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QUESTION N° : 1.13

B2_PS1_Group 3_Q1.13_T. YAMANAKA

**Question 1.13 : Would the authors of B2-10852 and experts from other countries/utilities share information on any statutory requirements/conditions of constructing overhead transmission lines in proximity with gas/oil pipe lines or fuel storage?**

Contribution 1.13:

Statutory requirements/conditions of constructing overhead transmission lines in proximity with gas/oil pipe lines or fuel storage in Japan

Legal requirements/conditions for electrical clearances between gas/oil pipelines or fuel storage sites and overhead power lines in Japan are defined by technical standards under the Electricity Business Act and the Fire Service Act.

1. Electrical clearance according to the Electricity Business Act
According to the "Interpretation of Technical Standards for Electrical Installations," "gas/oil pipelines or fuel strages" are classified as structures other than "buildings, roads, pedestrian bridges, railroads, tracks, cableways, communication lines, low voltage or high voltage distribution lines, low voltage or high voltage train lines and other overhead transmission lines (hereinafter referred to as "other structures").
According to Articles 102 and 106 of the Interpretation of Technical Standards for Electrical Installations, the electrical clearances between "gas and oil pipelines or fuel storage" and overhead power lines are classified as shown in Table 1 and Figure 1.

Table 1 Electrical clearance between gas or oil pipeline or fuel storage and overhead transmission line

| Operating voltage | Electrical clearance |
|---|---|
| 60 kV or less | 2 m |
| More than 60 kV and less than 170 kV | (2 + c) m[*1] |
| Exceeding 170 kV | (3.32 + d) m[*2] |

*1: c is the difference between the operating voltage of the overhead transmission line and 60 kV divided by 10 kV (rounded up to the nearest kV) multiplied by 0.12.
*2: d is the difference between the operating voltage of the overhead transmission line and 170 kV divided by 10 kV (rounded up to the nearest kV) multiplied by 0.06.

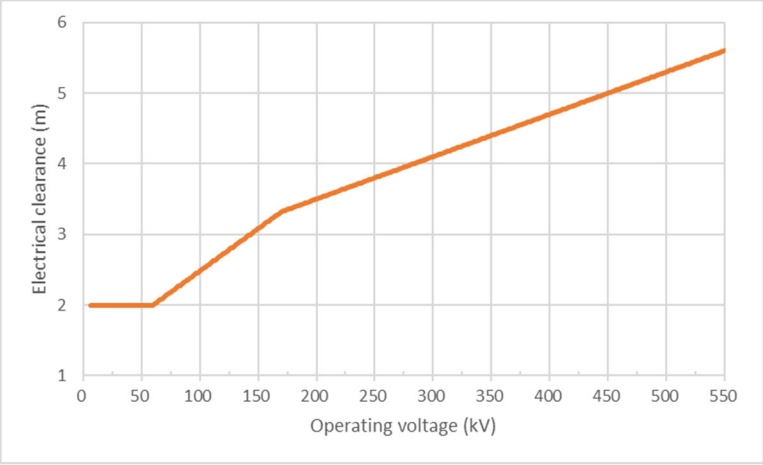


Figure 1 Electrical clearance between gas or oil pipeline or fuel storage and overhead transmission line

2. Electrical clearance according to the Fire Service Act
According to Article 9, Paragraph 1, Items 5 and 6 of the Cabinet Order on the Regulation of Hazardous Materials, the Electrical clearance between fuel oil refinery and overhead transmission lines are classified as shown in Table 2 and Figure 2.

Table 2 Electrical clearance according to the Fire Service Act

| Operating voltage | Electrical clearance |
|---|---|
| Overhead transmission lines exceeding 7 kV but not exceeding 35 kV | Horizontal distance of 3 m or more |
| Overhead transmission lines exceeding 35 kV | Horizontal distance of 5 m or more |

Note that there is no provision in the Fire Service Act for electrical clearances between gas and oil pipelines and overhead transmission lines.

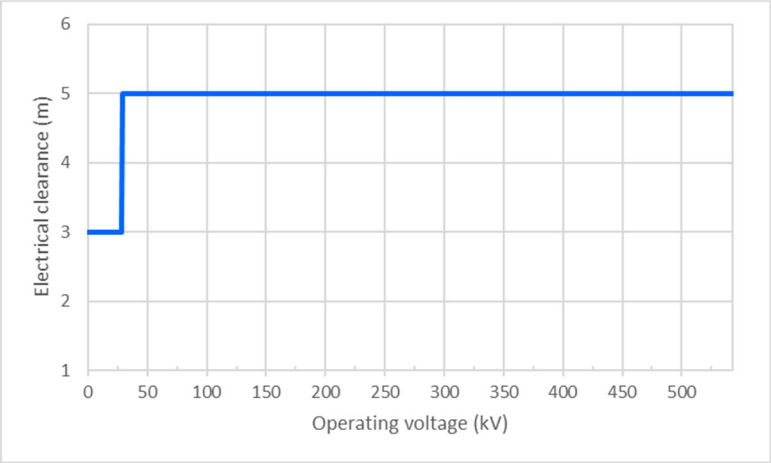


Figure 2 Electrical clearance according to the Fire Service Act

3. Electrical clearances combining by the Electricity Business Act and the Fire Service Act

Combining the electrical clearance in the Electricity Business Act and the Fire Service Act, the electrical clearance between gas or oil pipeline or fuel storage and overhead transmission line are shown in Table 3 and Figure 3.

Table 3 Electrical clearances combining by the Electricity Business Act and the Fire Service Act

| Operating voltage | Electrical clearance |
|---|---|
| 35 kV or less | 3 m |
| More than 35 kV and less than 450 kV | 5 m |
| Exceeding 450 kV | (5 + d) m*2 |

*2: d is the difference between the operating voltage of the overhead transmission line and 170 kV divided by 10 kV (rounded up to the nearest kV) multiplied by 0.06.

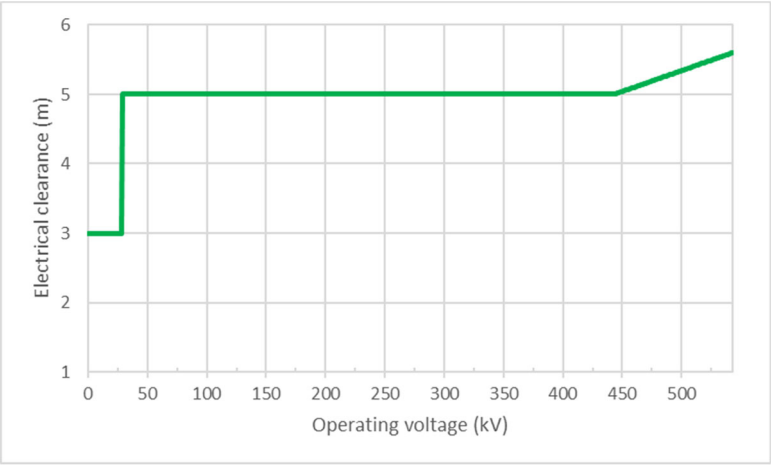


Figure 3 Electrical clearances combining by the Electricity Business Act and the Fire Service Act

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