vacuum Truck	Х	
Soil Removal	Х	
Other (please describe)		
Comments:		

Phone and Fax Number - 803-217-7204

Displaying 22 of 26 respondents « Prev Next » Jump To: 22 Go » Collector: Response Type: Edit Response Delete Normal Response IEEE Substation Committee E2 Oil Containment Survey (Web Link) **Custom Value: IP Address:** 161.156.101.6 emply **Response Started: Response Modified:** Wednesday, May 2, 2012 5:31:35 AM Wednesday, May 2, 2012 6:36:17 AM Show this Page Only 1. What is the name of your Company? SCANA Inc 2. What is your Company's primary classification? Producer 3. How many sub/switching stations exist on your system? 500 4. At these stations, how many spill events have you had in the last 10 years? 39 5. Of these spills how many extended outside the property boundaries? 1 6. Who should we contact if any clarifications are required? Name - Tim Nelson Address - 220 Operations Way, Cayce, SC 29033

E-Mail - timothy.nelson@scana.com	
	Show this Page Only
7. Of your fluid filled equipment approximately what percentage of equipment is fille following?	ed with the
Mineral Oil - 100	
8. Approximately what percent of the following sources are the cause of your spills?	?
Equipment Failure - 86	
Vandalism - 3	
Human Error - 8	
Other (Please explain in comments at end of survey) - 3	
drainage through oil/water separators, etc)? Also, please indicate the typical breaks MVA, etc, (examples: For transformers - 10 MVA and above, for Breakers - 138 kV an type of equipment where your company deems the quantity of oil in the device high warrant secondary containment. If not used, this question is not applicable. Note: secontainment = a system designed to contain the oil discharged from an oil-filled pie in situations of primary oil-containment failure. Power Transformers - in new subs and high risk subs	d above) for that enough to econdary oil
Oil Circuit Breakers - high risk subs	
Single Phase Regulators - in new subs and high risk subs	
Potential Transformers - in high risk subs	
	Show this Page Only
10. Which of the following criteria determines whether secondary containment is re substations. Please describe the criteria numerically in the third column (e.g., >1000 from water, etc.)	
Volume of oil in individual device - ranked 1-5 from <500 gals to > 10,000 gals	
Proximity to navigable waters - ranked 1-5 from > 2,500 ft to < 100 ft	
Location of substation (urban, rural, etc) - ranked 1-5 from rural to urban	
Emergency response time if a spill occurs - ranked 1-5 from < 5 miles to > 40 miles	
Other (please describe) - Rankings affected by presence or not of SCADA system and of customers subs) or not personnel are onsite 24 hours /day	d whether (in case

11. Which of the following secondary oil spill containment methods have been used in your stations?

	New Installations	Effective	Retrofit Installations	Effective
Open Oil Retention Pit	Х	X	X	X
Fire Quenching & Oil Retention Pit				
Gravity Separator				
Oil-Water Separator	X	X	X	X
Oil Trap	X	X		
Oil Absorbing Polymer Beads				
Perimeter or Equipment Berm			X	X
Oil Detection-Triggered Sump Pump				
Oil-Water Stop Valve				
Other (please describe)			X	X
Comments: SCANA Inc				

12. If oil retention pits under large equipment such as transformers and oil filled circuit breakers are used:

What percent of the tank's oil volume is the pit designed to retain? What reason or criteria is the selected percentage based on? -120 %

Do you include rainwater and/or water from the fire protection systems in sizing of spill containments and if so how much? - yes, 20 %

For transformers, how far beyond the edge of the tank/radiators does the pit normally extend? - far enough to caintain any vertical leaks

Do you evaluate the soil characteristics to determine if the pit should be lined? - all pits are made of concrete

13. Where an impervious material is used to line the pit, what material is used? New Liner Materials:

	Used	New Designs	Retrofit Designs	Effective
Rubber Liner				
Plastic Liner	X		X	X
Geomembrane Liner				
Spray-On Liner				
Clay (Bentonite)				
Concrete	X	X		Х

