Procedure for Charging/Energization and Integration of Altered (including modified/replaced/upgraded) Power System Elements

This document lays down the procedure for facilitating charging/energization of altered (including modified/replaced/upgraded) power system elements. This procedure is supplementary to the existing SLDC Procedure for First Time Charging/Energization (FTC) and Integration of New or Modified Power System Element.

This procedure is applicable to all the power system elements charged at 132 kV level and above transmission elements emanating from Intra State Generating Stations (InSGS) /InSTS substations; Intra Regional/ Intrastate irrespective of voltage level/ownership; HVDC links/poles and FACTS devices (TCSC/FSC/STATCOM/SVC), irrespective of ownership; Generating units/Generator Transformers (GTs)/Station Transformers (STs) at Intra State Generating Stations.

This procedure is applicable for charging/energization of power system elements under following cases:

1. Charging of already commissioned element like 1-ph or 3-ph Phase ICT /GT/ST Reactor/ Transmission line / Bay / STACOM / SVC/ FSC / HVDC after continuous outage for more than 6 months.

2. Charging of already commissioned transmission line/bay equipment after alteration (including modification/ replacement/ upgradation) under Planned/Emergency/Forced outage:
    a. Replacement and/or upgradation of substation equipment: CT, PT, CVT, Isolator, CB, LA, Bushing and Wave trap
    b. Replacement of one phase of a failed ICT/Transformer/Reactor after replacement with spare which is yet to be commissioned (Not applicable on already commissioned and live spares)
    c. Replacement of failed 3-ph ICT/GT/ST/ Reactor with new ICT/GT/ST/ Reactor

3. Charging of transmission line after restoration of damaged/collapsed towers at the same location

4. Restoration of transmission line through Emergency Restoration System

5. Restoration after re-conductoring, re-bundling or similar other alterations which can change the type of power flow in the line (say from AC to DC transmission) and short circuit capacity of terminal substations.

6. Restoration of transmission line after upgradation/increase in voltage level

7. Charging of already commissioned transmission line after Alteration (including Diversion/ Modification/ Tower height modification) on account of change in river course, infrastructure projects etc.

8. Anti-theft charging of already commissioned /new transmission line
    a. Idle charging (for anti-theft) of a section of new transmission line which is not terminated at both ends
    b. Charging a section of already commissioned transmission line which is under breakdown/ long outage

Application for charging/energization of altered (including modified/replaced/upgraded) power system elements:

The application for charging of altered (including modified/replaced/upgraded) power system elements shall be submitted by asset owner to the concerned SLDC, at least **three (03) days** prior to the date of charging. The following documents (as applicable) shall be enclosed along with the applications:

a) **Annexure B6**: Undertaking by Asset Owner for Charging/Energization and Integration of transmission line/bay equipment after alteration (including modification/ replacement/ upgradation)
b) **Annexure B7**: Undertaking by Asset Owner for Charging/Energization and Integration of Transmission Line after Alteration (including Diversion/ Modification/ Tower height modification)
c) **Annexure B8**: Undertaking by Asset Owner for Anti-Theft Charging of Transmission Line

Approval by SLDC for charging/energization of modified power system elements:

Within **two (02) days** of submission of above documents by the applicant, concerned SLDC shall seek clarifications, if any. The applicant shall submit the clarifications to the concerned SLDC along with the supporting documents (as applicable).

Upon receipt of satisfactory clarifications/documents, SLDC would issue a provisional approval for charging/energization of the concerned power system element to the applicant within **two (02) days** of receipt of above documents and clarifications.

After getting the provisional approval from SLDC, the asset owner shall seek real time code from SLDC to charge the altered (including modified/replaced/upgraded) power system element(s). In real time, the charging/energization of the concerned power system element(s) shall be facilitated in accordance with the operating procedure, subject to the validity of provisional approval, availability of real time data and favourable system conditions.

