NFPA® 850

Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations

7.8.6* Transformers. Oil-filled main, station service, and start-up transformers not meeting the separation or fire barrier recommendations in 5.1.4 or as determined by the Fire Protection Design Basis Document should be protected with automatic water spray or foam-water spray systems.

5.1.4 Outdoor Oil-Insulated Transformers.

5.1.4.1 Outdoor oil-insulated transformers should be separated from adjacent structures and from each other by firewalls, spatial separation, or other approved means for the purpose of limiting the damage and potential spread of fire from a transformer failure.

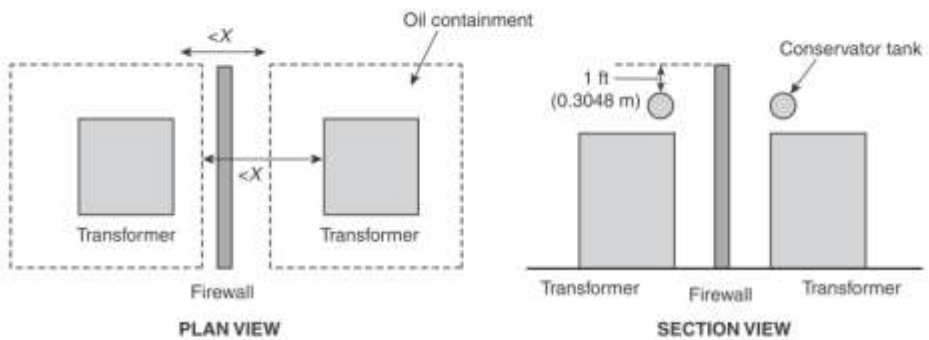
5.1.4.2 Determination of the type of physical separation to be used between transformers, control equipment, and building structures should be based on a detailed analysis of the following:

(1) Type and quantity of oil in the transformer
(2) Size of a postulated oil spill (surface area and depth)
(3) Type of construction of adjacent structures
(4) Type and amount of exposed equipment, including high line structures, motor control center (MCC) equipment, breakers, other transformers, and so forth.
(5) Power rating of the transformer
(6) Fire suppression systems provided
(7) Type of electrical protective relaying provided
(8) Availability of replacement transformers (long lead times)
(9) *The existence of fast depressurization systems

5.1.4.3* Unless consideration of the factors in 5.1.4.2 indicates otherwise, it is recommended that any oil-insulated transformer containing 500 gal (1893 L) or more of oil be separated from adjacent structures by a 2-hour–rated firewall or by spatial separation in accordance with Table 5.1.4.3. Where a firewall is provided between structures and a transformer, it should extend vertically and horizontally as indicated in Figure 5.1.4.3.

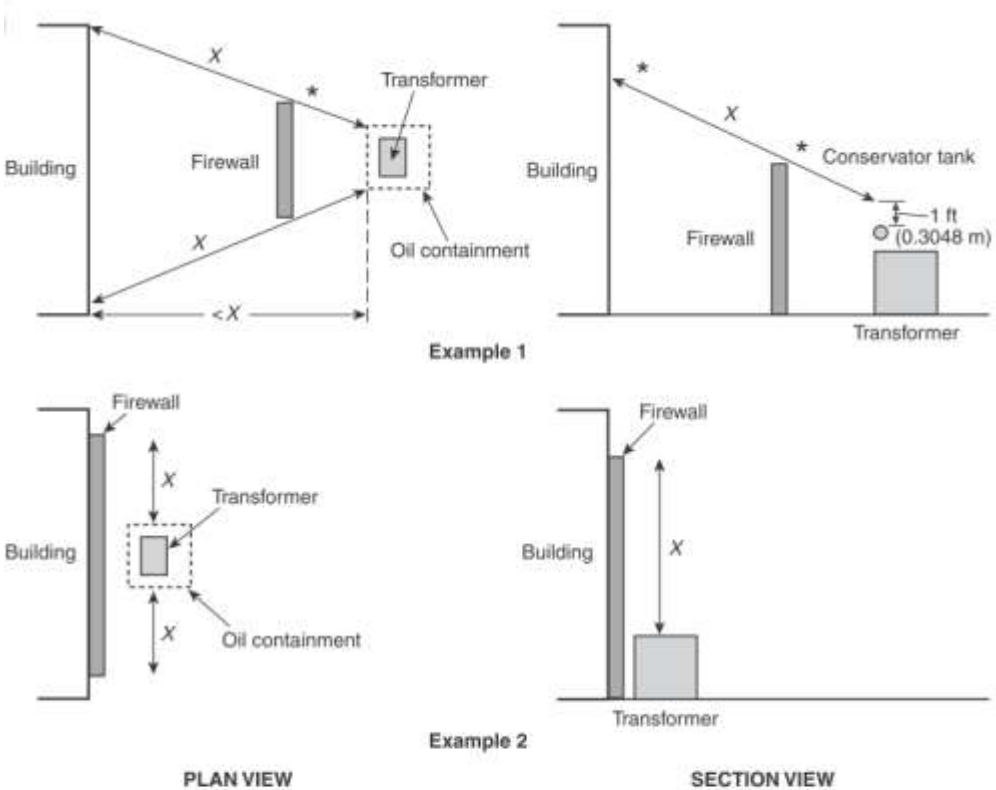
Table 5.1.4.3 Outdoor Oil-Insulated Transformer Separation Criteria