		Show this Page Only
15. Which of the following oil spill cleanup m	nethods do you employ?	
	Used	Effective
River Boom Deflector		
Straw Skimming		
Expanded Straw Skimming		
Lake Boom Deflector		
Cover with Sand		
Berm Cleanup		
Dike on Sloped Ground		
Stone Vacuum Truck	X	X
Soil Removal	X	X
Other (please describe)		
Comments:		

14. Do you fill containment pits with crushed rock or stone for fire suppression? If yes, what values

Design depth below the rock/stone surface the level of oil will reach to ensure fire quenching will be

Others (please specify)

are typically used for the following:

Comments:

successful? - no

Displaying 23 of 26 respondents			
« Prev Next » Jump To: 23 Go »			
Response Type: Normal Response	Collector: IEEE Substation Committee E2 Oil Containment Survey	Edit Response	Delete
Custom Value: empty Response Started:	(Web Link) IP Address: 161.186.93.10 Response Modified:		
Wednesday, May 2, 2012 5:53:54 AM	Wednesday, May 2, 2012 7:57:14 AM		
		Show this F	Page Only
1. What is the name of your Company?			
Рерсо			
2. What is your Company's primary class User	sification?		
3. How many sub/switching stations exis	st on your system?		
No Response			
4. At these stations, how many spill eve	nts have you had in the last 10 years?		
No Response			
5. Of these spills how many extended o	utside the property boundaries?		
No Response			
6. Who should we contact if any clarifica	ations are required?		
No Response			

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7. Of your fluid filled equipment approximately what percentage of equipment is filled with the following?
No Response
8. Approximately what percent of the following sources are the cause of your spills?
No Response
9. For which of the following devices do you provide secondary oil containment and/or diversionary structures to prevent discharged oil from exiting the station (e.g., berms, oil containment pits, drainage through oil/water separators, etc)? Also, please indicate the typical breakpoint in voltage, MVA, etc, (examples: For transformers - 10 MVA and above, for Breakers - 138 kV and above) for that type of equipment where your company deems the quantity of oil in the device high enough to warrant secondary containment. If not used, this question is not applicable. Note: secondary oil containment = a system designed to contain the oil discharged from an oil-filled piece of equipment in situations of primary oil-containment failure.
No Response
Show this Page Only 10. Which of the following criteria determines whether secondary containment is required at your substations. Please describe the criteria numerically in the third column (e.g., >1000 gals, ≤ 500 ft from water, etc.)
No Response
11. Which of the following secondary oil spill containment methods have been used in your stations?
No Response
12. If oil retention pits under large equipment such as transformers and oil filled circuit breakers are used:
No Response
13. Where an impervious material is used to line the pit, what material is used? New Liner Materials:
No Response

14. Do you fill containment pits with crushed rock or stone for fire suppression? If yes, what values are typically used for the following:

No Response

Show this Page Only

15. Which of the following oil spill cleanup methods do you employ?

No Response

No Response

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7. Of your fluid filled equipment approximately what percentage of equipment is filled with the following?
No Response
8. Approximately what percent of the following sources are the cause of your spills?
No Response
9. For which of the following devices do you provide secondary oil containment and/or diversionary structures to prevent discharged oil from exiting the station (e.g., berms, oil containment pits, drainage through oil/water separators, etc)? Also, please indicate the typical breakpoint in voltage, MVA, etc, (examples: For transformers - 10 MVA and above, for Breakers - 138 kV and above) for that type of equipment where your company deems the quantity of oil in the device high enough to warrant secondary containment. If not used, this question is not applicable. Note: secondary oil containment = a system designed to contain the oil discharged from an oil-filled piece of equipment in situations of primary oil-containment failure.
No Response
Show this Page Onle 10. Which of the following criteria determines whether secondary containment is required at your substations. Please describe the criteria numerically in the third column (e.g., >1000 gals, ≤ 500 ft from water, etc.)
No Response
11. Which of the following secondary oil spill containment methods have been used in your stations?
No Response
12. If oil retention pits under large equipment such as transformers and oil filled circuit breakers are used:
No Response
13. Where an impervious material is used to line the pit, what material is used? New Liner Materials:
No Response

14. Do you fill containment pits with crushed rock or stone for fire suppression? If yes, what values are typically used for the following:

No Response

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15. Which of the following oil spill cleanup methods do you employ?