Annexure – B6

Undertaking by Asset Owner for charging/energization and integration of transmission line/bay equipment after alteration (including modification/ replacement/ upgradation)

(*to be duly signed by Station In-charge/Asset Owner on a Letter Head*)

Ref. No: **Date:**

To,
The General Manager,
State Load Despatch Centre,Ranchi

Sub: Charging/Energization and Integration of [**Element Name**] with **[Altered]** *(Specify the type of alteration like modified/replaced/upgraded etc.)* [**new CT/CVT/PT/LA/Isolator/CB….with ratings/Tower with loc.**] of [**Asset Owner**] at [**Substation Name**]

Likely Date and Time of Charging:

Sir,

The failure was observed on [**old CT/CVT/PT/LA/Isolator/CB….. with ratings/Tower (loc)**] of [**Element Name**] at [**Substation Name**] due to [**reason**] on [**Date**]. The faulty [**old CT/CVT/PT/LA/Isolator/CB……..with ratings/Tower (loc)**] of [___] make has been modified/replaced/upgraded by [**Asset Owner**] on [**Date**] with [**new CT/CVT/PT/LA/Isolator/CB…….. with ratings/ Tower(loc)**] of [____] make.

I hereby undertake that

1. The said (**new CT/CVT/PT/ /LA/Isolator/CB……..**) is not a new power system element to be charged for first time and is a **[Altered]** *(Specify the type of alteration like modified/replaced/upgraded etc.)* power system element.	
2. We have complied with CEA (Measures relating to Safety and Electric Supply) 2010 (as amended) and all statutory clearances have been obtained for the said alteration. **2(a).** Approval for Energisation by Electrical Inspector is enclosed herewith.	
3. After completion of the alteration works, all protection systems at [**Substation Name**] are in place.	
4. There is no requirement of change in protection coordination at main and adjacent substations after completion of the **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*) of the transmission line. Or Necessary protection coordination at main and adjacent substations after completion of the **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*) of the transmission line has been carried out as per RPC guidelines.	**strike through whichever is not applicable**
5. There is no change in CTR/PTR w.r.t metering and telemetry. Healthiness of all telemetry channels is ensured and real time data including PMU data, if installed would flow to SLDC immediately as the element is charged. Or There is change in CTR / PTR w.r.t metering and telemetry. Necessary activities for incorporation of changes at SLDC have been done. Healthiness of all telemetrychannels is ensured and real time data including PMU data, if installed would flow to SLDC immediately as the element is charged.	

6. There is no change in the configuration for PLCC/OPGW communication after completion of the **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*) of transmission line. Healthiness of all available PLCC, OPGW communications etc. are ensured. Or Necessary changes incorporated in the configuration for PLCC/OPGW communication after completion of the **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*) of transmission line. All available PLCC, OPGW communications etc. are restored and their healthiness is ensured.	
7. There is no change in the length of transmission line after completion of the **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*). Or After completion of the the **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*), the length of the transmission line is [**increased/decreased**] by_____m.	
8. There is no change in the count of number of towers after completion of the **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*) of transmission line. Or After completion of the **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*),_____Nos. of additional towers are erected/removed in the transmission line. New erected/removed towers are _____(tower identification numbers)	
9. There is no change in the course of transmission line or change in the type of power flow after completion of the **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*). Or After completion of the **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*), there is change in the course of transmission line and/or change in the type of power flow. **9(a).** PTCC Clearance or Suitable Advisory on requirement of fresh PTCC Clearance by CEA is enclosed herewith.	

May kindly allow the Charging/Energization and Integration of [**Element Name**] with **[Altered]** *(Specify the type of alteration like modified/replaced/upgraded etc.)* [**new CT/CVT/PT/LA/Isolator/CB….with ratings/Tower with loc.**] of **[Asset Owner]** at **[Substation Name]**.

Thanking you,

(Name and Designation of the authorized person with official stamp/seal)

Place:

Date:

Enclosures:

a. Approval for Energisation by Electrical Inspector
b. PTCC Clearance or Suitable Advisory on requirement of fresh PTCC Clearance by CEA.

Annexure -B7

Undertaking by Asset Owner for Charging/Energization and Integration of Transmission Line after Alteration (including Diversion/Modification/Tower height modification)

(*to be duly signed by Station In-charge/Asset Owner on a Letter Head*)

Ref. No: **Date:**

To,

To,
The General Manager,
State Load Despatch Centre, Ranchi

Sub: Charging/Energization and Integration of [**Transmission line**] after **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*) by [**Asset Owner**]

Likely Date and Time of Charging:

Sir,

The **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*) of the [**Transmission line**] due to [**Reason**] was approved. The activity of [**Transmission line**] **[Alteration works]** was under execution by **[Asset Owner**] from [**Date of starting of Outage**]. In regard to the aforementioned **[Alteration works]**, I hereby undertake that