Transformer Oil Capacity		Minimum (Line-of-Sight) Separation Without Firewall	
gal	L	ft	m
<500	<1893	See 5.1.4.2	
500–5000	1893–18,925	25	7.6
>5000	>18,925	50	15



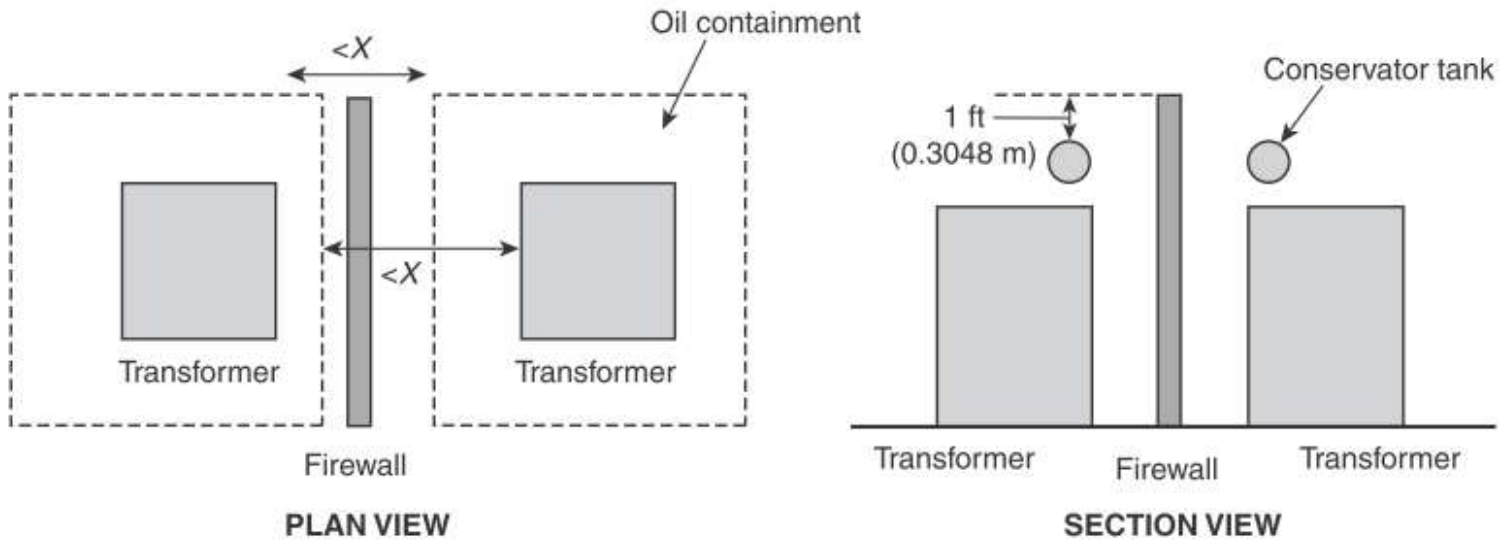
X: Minimum separation distance from Table 5.1.4.3.

