

BUREAU OF RECLAMATION
FACILITIES INSTRUCTIONS, STANDARDS & TECHNIQUES
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**INSPECTION AND MAINTENANCE OF
PCB CONTAINING EQUIPMENT**

Inspection and Maintenance of PCB Containing Equipment

(This information is from the Federal Register of August 25, 1982, pages 37342 through 37360.)

Title 40 of the Code of Federal Regulations, Part 761, which regulates PCB's (polychlorinated biphenyls) in concentrations greater than 50 p/m has been amended effective September 24, 1982. This final rule contains several changes that affect Bureau equipment and operation. The final rule:

1. Authorizes the use of all PCB Transformers that do not pose an exposure risk to food or feed for the remainder of their useful lives, and requires a quarterly inspection of this equipment for leaks of dielectric fluid.
2. Authorizes the use of large (more than three pounds of PCB's) PCB capacitors that are located in restricted access electrical substations for the remainder of their useful lives.
3. Authorizes the use of large PCB capacitors that are located in contained and restricted-access Indoor installations for the remainder of their useful lives.
4. Prohibits the use of all other large PCB capacitors after October 1, 1988.
5. Eliminates the proposed inspection requirements for all large PCB capacitors.
6. Authorizes the use of all PCB-containing, mineral oil-filled, electrical equipment for its remaining useful life.
7. Allows oil-filled cable to be assumed to contain less than 50 p/m PCB's if the actual PCB concentration is unknown.
8. Allows storage for disposal of nonleaking PCB large high-voltage capacitors and PCB-contaminated electrical equipment outside of qualified storage facilities after January 1, 1983.
9. Requires records of inspection and maintenance histories to be maintained for at least 3 years after disposing of PCB Transformers.

Use of PCB Transformers (transformers containing more than 500 p/m PCB's) Is subject to the following conditions:

1. A visual inspection of each PCB Transformer in use or stored for reuse shall be performed at least once every 3 months. These inspections may take place any time during the 3 month periods: January through March, April through June, July through September, and October through December, as long as there is a minimum of 30 days between inspections. The visual Inspection must include investigation for any leak of dielectric fluid on or around the transformer. The extent of the visual inspections will depend on the physical constraints of each transformer installation and should not require an electrical shutdown of the transformer being Inspected.
2. If a PCB Transformer is found to have a leak which results in any quantity of PCB's running off or about to run off the external surface of the transformer, the transformer must be repaired or replaced to eliminate the source of the leak. Cleanup of the released PCB's must be initiated as soon as possible, but in no case later than 48 hours of its discovery. Until appropriate action is completed, any active leak of PCB's must be contained to prevent exposure of humans or the environment and inspected daily to verify containment of the leak. Trenches, dikes, buckets, and pans are examples of proper containment measures.
3. Records of inspection and maintenance history shall be maintained at least 3 years after disposing of the transformer, and shall be made available for inspection, upon request, by EPA (Environmental Protection Agency). The records shall contain the following information for each PCB transformer.

- a. Location
 - b. The date of each visual inspection and the date that a leak was discovered, if different from the inspection date
 - c. The person performing the inspection
 - d. The location of any leaks
 - e. An estimate of the amount of dielectric fluid released from any leak
 - f. The date of any cleanup, containment, or repair performed
 - g. A description of any cleanup, containment, or repair performed
 - h. The results of any containment and daily inspection required for uncorrected active leaks
4. A reduced visual inspection frequency of at least once every 12 months applies to PCB Transformers that utilize either of the following risk reduction measures. These inspections may take place any time during the calendar year as long as there is a minimum of 180 days between inspections.
- a. PCB Transformer which has impervious, undrained, secondary containment capacity of at least 100 percent of the total dielectric fluid volume of all transformers so contained, or
 - b. A PCB Transformer which has been tested and found to contain less than 60,000 p/m PCB's (after 3 months of in-service use if the transformer has been serviced for purposes of reducing the PCB concentration.)

5. The use and storage for reuse of PCB Transformers that pose an exposure risk to food or feed is prohibited after October 1, 1985, and an increased visual inspection frequency of at least once every week is required.

Figure 1 is a sample "Inspection and Servicing Record" sheet to illustrate the inspection data required, and figure 2 is a blank inspection sheet that may be reproduced for use in the inspection program. Transformers classified as PCB-contaminated (between 50 and 500 p/m PCB's) may be serviced including rebuilding. Any servicing of PCB transformers (over 500 p/m PCB's) that requires removal of the transformer coil from the casing is prohibited.

PCB Transformers may be converted to either PCB-contaminated or non-PCB transformers and PCB-contaminated transformers may be reclassified as non-PCB transformers by draining, refilling, and/or otherwise servicing the transformer. In order to reclassify, the transformer's dielectric fluid must still contain less than 500 p/m PCB for conversion to a PCB-contaminated transformer or less than 50 p/m for conversion to a non-PCB transformer after a minimum of 3 months of in-service use subsequent to the last servicing conducted for the purpose of reducing the PCB concentration in the transformer. In-service means that the transformer is used electrically under loaded conditions that raise the temperature of the dielectric fluid to at least 50 °C.

A specific operating procedure including a hazard analysis will be developed at each site where PCB equipment is located to analyze potential hazards in servicing PCB units. The specific operational procedure, including appropriate protective equipment that must be available for use, will be approved by the project, area, or regional safety professional.

EQUIPMENT Transformer Bank KSA

PROJECT Colorado-Big Thompson LOCATION Estes Powerplant

INSPECTION AND SERVICING RECORD

DATE	EMPLOYEE	INSPECTION RESULTS	SERVICING PERFORMED
7-10-81	R. L. Smith	No leaks observed	
10-2-81	R. L. Smith	Leak at drain valve area-moist only - not a moderate leak	
12-10-81	B. C. Jones	Moderate leak in drain valve area - several drops observed below valve	
12-11-81	R. L. Smith		Repaired defective drain valve and cleaned transformer
1-19-82	B. C. Jones		Axonal sample taken for dielectric strength test
3-3-82	R. L. Smith	No leaks observed	
5-20-82	R. L. Smith	Leak observed at gasket on left side of transformer - seep only - not a moderate leak	
6-10-82	B. C. Jones		Replaced defective gasket on left side of transformer and cleaned transformer
8-10-82	R. L. Smith	No leaks observed	
11-3-82	R. L. Smith	No leaks observed	
		Sample Log Sheet	

FIGURE 1 - SAMPLE INSPECTION AND SERVICING RECORD

EQUIPMENT		LOCATION	
PROJECT		LOCATION	
INSPECTION AND SERVICING RECORD			
DATE	EMPLOYEE	INSPECTION RESULTS	SERVICING PERFORMED

FIGURE 2 - INSPECTION AND SERVICING RECORD