1. The said [**Transmission line**] is not a new power system element to be charged for the first time and is a **[Altered]** *(Specify the type of alteration like modified/replaced/upgraded etc.)* power system element.	
2. We have complied with CEA (Measures relating to Safety and Electric Supply) 2010 (as amended) and all statutory clearances have been obtained for the said **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*). **2(a).** Approval for Energisation by Electrical Inspector is enclosed herewith.	
3. After completion of the **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*), all protection systems are in place.	
4. There is no requirement of change in protection coordination at main and adjacent substations after completion of the **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*) of the transmission line. Or After completion of the **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*) of the transmission line, Necessary protection coordination at main and adjacent substations has been carried out as per RPC guidelines.	**strike through whichever is not applicable**
5. There is no change in CTR/PTR w.r.t metering and telemetry. Healthiness of all telemetry channels is ensured and real time data including PMU data, if installed would flow to SLDC and/or RLDC immediately as the element is charged. Or There is change in CTR / PTR w.r.t metering and telemetry. Necessary activities for incorporation of changes at SLDC have been done. Healthiness of all telemetrychannels is ensured and real time data including PMU data, if installed would flow to SLDC immediately as the element is charged.	

6. There is no change in the configuration for PLCC/OPGW communication after completion of the **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*) of the transmission line of transmission line. Healthiness of all available PLCC, OPGW communications etc. are ensured. Or Necessary changes incorporated in the configuration for PLCC/OPGW communication after completion of the **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*) of the transmission line. All available PLCC, OPGW communications etc. are restored and their healthiness is ensured.	
7. There is no change in the length of transmission line after completion of the **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*). Or After completion of the **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*), the length of the transmission line is [**increased/decreased]** by_____m.	
8. There is no change in the count of number of towers after completion of the **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*) of transmission line. Or After completion of the **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*),_Nos. of additional towers are erected/removed in the transmission line. New erected/ Deleted towers are_____(tower identification numbers)	
9. There is no change in the course of transmission line or change in the type of power flow after completion of the **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*). Or After completion of the **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*), there is change in the course of transmission line and/or change in the type of power flow. **9(a).** PTCC Clearance or Suitable Advisory on requirement of fresh PTCC Clearance by CEA is enclosed herewith.	

May kindly allow the Charging/Energization and Integration of [**Transmission line**] after **[Alteration works]** (*Specify the type of alteration like Diversion/Modification/Tower height modification etc.*) by [**Asset Owner**].

Thanking you,

Place: (Name and Designation of the authorized person with official stamp/seal)
Date:

Enclosures:

a. Schematic for the diversion/modification works carried out
b. Approval for Energisation by Electrical Inspector
c. PTCC Clearance or Suitable Advisory on requirement of fresh PTCC Clearance by CEA.

Annexure – B8

Undertaking by Asset Owner for Anti-Theft Charging of Transmission Line

(*to be duly signed by Station In charge/Asset Owner on a Letter Head*)

Ref. No: **Date:**

To,

To,
The General Manager,
State Load Despatch Centre,Ranchi

Sub: Anti-Theft charging of_____km length of [**Transmission Line**] from [**Substation Name**] end

Likely Date and Time of Charging:

Sir,

With reference to the anti-theft charging proposal of **[Transmission Line]**, I hereby undertake that:

1. The said [**Transmission Line**] is an under-construction transmission line and is not terminated at both the ends. To prevent theft during construction, anti-theft charging from [**Substation Name**] end is required. Or The said [**Transmission Line**] has already been commissioned. Due to failure of towers in [**Details of transmission section**] section of transmission line, the line has lost completeness. To prevent theft during repair and restoration activity anti-theft charging from [**Substation Name]** end is required.
2. We have complied with all provisions of CEA (Measures relating to Safety and Electric Supply Regulations) 2010 (as amended). Approval of Electrical inspector statutory clearances shall be obtained by asset owner after completion and termination of the line at bays / substation at both ends and shall be submitted prior to charging/energization and integration of the complete line.
3. All protection systems are in place. Necessary protection coordination at main and adjacent substations after completion of the works of the transmission line has been carried out as per RPC guidelines.
4. The length of anti-theft charged section is _____ km.
5. Anti-theft charged section of the said line will cover _____ Nos. of towers. from location _____ to_____(**tower identification numbers**)
6. All concerned parties, asset owners of both ends and Transmission line sections have already been informed in writing for anti-theft charging of the said line section.
7. All men and materials from the line have been removed. All safety measures are taken for anti-theft charging of the said transmission line.