FIGURE 5.1.4.4 Outdoor Oil-Insulated Transformer Separation Criteria.



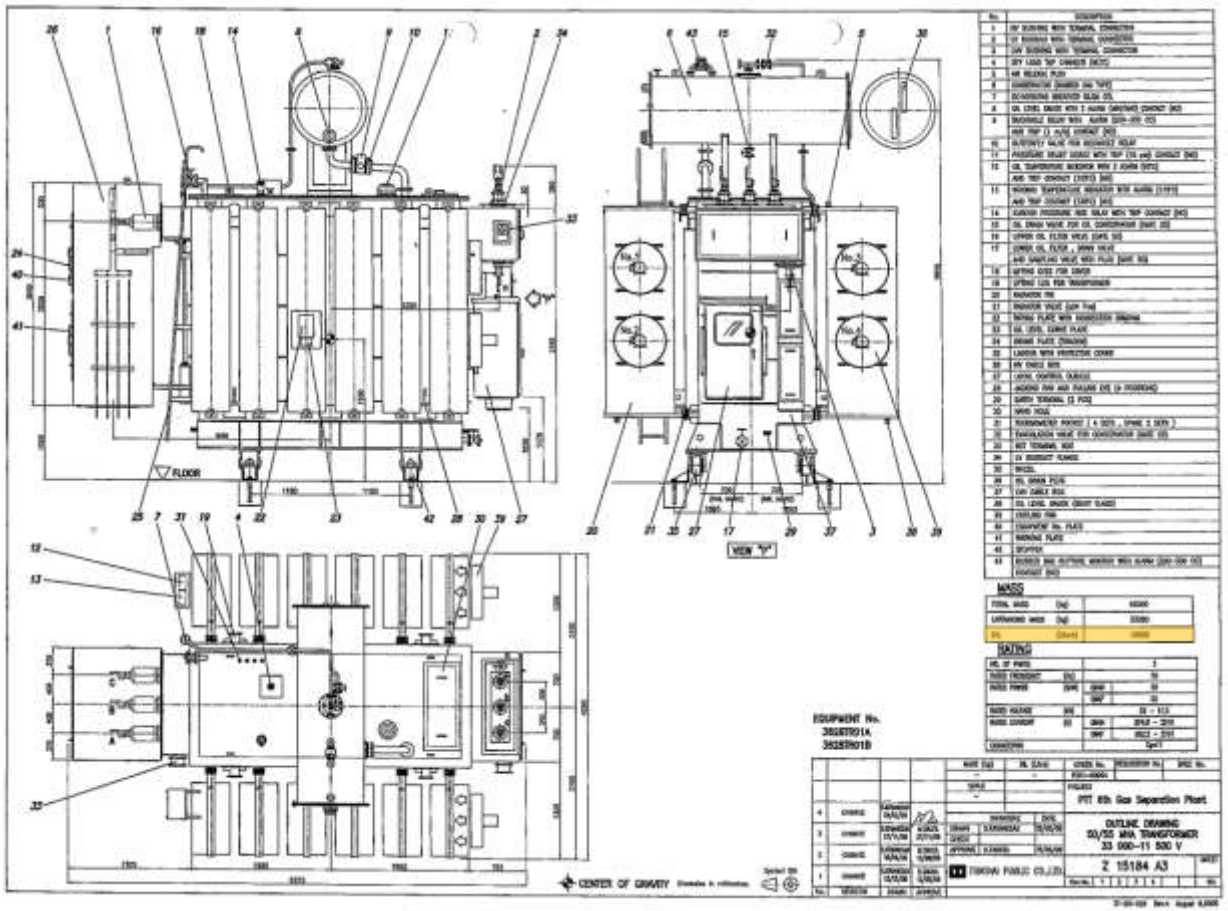
X: Minimum separation distance from Table 5.1.4.3.
★: See A.5.1.4.3.

