

**EASTERN REGIONAL POWER COMMITTEE**  
14, GOLF CLUB ROAD, TOLLYGUNGE  
KOLKATA-700033

**MINUTES OF THE 5<sup>th</sup> PROTECTION COMMITTEE MEETING HELD  
AT NEW SILIGURI 400kV S/S OF POWERGRID ON 23.05.2007 (FRIDAY)**

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**List of participants is enclosed at Annexure-I.**

**Shri S.K. Shyam Choudhury, CE (Testing) of WBSETCL chaired the meeting. At the outset, he stressed the need of Protection Sub-Committee meeting among ER constituents on quarterly basis for agreed decision of Protection Coordination between CTU and utilities in order to achieve smooth integrated grid operation and analysis of disturbances, whenever occurred, for remedial measures thereof. He also hoped amicable resolution of some of the important pending issues in this meeting.**

**He then requested Shri B.Sarkhel, EE, ERPC to take up the agenda points for discussion.**

**ITEM NO.:1 CONFIRMATION OF THE MINUTES OF THE 4<sup>TH</sup> PROTECTION SUB-COMMITTEE MEETING OF ERPC HELD AT ERPC, KOLKATA ON 11.09.07**

The minutes of the above meeting were circulated vide letter no. ERPC/SE (OPRN)/ PROTECTION/ 2007/ 3936-62 dated 27.09.07.

*No comments have been received from any constituent. If there is no comment, the minutes of the meeting may please be confirmed.*

**The minutes of the 4<sup>th</sup> Protection Sub-Committee meeting were confirmed, without any modifications. However, members opined the Protection Committee meeting be held on quarterly basis and the decisions thus taken be implemented in letter and spirit.**

**ITEM NO. 2 PROTECTION COORDINATION BETWEEN RANGIT HPS (NHPC) AND OTHER UTILITIES (VIZ. POWERGRID/WBSETCL/ GOVT. OF SIKKIM) – REMEDIAL MEASURES FOR OVERCOMING FREQUENT LOSS OF GENERATION FROM RANGIT HPS**

Loss of generation at Rangit HPS of NHPC quite often took place in the year 2007 due to evacuation constraints caused by un-coordinated trippings of lines emanating from Rangit HPS. In the 18th OCC meeting held at ERPC, Kolkata on 11.09.07, it was decided that NHPC would convene a protection coordination meeting at NHPC end with the associated utilities viz. Powergrid, WBSETCL/ WBSEDCL, Department of Sikkim and ERLDC/ERPC to discuss the past tripping incidences occurred during the period. Accordingly, NHPC convened

the meeting at NHPC office, Siliguri on 29.10.07 to analyse the tripping incidences occurred on 05.07.07 at 20:01 Hrs, 28.08.07 at 22:29 Hrs, 11.09.07 at 20:50 Hrs and 13.09.07 at 16:47 Hrs respectively.

During the discussion it was revealed that there was mismatch existing in zone –II and zone-III time delay settings of the Distance Protection relays connected to 132kV system associated with Rangit HPS of NHPC (Refer Exhibit-I, Single Line diagram). The time settings provided in the transmission lines are indicated below:

Sl No.	System	Line	Existing Settings	
			WBSETCL / Powergrid / Sikkim end	NHPC end
1	WBSETCL & NHPC	132kV Rammam- Rangit	Z1-Inst., Z2-300ms., Z3-600ms.	Z1-Inst., Z2-300ms., Z3-1000ms.
2	Powergrid & NHPC	132kV Gangtok-Rangit	Z1-Inst., Z2-500ms. Z3-1500ms.	Z1-Inst., Z2-300ms. Z3-1000ms.
		132kV Siliguri-Rangit	Z1-Inst., Z2-500ms. Z3-1500ms.	Z1-Inst., Z2-300ms. Z3-1000ms.
3	Sikkim & NHPC	132kV Melli-Rangit	Z1-Inst., Z2-500ms. Z3-1500ms.	Z1-Inst., Z2-300ms. Z3-1000ms.

The committee members of the above meeting suggested to review and standardize the zone time settings between the utilities.

On 08.05.08 at 13:41 Hrs. the running unit of Rangit HPS again tripped on loss of evacuation path. A fault occurred in 132kV Rangit – Siliguri line, cleared from Rammam end in Zone-III, Rangit and Siliguri 132kV ends in Zone-I Distance Protection. The other evacuation lines from Rangit HPS had to be hand tripped leading to loss of evacuation path.

The details of tripping from Powergrid Siliguri end are awaited. This incident indicates uncoordinated trippings from Rammam and other ends.

In general, it is observed that whenever a fault occurs in any line adjoining Rangit HPS, instead of the concerned line only, other connecting lines are also getting tripped( due to operation of their distance relay in Zone-II or III time) resulting in loss of evacuation path of the power station. There are instances when the distance protection at Siliguri end of 132 kV Rangit –Siliguri line operated (possibly mal-operation) due to fault in 132kV Siliguri-Melli line.