May kindly allow the Anti-Theft charging of_____km length of **[Transmission Line**] from **[Substation Name]** end.

Thanking you,

Place: (Name and Designation of the authorized person with official stamp/seal)
Date:

Requirements for Charging/Energization and Integration of Altered (including modified/replaced/upgraded) Power System Elements

Case	Particulars	State EI Clearance	PTCC clearance	Undertaking (to be submitted by asset owner)	VOIP Communication, SCADA & PMU Data Availability	Protection Coordination (to be ensured by owner)	Reference
1	**Charging of already commissioned element like 1-ph or 3-ph Phase ICT /GT/ST Reactor / Transmission line / Bay / STACOM / SVC/ FSC / HVDC after continuous outage for more than 6 months**	Yes	Not required	No	Yes	Confirmation from T&C Wing/CRITIL that no changes have been carried out which may affect protection coordination	
2	**Charging of already commissioned transmission line/bay equipment after alteration (including modification/ replacement/ upgradation) under Planned/Emergency/Forced outage**						
a	Replacement and/or upgradation of substation equipment: CT, PT, CVT, Isolator, CB, LA, Bushing and Wave trap	Yes	Not required	Yes (as per **Annexure-B6**)	Yes	Yes (If changes in protection coordination are required as mentioned in Annexure-B6)	
b	Replacement of one phase of a failed ICT/Transformer/Reactor after replacement with spare which is yet to be commissioned (Not applicable on already commissioned and live spares)	To be processed as a fresh case for First Time Charging, PTCC clearance not required Note: The details about already commissioned spares at the substation to be provided by licensee. The connection diagram of hot spares also to be shared.					
c	Replacement of failed 3-ph ICT/GT/ST/ Reactor with new ICT/GT/ST/ Reactor	To be processed as a fresh case for First Time Charging, PTCC clearance not required					
3	**Charging of transmission line after restoration of damaged/collapsed towers at the same location**	Yes	Not required	Yes (as per **Annexure-B6**)	Yes	Yes (If changes in protection coordination are required as mentioned in Annexure-B6)	
4	**Restoration of transmission line through Emergency Restoration System towers**	• ERS plan and schedule to be shared with concerned SLDC and telephonic intimation to be conveyed beforehand. • All Electrical Safety measures at the ERS site must be followed strictly. • Time span for the ERS work should be reasonable & limited and should have necessary approval. • Subsequent to completion of Diversion / restoration works, Electrical inspection would have to be done under Regulation-43 of CEA (Measures relating to Safety and Electric Supply) 2010 (as amended) for charging the line. *(Approval from State EI Clearance during shifting to ERS as well as while bringing back to permanent structure shall be required)*					
5	**Restoration after re-conductoring,re-bundling or similar other alterations which can change the nature of power flow in the line (say from AC to DC transmission) and short circuit capacity of terminal substations**	To be processed as a fresh case for First Time Charging. Fresh PTCC Clearance or Suitable Advisory on requirement of fresh PTCC Clearance by CEA to be submitted by transmission licensee.					
6	**Restoration of transmission line after upgradation/increase in voltage level**	To be processed as a fresh case for First Time Charging. Fresh PTCC Clearance or Suitable Advisory on requirement of fresh PTCC Clearance by CEA to be submitted by transmission licensee.					
7	**Charging of already commissioned transmission line after Alteration (including Diversion/ Modification/ Tower height modification) on account of change in river course, infrastructure projects etc.**	Yes	Fresh PTCC Clearance or Suitable Advisory on requirement of fresh PTCC Clearance by CEA to be submitted by transmission licensee. *(Not required for increase in tower height only)*	Yes (as per **Annexure-B7**)	Yes	Yes (If changes in protection coordination are required as mentioned in Annexure-B7)	
8	**Anti-theft charging on rated voltage of already commissioned /new transmission line**						
a	Idle charging on rated voltage (for anti-theft) of a section of new transmission line which is not terminated at both ends	N/A	Yes	Yes (as per **Annexure-B8**)	Yes	Yes (Relay settings confirmation for safe anti-theft charging)	
b	Charging a section of already commissioned transmission line which is under breakdown / long outage		Not required				