

Sr. No.	Regulation	Original Regulation/ Proposed Amendment	Suggestion	Justification	CEA comments
Sterlite Power					
1	70(4)	Auxiliary Power Supply Transformer: An auxiliary power supply transformer of adequate capacity connected to the 33kV or 22kV or 11Kv bus shall be provided to meet the auxiliary and lighting loads of the sub-station.	Power Voltage Transmission within Substation for Auxiliary Power Supply is recommended.		NOT ACCEPTED as Auxiliary supply in S/S is allowed at all the available volgates i.e 33 KV or 22 KV or 11 KV
2	106(3)	Conductor: Required accessories for conductor and earth wire viz. midspan compression joints, repair sleeve, T-conductor, flexible copper bond, vibration dampers, spacer/spacer-dampers, earth wire clamps etc. shall conform to relevant IS	Mention of OPGW is missing. It may be considered to include OPGW alongside earth wire as OPGW is main stray.		OPGW is not in use in Distribution Lines
3	Provisio n for New Clause		AL59 on Distribution lines as a practice		AL59 is a low resistance high capacity new technology conductor and New technology conductors have alredy been included in clause 106(2) vide Amendment carried out in 2015
Wind Energy Association					
4	63(2)(f)	The accuracy class for metering core shall be equal to or better than the accuracy class of the meter specified in the Central Electricity Authority (Installation and Operation of Meters) Regulations as amended upto date.	The accuracy class of metering core of VT shall correspond to the class of meter without the suffix 's' (i.e., it should be 0.2 Class)	0.2s Class is not applicable to metering core of VT and it is only applicable to CTS where the errors at lower loadings are reduced. For example-, 0.2 class PT shall be considered for 0.2s meter.	not agreed.
5	75(1)	The transformer shall conform to relevant IS and shall be ISI marked.	The transformer shall conform to relevant IS	For station auxiliary transformer rating of 200kVA and below, the potential suppliers are not willing to supply the transformer with ISI mark though it confirms to IS with relevant type and routine certificates. In view of the same, the condition may be relaxed.	NOT ACCEPTED as all the Distribution Trasnformers now should be ISI marked as per DHI Quality Control Order.
Er.Sreekanth Nair					
6	59(1)	Circuit breakers (CBs) shall comply with the provisions of relevant IS. The circuit breakers shall be SF6 or vacuum type. The rated voltage for the circuit breakers shall be 36 kV, 24kV and 12 kV for 33 kV, 22kV and 11 kV systems respectively.	suggestion to consider VCB only for the voltage upto 33kv level since the population and requirements are more for this segment. The maintenance wrt SF6 is very easy and replacement also easy. Also the leakage and storage problems are with SF6 gas for these much population density of CB requirements.		NOT ACCEPTED as Both VCB & SF6 circuit Breaker have been included and the use of the perticular technology may be choosen by the utility as per their expereiences & practices
TATA Power, Mumbai					
7	54(7)	54. Power Transformers “(7) The maximum rise of oil and winding shall be as per the relevant IS.”	May be replaced as follows: “(7) The maximum rise of oil and winding shall be as per the relevant IS/IEC/IEEE.”	To ensure that IEC /IEEE may also be followed in case the relevant IS has not been published	NOT ACCEPTED as IS is avaiable for Power transformers