No Response

Displaying 25 of 26 respondents « Prev Next » Jump To: 25 Go » Collector: Response Type: Edit Response Delete Normal Response IEEE Substation Committee E2 Oil Containment Survey (Web Link) **Custom Value: IP Address:** 204.124.192.32 emply **Response Started: Response Modified:** Friday, May 4, 2012 8:53:14 AM Friday, May 4, 2012 12:10:54 PM Show this Page Only 1. What is the name of your Company? MidAmerican Energy Company 2. What is your Company's primary classification? Producer 3. How many sub/switching stations exist on your system? 386 4. At these stations, how many spill events have you had in the last 10 years? <5 5. Of these spills how many extended outside the property boundaries? None 6. Who should we contact if any clarifications are required? Name - Robin Fortney Address - 4299 NW Urbandale Drive, Urbandale, IA 50322 Phone and Fax Number - Phone: 515-281-2951 Fax: 515-242-3084

E-Mail - rbfortney@midamerican.com	E-Mail -	rbfortnev	√@midaı	merican.con
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7. Of your fluid filled equipment approximately what percentage of equipment is filled with the following?

Mineral Oil - 100

8. Approximately what percent of the following sources are the cause of your spills?

Equipment Failure - 80

Vandalism - 10

Human Error - 10

9. For which of the following devices do you provide secondary oil containment and/or diversionary structures to prevent discharged oil from exiting the station (e.g., berms, oil containment pits, drainage through oil/water separators, etc)? Also, please indicate the typical breakpoint in voltage, MVA, etc, (examples: For transformers - 10 MVA and above, for Breakers - 138 kV and above) for that type of equipment where your company deems the quantity of oil in the device high enough to warrant secondary containment. If not used, this question is not applicable. Note: secondary oil containment = a system designed to contain the oil discharged from an oil-filled piece of equipment in situations of primary oil-containment failure.

Power Transformers - pit, berm

Oil Circuit Breakers - trench/moat, berm

Shunt Reactors - pit, berm

Oil-Filled Cables (Including Terminal Stations) - double wall tank at terminal stations

Three Phase Regulators - pit, trench/moat

Single Phase Regulators - gravel bed

Mobile Transformers - berm, pit, gravel bed

Mobile Breakers - berm, pit, gravel bed

Mobile Regulators - berm, pit, gravel bed

Mobile Substations - berm, pit, gravel bed

Oil Filling/Transporting Equipment - berms, pop-up containment, drip pans, absorbent materials, tools for building berms

Station Service Transformers - gravel bed

Potential Transformers - trench/moat, gravel bed

Current Transformers - trench/moat, gravel bed

Oil Circuit Reclosers - gravel bed

Capacitor Banks - gravel bed

Above Ground Oil Storage Tanks - double wall

Below Ground Oil Storage Tanks - NA

Other (Please Describe) - Gravel bed used only if no drain or conduit to surface water. Use emergency generators with double walled fuel tank. Note: Constructed containment is provided for larger oil-filled equipment where there is a medium to high risk of off-site release (based on oil capacity and distance to surface water or drain). At low risk substations, gravel bed provides containment.

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10. Which of the following criteria determines whether secondary containment is required at your substations. Please describe the criteria numerically in the third column (e.g., >1000 gals, \leq 500 ft from water, etc.)