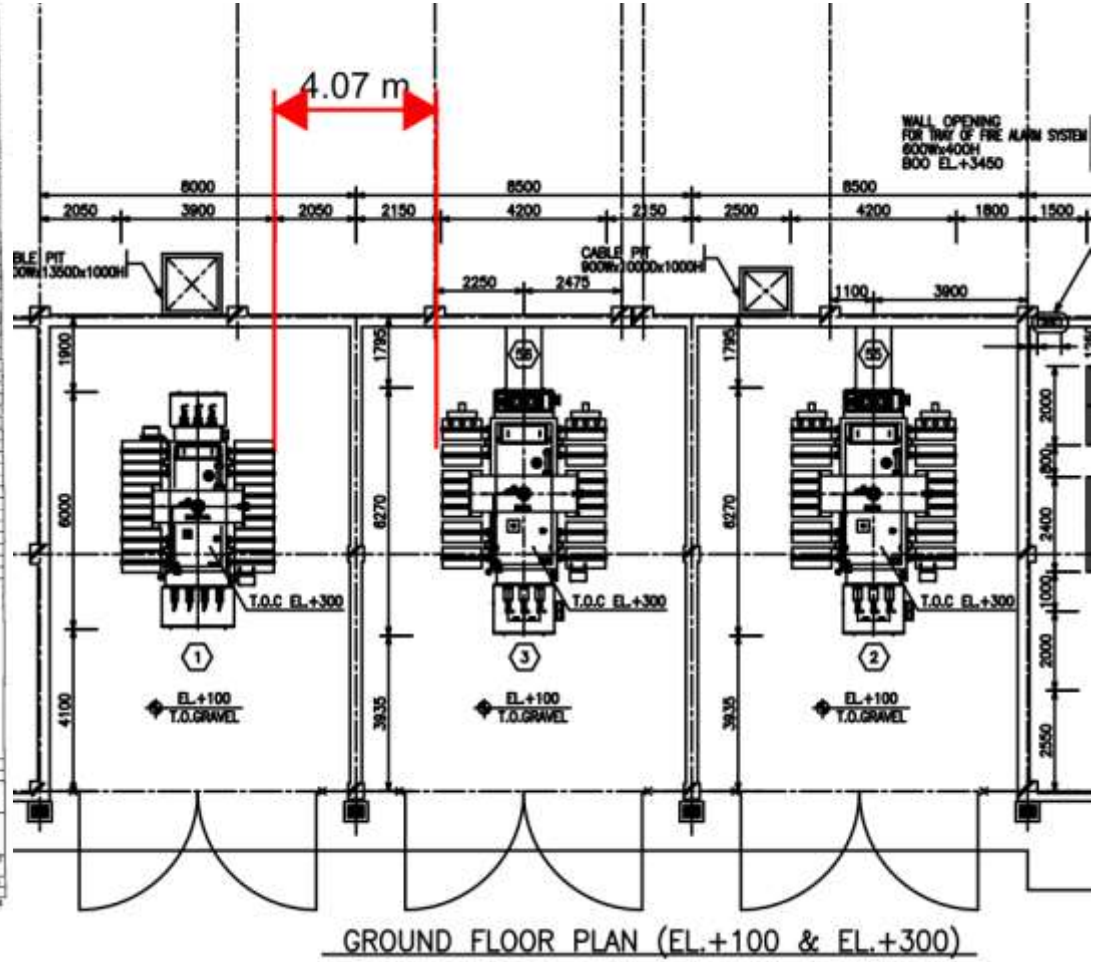
FIGURE 5.1.4.3 Illustration of Oil-Insulated Transformer Separation Recommendations.