8	54(9)	54. Power Transformers “(9) A transformer with off-circuit tap changer shall have taps ranging from (+) 2.5% to (-) 10% in steps of 2.5% each on the higher voltage winding for variation in the voltage.”	It is suggested that the transformer shall have off circuit tap changer with taps ranging from +10% to -10% in steps of 2.5% on the higher voltage winding for variation in the voltage between day and night time.	The same range is applicable to OLTC with appropriate no. of taps. This is required as cities such as Mumbai face overvoltage problems due to extensive cable network and its associated capacitances.	May be accepted as “(9) A transformer with off-circuit tap changer shall have taps ranging from (+) 5% to (-) 10% in steps of 2.5% each on the higher voltage winding for variation in the voltage.”
9	74 (4)	74. General “(4) The DSS can also be placed on rooftop. It shall be ensured that the building is suitable for bearing the load of the DSS. Adequate fencing or isolation arrangements shall be ensured. Only dry type transformer shall be used for rooftop and underground installation.”	May be replaced as follows: “(4) The DSS can also be placed on rooftop. It shall be ensured that the building is suitable for bearing the load of the DSS. Adequate fencing or isolation arrangements shall be ensured. Only Dry type or <i>K-Class ester oil filled transformer with containment</i> shall be used for rooftop and underground installation.”	To make use of the Fire Safe and Enviornementally friendly K Class Fluids as an option.	NOT accepted . The clause has alrdey been amended in 2015.
10	54 (5)	The transformer can be oil filled, gas filled or dry type depending on requirement and as per Central Electricity Authority(Measures relating to Safety and Electricity Supply) Regulations as amended up to date . Outdoor dry-type transformer may be non-ventilated type.	The transformer can be oil filled <i>including K-class ester oils</i> , gas filled epoxy cast dry type or ventilated dry type/ <i>K-class Ester filled</i> depending on whether it is installed indoor or outdoor.”	To make use of the Fire Safe and Enviornementally friendly K Class Fluids as an option.	Not accepted as oil includes both mineral & K class oils as per IS 2016 part I so no need to mention K class oil
11	54 (10)	On load tap changing (OLTC) device shall be provided with transformers of 3.15 MVA and higher rating for better voltage control by manual and automatic and as per Central Electricity Authority(Measures relating to Safety and means. A transformer with on-load tap changer shall have taps ranging from (+) 5% to (-) 15% in steps of 1.25 % each on 33 kV or 22 kV winding for voltage variation.	On load tap changing (OLTC) device shall be provided with transformers of 3.15 MVA and higher rating for better voltage control by manual and automatic and as per Central Electricity Authority(Measures relating to Safety and means. A transformer with on-load tap changer shall have taps ranging from <i>(+) 10% to (-) 10%</i> in steps of 1.25 % each on 33 kV or 22 kV winding for voltage variation.	For places where highvoltage is experienced on sesonal/daily basis, Transformer need higher variation in taps	Not accepted as most of the utilties use range +5% to -15% in the step of 1.25% (step 1.25% is proposed in place of 2.5% based on the commenst of utilitis and IEEMA)
12	54 (13)	Transformers shall be separated from one another and from all walls and partitions to permit free circulation of air complying with requirements of relevant IS and CEA (Measures relating to Safety and Elctric Supply) Regulations as amended upto date.	Transformers shall be separated from one another and from all walls and partitions to permit free circulation of air complying with requirements of relevant IS/ <i>IEC</i> and CEA (Measures relating to Safety and Electric Supply) Regulations as amended upto date.	IEC 61936 takes into account the K Class Fluids and mentions the clearances in line with the enhanced fire protection.	Not accepted as IS is avaiambe and the safety would mainly be as per CEA (Measures relating to Safety and Elctric Supply) Regulations
13	54 (14)	33 kV voltage rating transformers shall be separated from one another by a fire wall as per CEA (Measures relating to Safety and Electric Supply) Regulations as amended upto date.	33 kV voltage rating transformers shall be separated from one another by a fire wall as per CEA (Measures relating to Safety and Electric Supply) Regulations as amended upto date <i>and relevant IS and IEC standard 61936.</i>	IEC 61936 takes into account the K Class Fluids and mentions the clearances in line with the enhanced fire protection.	Not accepted as IS is avaiambe and the safety would mainly be as per CEA (Measures relating to Safety and Elctric Supply) Regulations