Volume of oil in individual device - 55 gallon>

Total volume of oil in substation - 1,320 gallon>

Proximity to navigable waters - <100 feet from drain or surface water

Location of substation (urban, rural, etc) - Proximity to residential or commercial customers

Failure probability of the equipment - Assume 100% failure

Laws and regulations - EPA regulations and guidance and company policy

11. Which of the following secondary oil spill containment methods have been used in your stations?

	New Installations	Effective	Retrofit Installations	Effective
Open Oil Retention Pit	X	X	X	X
Fire Quenching & Oil Retention Pit				
Gravity Separator				
Oil-Water Separator				
Oil Trap				
Oil Absorbing Polymer Beads			X	X
Perimeter or Equipment Berm			X	X
Oil Detection-Triggered Sump Pump				
Oil-Water Stop Valve				
Other (please describe)				
Comments: MidAmerican Energy Com	npany			

12. If oil retention pits under large equipment such as transformers and oil filled circuit breakers are used:

What percent of the tank's oil volume is the pit designed to retain? What reason or criteria is the

selected percentage based on? -100% plus 25 year/24 hour maximum rain event (inches) per EPA guidance

Do you include rainwater and/or water from the fire protection systems in sizing of spill containments and if so how much? - See above, 6 inches of freeboard

For transformers, how far beyond the edge of the tank/radiators does the pit normally extend? - 3 feet minimum; may be greater

For oil filled breakers, how far beyond the edge of the tank does the pit normally extend? - 3 feet minimum; may be greater

Do you evaluate the soil characteristics to determine if the pit should be lined? - No

13. Where an impervious material is used to line the pit, what material is used? New Liner Materials:

	Used	New Designs	Retrofit Designs	Effective
Rubber Liner				
Plastic Liner				
Geomembrane Liner	Х	X	X	Х
Spray-On Liner				
Clay (Bentonite)				
Concrete	Х			Х
Others (please specify)				
Comments:				

14. Do you fill containment pits with crushed rock or stone for fire suppression? If yes, what values are typically used for the following:

Design depth below the rock/stone surface the level of oil will reach to ensure fire quenching will be successful? - N/A

Design void ratio for oil containment volume? - 40% is void volume.

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15. Which of the following oil spill cleanup methods do you employ?

	Used	Effective
River Boom Deflector		
Straw Skimming		
Expanded Straw Skimming		
Lake Boom Deflector		

Cover with Sand Berm Cleanup	X	X
Dike on Sloped Ground		
Stone Vacuum Truck	X	X
Soil Removal	Х	Х
Other (please describe)		
Comments:		

Phone and Fax Number - (202) 331-6467

Displaying 26 of 26 respondents « Prev Next » Jump To: 26 Go » Collector: Response Type: Edit Response Delete Normal Response IEEE Substation Committee E2 Oil Containment Survey (Web Link) **Custom Value: IP Address:** 161.186.93.10 emply **Response Started: Response Modified:** Friday, May 4, 2012 11:57:44 AM Friday, May 4, 2012 12:02:56 PM Show this Page Only 1. What is the name of your Company? Pepco 2. What is your Company's primary classification? Producer 3. How many sub/switching stations exist on your system? about 140 4. At these stations, how many spill events have you had in the last 10 years? Estimate 25 to 30 5. Of these spills how many extended outside the property boundaries? None that I can recall 6. Who should we contact if any clarifications are required? Name - Colin Danville Address - 701 Ninth Street NW Washington DC

E-Mail - cadanville@pepco.com	
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7. Of your fluid filled equipment approximately what percentage of equipment if following?	s filled with the
Mineral Oil - 100	
8. Approximately what percent of the following sources are the cause of your s	spills?
Equipment Failure - 95	
Human Error - 5	
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Power Transformers - Secondary containment	
Shunt Reactors - Secondary containment	
Mobile Transformers - Secondary containment	
Mobile Substations - Secondary containment	
Oil Filling/Transporting Equipment - bermed truck unloading area	
Above Ground Oil Storage Tanks - Secondary containment	
Below Ground Oil Storage Tanks - Leak detection	
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