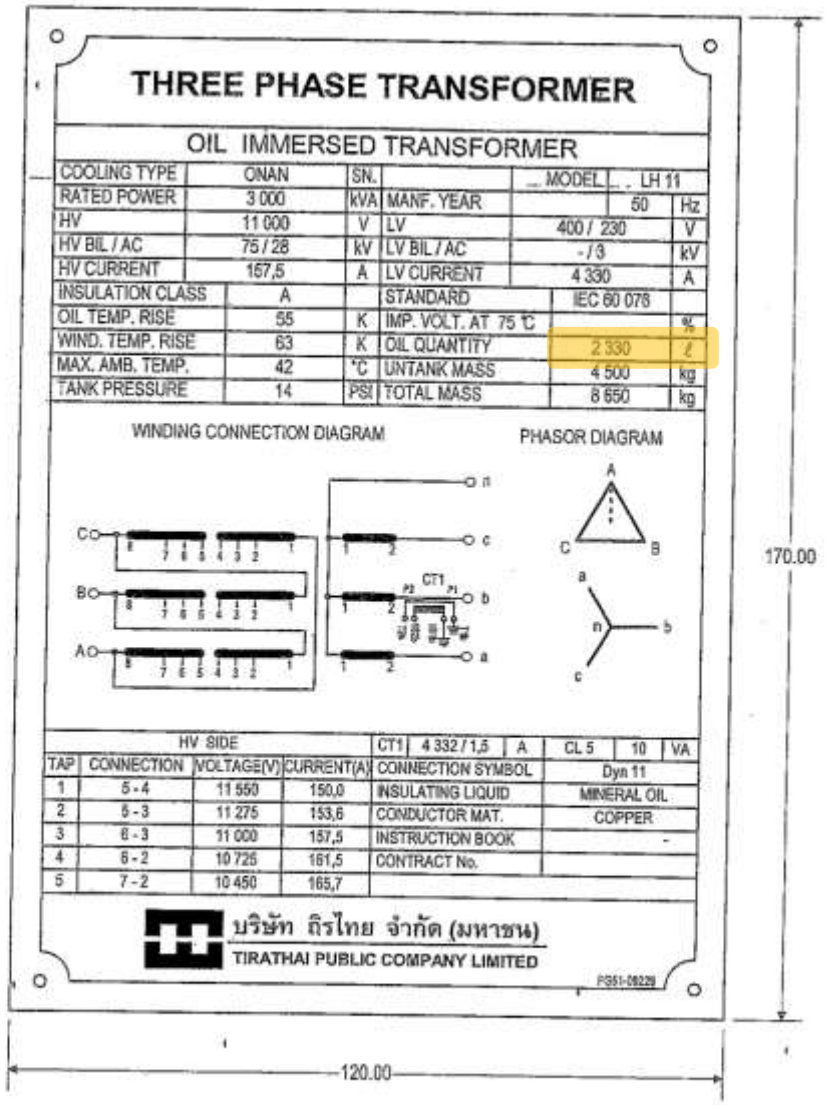
X: Minimum separation distance from Table 5.1.4.3.

FIGURE 5.1.4.4 Outdoor Oil-Insulated Transformer Separation Criteria.





GROUND FLOOR PLAN (EL.+100 & EL.+300)



THREE PHASE TRANSFORMER

OIL IMMERSED TRANSFORMER

COOLING TYPE	ONAN	SN.		MODEL	LH 11	
RATED POWER	3 000	kVA	MANF. YEAR	50	Hz	
HV	11 000	V	LV	400 / 230	V	
HV BIL / AC	75 / 28	kV	LV BIL / AC	- / 3	kV	
HV CURRENT	157,5	A	LV CURRENT	4 330	A	
INSULATION CLASS	A		STANDARD	IEC 60 076		
OIL TEMP. RISE	55	K	IMP. VOLT. AT 75 °C		%	
WIND. TEMP. RISE	63	K	OIL QUANTITY	2 330	ℓ	
MAX. AMB. TEMP.	42	°C	UNTANK MASS	4 500	kg	
TANK PRESSURE	14	PSI	TOTAL MASS	8 650	kg	