14	59 (1)	Circuit breakers (CBs) shall comply with the provisions of relevant IS. The circuit breakers shall be SF6 or vacuum type.	Circuit breakers (CBs) shall comply with the provisions of relevant IS. The circuit breakers shall be SF6 or vacuum type. <i>In case of Vacuum type Circuit Breakers, Surge Arresters shall be provided for motor and Transformer feeders.</i>	To suppress transient surges generated by VCB during current chopping action.	Not accepted as placement of surge arresters have been dealt in Regulation No 62.
15	67 (2)	Power cables shall be XLPE insulated, PVC sheathed type confirming to relevant IS. Cables shall be flame retardant low smoke (FRLS)/Low Halogen type.	Power cables shall be XLPE insulated, PVC sheathed type confirming to relevant IS. Cables shall be flame retardant low smoke (FRLS)/Low Halogen type <i>when cables are exposed and not buried.</i>	Since most of the length of cables are buried the possibility of fire in buried underground cables does not exist however wherever they are exposed they should be FRLS type	Not accepted as fire may be there in trenches also and This amendment is in line with amended Safety regulations
16	68 (1)	Telecommunication System – A dedicated & reliable telecommunication system based on radio frequency (RF), cellular/mobile technology, fiber optics, satellite communication, PLCC, any other new communication technology or a combination of these shall be provided, besides usual public communication and local Public Address (PA) system.	68. Telecommunication System – “(1) A dedicated and reliable communication system i.e. radio, mobile telephone, satellite, <i>fibre optic based system</i> or a combination of these shall be provided, besides usual public communication and local public address (PA) system.”	To make available to the utilities the fibre connectivity that is established for communication purposes too.	Optical fiber is already included
17	71	Fencing/ boundary wall of suitable height shall be provided around the sub-station. A metalled approach road to transport the equipment should be provided leading from the main road.	Fencing/ boundary wall of suitable height shall be provided around the sub-station. A metalled approach road to transport the equipment should be provided leading from the main road. <i>At regular intervals the fencing shall be connected to the earthing grid.</i>	As an earthing requirement for safety.	May be accepted as "Fencing/ boundary wall of suitable height shall be provided around the sub-station. A metalled approach road to transport the equipment should be provided leading from the main road. <u>The fencing shall be connected to the earthing grid at regular intervals</u> ".
18	72 (2)	It should be ensured to provide separate DC battery bank for emergency lighting in the sub-station and Sub Station's main battery bank used for protection system is not used for emergency lighting to avoid the draining of the main battery bank.	It should be ensured to provide separate DC battery bank for emergency lighting in the sub-station and Sub Station's main battery bank used for protection system is not used for emergency lighting to avoid the draining of the main battery bank. Alternatively, design the station with appropriate size DG set to support for battery & battery chargers and emergency lighting.	For critical stations, DG set is provided which can support emergency DC lighting.	Not accepted as DG sets are not required in S/Ss.
19	75 (1)	75. Distribution Transformers “(1) The transformer shall conform to relevant IS and shall be IS marked.”	May be replaced as follows: “(1) The transformer shall conform to relevant IS/ <i>IEC/IEEE.</i> ”	To ensure that IEC /IEEE may also be followed in case the relevant IS has not been published	Not Accepted as only ISI marked DTs are allowed after DHI Quality Control order.
20	75 (2)	75. Distribution Transformers “(2) The transformer can be oil filled, or dry type depending on requirements and shall be as per the Central Electricity Authority (Measures relating to Safety and Electricity Supply) Regulations as amended up to date.”	May be replaced as follows: “(2) The transformer can be oil filled or dry type depending on the requirements. In indoor installations under stilts, roof top and underground installations the transformer shall be only dry type <i>or K-class ester filled transformer.</i>	The alternative of Transformers filled with K Class Fluids should be available as an option to Dry Type transformers as the same is used	Not Accepted as oil includes both mineral & K class oils so no need to mention K class oil. Both type of oils are also allowed in IS 1180.

