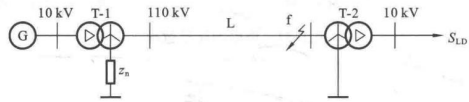
7-3　系统接线如题 7-3 图所示，已知各元件参数如下。发电机 G：$S_N=30$ MV·A，$x''_d=x_{(2)}=0.2$；变压器 T-1：$S_N=30$ MV·A，$U_S=10.5\%$，中性点接地阻抗 $z_n=j10\ \Omega$；线路 L：$l=60$ km，$x_{(1)}=0.4\ \Omega/\text{km}$，$x_{(0)}=3x_{(1)}$；变压器 T-2：$S_N=30$ MV·A，$U_S=10.5\%$；负荷：$S_{LD}=25$ MV·A。试计算各元件电抗的标幺值，并作出各序网络。



题 7-3 图

选取 $S_B=30\text{MVA}$，$U_B=U_{av}$

$$X_{(2)}=X_d''=0.2\frac{S_B}{S_{GN}}=0.2\times\frac{30}{30}=0.2$$

$$X_T=\frac{U_S\%}{100}\frac{S_B}{S_{TN}}=\frac{10.5}{100}\times\frac{30}{30}=0.105$$

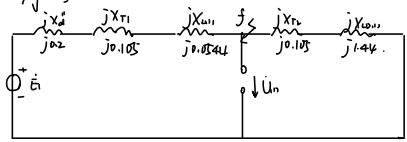
$$X_{L(1)}=X_{L(2)}=x_{(1)}l\frac{S_B}{U_B^2}=0.4\times60\times\frac{30}{115^2}=0.0544$$

$$X_{L(0)}=3X_{L(1)}=3\times0.0544=0.1632$$

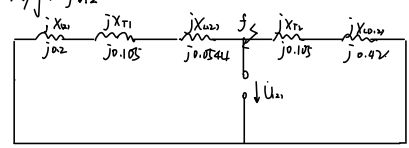
$$X_{LD(1)}=1.2\frac{S_B}{S_{LD}}=1.2\times\frac{30}{25}=1.44\qquad X_{LD(2)}=0.35\frac{S_B}{S_{LD}}=0.35\times\frac{30}{25}=0.42$$

$$Z_n=j10\frac{S_B}{U_B^2}=j0.0227\qquad 3Z_n=j0.0805$$

正序网络



负序网络



零序网络