WINDING CONNECTION DIAGRAM

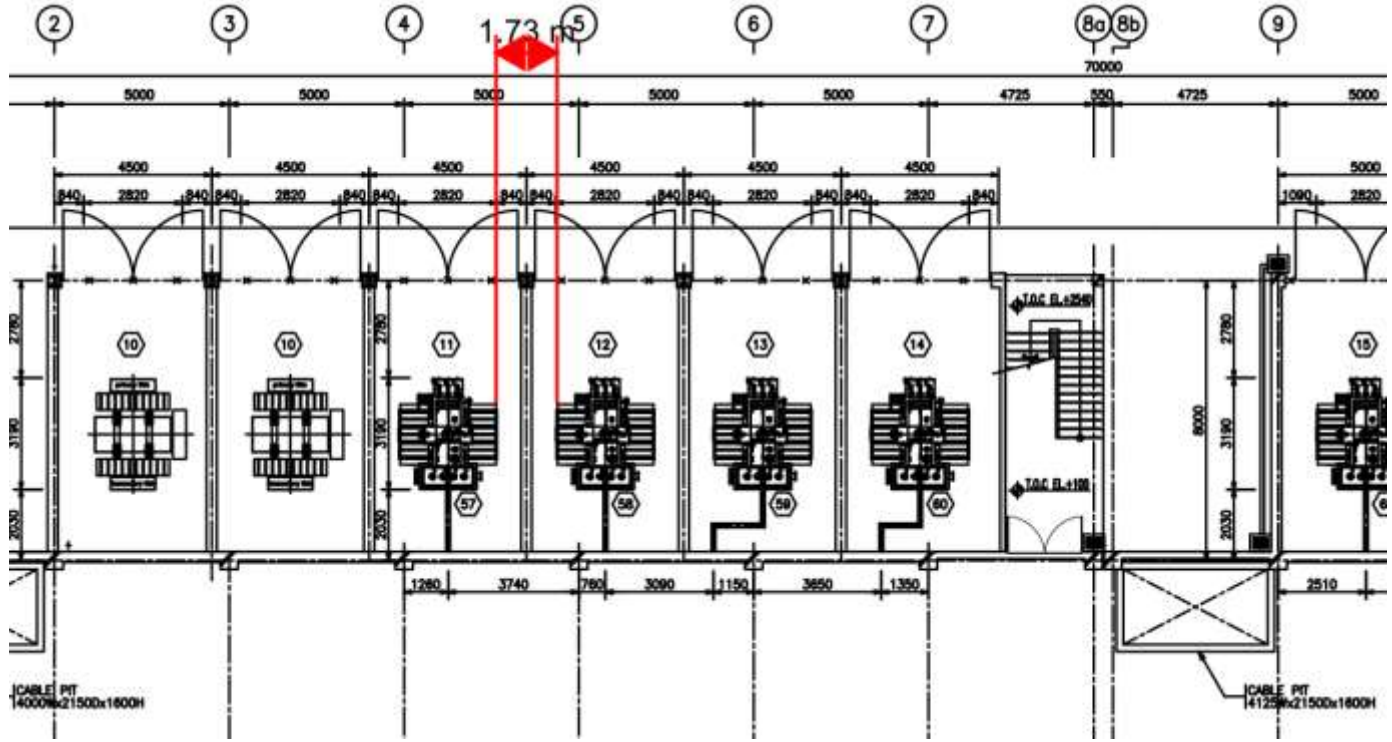
PHASOR DIAGRAM

HV SIDE				CT1	4 332 / 1,5	A	CL 5	10	VA
TAP	CONNECTION	VOLTAGE(V)	CURRENT(A)	CONNECTION SYMBOL			Dyn 11		
1	5 - 4	11 550	150,0	INSULATING LIQUID			MINERAL OIL		
2	5 - 3	11 275	153,6	CONDUCTOR MAT.			COPPER		
3	6 - 3	11 000	157,5	INSTRUCTION BOOK			-		
4	6 - 2	10 725	161,5	CONTRACT No.					
5	7 - 2	10 450	165,7						

บริษัท ถิรไทย จำกัด (มหาชน)
TIRATHAI PUBLIC COMPANY LIMITED

170.00

120.00



Equipment No. : 3628TR02A, 3628TR02B, 3628TR03A, 3628TR03B, 3628TR04A, 3628TR04B, 3628TR05A, 3628TR05B, 3628TR06A, 3628TR06B