21	75 (7)	deleted	This clause may not be deleted and retained.	This clause may not be deleted and retained as 22 kV Voltage Class still exists and it will take time to phase out the same.	The clause reg use of non standard rating of DTs is of no use as only standard rating DTs can be manufactured as per DHI Quality Control order.
TPDDL Delhi					
20	74(5)	" The DSS can be conventional , package type or completely self protected (CSP) type"	The DSS can be conventional , package type or completely self protected (C5P) and Vertical Type	In addition to existing ,We want to add vertical type s/stn which shall be constructed for the areas with high density where there is space constraint and heavy vertical load growth and space to install conventional DSS is not available. Vertical s/stn may have configration either DT on ground with RMU & LT switches above DT on another pleteform or vice versa as per techao economic consideration. Tentative drawing attached.	may be accepted as " The DSS can be conventional , package type, completely self protected (CSP) type <u>or vertical type (DT on ground with RMU & LT switches above DT on another pleteform or vice versa) "</u>
21	75(4a)	The maximum losses of oil filled distribution transformers shall not exceed as that for at least three star rating transformer specified by Bureau of energy efficiency(BEE), where applicable.	The maximum losses of oil filled distribution transformers shall not exceed as that for at least single star rating transformer specified by Bureau of energy efficiency(BEE), where applicable.	As per notification issued by Ministry of power dated 16-Dec-2016 regarding new loss level	This clause has alredy been amended in 2015 as per IS
22	75(9)	Any standard rating other than the ratings mentioned in Sub regulations -6 above can also be Chosen based upon technical and economic considerations.		This regulation should be retained but this is contradicting with the notification issued by ministry of Heavy industries & public enterprises on dated 10-Feb-14	Non standard ratings are not allowed now as per DHI quality control order
23	77(5)	"The plinth shall be higher than the surroundings. The plinth foundation shall be of Concrete",	The plinth shall be higher than the surroundings. The plinth foundation shall be of Concrete/ Brick/Metal/Plastic/Fibre glass which can bear the toad. It can pre-fabricated also.	Many type of good pre fabricated plastics/fibre/metal bases are available in market which can bear the DT load and it will also help to install new transformer on priority to meet the "ease of doing business guidelines".	May be accepted as "The plinth shall be higher than the surroundings. The plinth foundation shall be of Concrete/ Brick/Metal which can bear the toad. The plinth can be pre-fabricated also. "
24	79(3c)	The distribution box shall be mounted at a height of 1.5 to 2 meters for pole mounted distribution transformers while the feeder pillar box van be installed at ground level with adequate clearance.	The distribution box shall be mounted at a height of 1.5 to 2 meters for pole mounted distribution transformers while the feeder pillar box van be installed at ground level with adequate clearance. The distribution box can also be directly mounted on transformer of proper rating.	Manufacturers are providing distribution box mounted on single phase DT's	May be considered as "The distribution box shall be mounted at a minimum height of 1.5 meters for pole mounted distribution transformers while the feeder pillar box van be installed at ground level with adequate clearance. The distribution box can also be directly mounted on transformer body of single phase transformer".
25	80(2b)	"Horn gap fuse with air break switch shall be provided on high voltage side and switch fuse unit or wire fuse on low voltage side shall be provided for transformers below 100 kVA.	"Horn gap fuse with air break switch shall be provided on high voltage side for three phase transformers only and in case of	We want to inform you that we are installing single phase Distribution Transformer of capacity 10,16 ,25, 50 and 100 KVA and providing fuse on primary side and not installing any switch. However on upstream of the 11 KV feeders on which these Distribution Transformers	Not accepted as switches are required for safety purposes.

26	99(2)	"Metal cross arms and insulator pins for PCC and PSCC poles shall be bonded together and normally earthed at every pole for above 650 V lines and at every 3rd pole for lines below 650 volts.	Metal cross arms and insulator pins for PCC and PSCC every poles(irrespective of inhabited areas) for 33 kv or 22 kv or 11 kv shall be bonded together and normally earthed through continuous earth wire with earthing at every 5 th pole. For poles below 500V guarding with continuous earth- wire shall be provided invariably ,connected to earth at three equidistant points in one KM.	It will be very difficult to maintain earth resistance value of such huge earthing due to such volume of earthing at every pole. The results are satisfactory with the proposed arrangement.	This is not amended version, This clause has been propsoed for amendment to make in line with Safety Regulations
27	99(6)	" All poles above 650 volts, irrepective of inhabited areas, shall be earthed . For poles below 650 V guarding with continuous earth/messenger- wire shall be provided invariably ,connected to earth at three equidistant points in one km".	To be be omitted	Covered in above sub-regulation no-2	This clause has been propsoed for amendmend for ABC cable
28	107	LT Spacers- To avoid clashing and accidental mutual touching of bare overhead conductors on LT lines ,spacers which can be either spiral or composite shall be provided in between conductors at appropriate locations in different spans(particularly for lines having longer spans or lines having large sags encountering high winds).	LT/HT Spacers- To avoid clashing and accidental mutual touching of bare overhead conductors on LT/HT lines ,spacers (of appropriate Dilectric strength which can be either spiral or composite shall be provided in between conductors at appropriate locations in different spans(particularly for lines having longer spans or lines having large sags encountering high winds).	To reduce the transient breakdowns especially in long span line in rural area.	Spacers of adequate dielectrc strength may be accepted
29	75(1)	The transformer shall conform to relevant IS and shall be IS marked		Clarification required that it should be IS marked or ISI marked.	Accepted. It should be ISI marked.
30	108(3)	"(3) Aerial bunched cables/insulated cables/ covered conductor etc may be used in the congested , theft and accident-prone areas".	Aerial bunched cables and Co-axial shall cable be used in the theft and accident -prone areas	To reduce theft through punchering of cables	Amendment of this clause is alredy propsoed to include insulated cable etc Co-axiel cbales are not used in power and used in communication

31 108(4) (4) Underground Cables shall normally be laid in tranches as per the relevant standards and utility practices. Direct burying of underground cables shall not be adopted except where cables enter and take off from a trench. Cables may also be laid in pipes through trench less method as per the site requirement

cable with co-extruded pipes are required to avoid derating of cables in pipes as there is air trapped in the cable & pipe, since size of pipe is approximately double the size of cable The bigger size is used because in smaller size it will be difficult to lay the cable . Air trapped inside the pipe behaves as an heat insulator and does not allow the heat trapped in the air to get released to the external atmosphere. It also saves the time & cost of cable laying, to ensure that the cable is with additional pipe , color of cable outer sheath & pipe should be different Letter number TPDDL/Head(projects & Engineering)/11 dated 21st march ,2017 handed to CEA ,CE,DP&DD on 31.03.2017. copy of letter attached. The relevent changes are also already proposed to be done in the relevent IS for cable laying under revision.

May be accepted as drfat IS 1255 also propsoes to include the co-extruded ducts in IS. The regulation may be amenede as " Underground Cables shall normally be laid in trenches as per the relevant standards and utility practices. Direct burying of underground cables shall not be adopted except where cables enter and take off from a trench. Cables may also be laid in pipes through trench less method as per the site requirement. Cable with co-extruded pipes may be used in case of trenchless. In case of co-extruded pipe with the cable color of pipe should be different from the cable and should be physically strong to withstand external damages".

Regulation

54 (5)

54(7)

54(9)

54 (10)

54 (13)

54 (14)
59 (1)
59(1)
63(2)(f)
70(4)
71

72 (2)
74 (4)
74(5)
75 (1)
75 (2)
75(4a)
75 (7)

75(9)

77(5)
79(3)
80(2b)



Amendment requested

The transformer can be oil filled including **K-class ester oils**, gas filled epoxy cast dry type or ventilated dry type/ **K-class Ester filled** depending on whether it is installed indoor or outdoor.”

May be replaced as follows:

“(7) The maximum rise of oil and winding shall be as per the relevant IS/**IEC/IEEE.**”

It is suggested that the transformer shall have off circuit tap changer with taps ranging from **+2.5+10%** to -10% in steps of 2.5% on the higher voltage winding for variation in the voltage between day and night time.

On load tap changing (OLTC) device shall be provided with transformers of 3.15 MVA and higher rating for better voltage control by manual and automatic and as per Central Electricity Authority(Measures relating to Safety and means. A transformer with on-load tap changer shall have taps ranging from **(+) 10% to (-) 10%** in steps of **2.5** 1.25 % each on 33 kV or 22 kV winding for voltage variation.

Transformers shall be separated from one another and from all walls and partitions to permit free circulation of air complying with requirements of relevant IS/**IEC and CEA (Measures relating to Safety and Electric Supply) Regulations as amended upto date.**

33 kV voltage rating transformers shall be separated from one another by a fire wall as **per CEA (Measures relating to Safety and Electric Supply) Regulations as amended upto date and relevant IS and IEC standard 61936.**

Circuit breakers (CBs) shall comply with the provisions of relevant IS. The circuit breakers shall be SF6 or vacuum type.**In case of Vacuum type Circuit Breakers, Surge Arresters shall be provided for motor and Transformer feeders.**

suggestion to consider VCB only for the voltage upto 33kv level since the population and requirements are more for this segment. The maintenance wrt SF6 is very easy and replacement also easy. Also the leakage and storage problems are with SF6 gas for these much population density of CB requirements.

The accuracy class of metering core of VT shall correspond to the class of meter without the suffix ‘s’ (i.e., it should be 0.2 Class)

Power Voltage Transmission within Substation for Auxiliary Power Supply is recommended.

Fencing/ boundary wall of **suitable height** shall be provided around the sub- station. A metalled approach road to transport the equipment should be provided leading from the main road. **At regular intervals the fencing shall be connected to the earthing grid.**

It should be ensured to provide separate DC battery bank for emergency lighting in the sub station and Sub Station's main battery bank used for protection system is not used for emergency lighting to avoid the draining of the main battery bank.

Alternatively, design the station with appropriate size DG set to support for battery & battery chargers and emergency lighting.

The DSS can also be placed on rooftop. It shall be ensured that the building is suitable for bearing the load of the DSS. Adequate fencing or isolation arrangements shall be ensured. Only Dry type **or K-Class ester oil filled transformer with containment** shall be used for rooftop and underground installation."

The DSS can be conventional , package type or completely self protected (CSP) **and Vertical Type**

The transformer shall conform to relevant IS/IEC/IEEE.

The transformer can be oil filled or dry type depending on the requirements. In indoor installations under stilts, roof top and underground installations the transformer shall be only dry type **or K-class ester filled transformer.**

The maximum losses of oil filled distribution transformers shall not exceed as that for at least **three single** star rating transformer specified by Bureau of energy efficiency(BEE), where applicable.

This clause may not be deleted and retained.

This clause may not be deleted and retained.

The plinth shall be higher than the surroundings. The plinth foundation shall be of Concrete/ **Brick/Metal/Plastic/Fibre glass which can bear the load. It can pre-fabricated also.**

The distribution box shall be mounted at a height of 1.5 to 2 meters for pole mounted distribution transformers while the feeder pillar box can be installed at ground level with adequate clearance. **The distribution box can also be directly mounted on transformer of proper rating.**

"Horn gap fuse with air break switch shall be provided on high voltage side for three phase transformers only and in case of

Provisional Decision

Not accepted as oil includes both mineral & K class oils as per IS 2016 part I so no need to mention K class oil

NOT Acceptable as IS is available for Power transformers

May be accepted as "(9) A transformer with off-circuit tap changer shall have taps ranging from (+) 5% to (-) 10% in steps of 2.5% each on the higher voltage winding for variation in the voltage."

Acceptable: as most of the utilities use range +5% to -15% in the step of 1.25% (step 1.25% is proposed in place of 2.5% based on the comment of utilities and IEEMA)

Not acceptable as IS is available and the safety would mainly be as per CEA (Measures relating to Safety and Electric Supply) Regulations

Not acceptable as IS is available and the safety would mainly be as per CEA (Measures relating to Safety and Electric Supply) Regulations

Not acceptable as placement of surge arresters have been dealt in Regulation No 62.

Not acceptable as Both VCB & SF6 circuit Breaker have been included and the use of the particular technology may be chosen by the utility as per their experiences & practices

Not acceptable

NOT Acceptable as Auxiliary supply in S/S is allowed at all the available voltages i.e 33 KV or 22 KV or 11 KV

May be accepted as "Fencing/ boundary wall of suitable height shall be provided around the sub- station. A metalled approach road to transport the equipment should be provided leading from the main road. The fencing shall be connected to the earthing grid at regular intervals".

Not accepted as DG sets are not required in S/Ss. However, separate battery bank with appropriate capacity can be recommended.

NOT required. The clause has already been amended in 2015.

Accepted as " The DSS can be conventional , package type, completely self protected (CSP) type or vertical type (DT on ground with RMU & LT switches above DT on another platform or vice versa) "

Not Acceptable as only ISI marked DTs are allowed after DHI Quality Control order.

Use of both type of oils are also allowed in IS. Underground should only be dry type.

This clause has already been amended in 2015 as per IS

The clause reg use of non standard rating of DTs is of no use as only standard rating DTs can be manufactured as per DHI Quality Control order.

Non standard ratings are not allowed now as per DHI quality control order

May be accepted as "The plinth shall be higher than the surroundings. The plinth foundation shall be of Concrete/ Brick/Metal which can bear the load. The plinth can be pre-fabricated also."

May be considered as "The distribution box shall be mounted at a minimum height of 1.5 meters for pole mounted distribution transformers while the feeder pillar box can be installed at ground level with adequate clearance. The distribution box can also be directly mounted on transformer body of single phase transformer".

Not accepted as switches are required for safety purposes.