These issues are required to be resolved

*Powergrid & Govt. of Sikkim are requested to submit the present Distance Protection settings of 132 kV lines at Siliguri, Melli and Gangtok s/s ends.*

In order to overcome the mismatch of the above settings, it is, therefore, proposed that the time settings of the Distance Protection relays at both ends of 132kV lines connecting Rangit HPS, NHPC with other utilities be adopted as:

<b>Zone 1-Inst.. Zone 2- 500msec.. Zone 3 - 1000msec.</b>
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*Members may please discuss and opine.*

### **Deliberation in the meeting**

***Members in general expressed concern over frequent loss of generation at Rangit HPS of NHPC during 2007 due to prevailing mismatch of zone time settings provided in the distance protection relays associated with the interconnected utilities. It was mentioned that the above discrepancies were noted by the Protection Coordination meeting among other utilities which was convened by NHPC on 29.10.07 at Siliguri as per the decision of 18<sup>th</sup> OCC meeting held on 11.09.07. While analysing the tripping incident on 08.05.08, it also revealed that a fault either in 132 kV Siliguri-Melli or, Rangit-Siliguri line ( a part of both the lines strung on common towers ) was cleared from Rammam end in Zone-III time while Rangit and Siliguri ends indicated Zone-I protection. The circuit breakers of Rangit and Siliguri ends possibly opened on delayed timing at the respective ends.***

***In view of discrepancy existing in Distance Protection Zone-II and Zone-III time settings among various lines adjoining Rangit HPS of NHPC as mentioned ( refer table in the agenda ), ERPC Secretariat proposed to adopt time setting in Zone I - Inst., Zone II- 500msec., Zone III - 1000msec. at both ends of 132 kV lines connecting Rangit HPS, Sikkim and North Bengal system of West Bengal to provide with uniform philosophy and to achieve adequate time discrimination. ERLDC also endorsed the proposal of ERPC considering lower short circuit levels in North Bengal system as compared to other parts in ER system.***

***CE (Testing ), WBSETCL was of the opinion that because of the absence of carrier aided inter-tripping in these 132kV lines, the Zone-II protection virtually functions as the primary protection beyond 80% of the protected line section. Hence, it is desirable to clear Zone-II faults in 300 msec. instead of 500mSec. Powergrid mentioned that whenever the state system interfaces with CTU transmission system, it has been the practice to set the Zone-II and III tripping times as 500mSec. and 1500mSec respectively. Therefore, Powergrid would be required***

**to modify only the Zone-III tripping time at 132kV Gangtok and Siliguri S/S to 1000mSec, for 132 kV Rangit-Gangtok, Gangtok-Melli and Siliguri-Rangit lines.**

**After the detailed deliberations, WBSETCL, Sikkim, NHPC and Powergrid agreed to adopt the proposed time setting for Zone-II & III in particular for maintaining uniformity, but POWERGRID and NHPC decided to refer it to their Corporate Engineering for concurrence before implementation.**

**Regarding tripping incident of 08.05.08, it transpired that although fault locator for 132 kV Siliguri-Melli line indicated location of the fault to be 76.18 Km from Siliguri end, probably both Rangit-Siliguri and Siliguri-Melli lines tripped because of double circuit line strung on single tower and distance protection operated from Siliguri end of 132 kV Siliguri-Rangit line. Sikkim representative could not confirm tripping of 132 kV Melli-Siliguri line from Melli end. The past tripping details including that on 08.05.08 from Melli substation of Sikkim, were not available.**

**It was decided that the Zone-II & III time settings as recommended for the lines involving Rangit HPS of NHPC, Rammam HPS of WBSEDCL, North Bengal system and Sikkim system would be implemented before 30.06.08 ( preferably by an agreed date ) and Powergrid & NHPC would, in the meantime, obtain the necessary concurrence from their Corporate Office. Sikkim was also urged to report the details of tripping involving Melli substation to ERPC & ERLDC and exchange the information with neighbouring substations.**

**For enhancing the reliability of power supply to 132kV NBU s/s of WBSETCL, ERLDC proposed that the existing Tee connection in one of the 132kV NJP (Siliguri)-NBU lines be closed at Tee point, keeping open from NJP (PG) end so as to extend power supply from 132kV NJP(WB) end through 132kV NJP(WB) - NBU line. For this purpose, the existing distance protection settings of 132kV NJP(WB) -NBU line would have to be modified accordingly.**

**WBSETCL agreed to examine the issue with their Planning and Engineering Department before conveying their final decision within a month in this regard.**

**ITEM NO. 3 ANALYSIS OF THE TRIPPING INCIDENT ON 31.03.08 AT 15:50HRS INVOLVING RUNNING UNITS TRIPPING OF FARAKKA STPS, NTPC AND RESPONSE OF DISTANCE PROTECTION (MAIN- I & II) AT MALDA & FARAKKA S/S OF POWERGRID**

On 31.03.08 at 14:11 Hrs 400kV Malda-Purnea line-II tripped on B-Phase earth fault. The line was declared ready for charging and test

charged from Malda end at 15:15 Hrs but tripped immediately. 315 MVA ICT –V bus coupler at Malda end also tripped on back up O/C & E/F and 400kV Farakka-Malda line –II tripped on zone-II distance protection from Farakka.

At FSTPS, NTPC end, severe voltage dip was observed and 3 out of four running units (generating around 1155MW) tripped on operation of GT back up E/F protection. As a result system frequency dipped from 49.6Hz to 48.95 Hz.

On patrolling fault was found at 62.6 Km. away from Malda s/s. All the tripped lines (except faulty 400kV Malda-Purnea line-II) were restored by same day and units of Farakka restored on the following day.

Preliminary reports received from Powergrid and FSTPS, NTPC but the detailed report including Event Logger and D/R print outs pertaining to the tripping at 15:15 Hrs are still awaited. The following points are required to be deliberated in the meeting:

- a. Non –operation of Switch –On- To- Fault ( SOTF) at Malda end
- b. The fault was within zone-I reach of Malda s/s and was seen at zone-II of the relays.  
- Zone reach of MICRO MHO relays at Malda needs investigation.
- c. It is observed that for the fault located beyond Malda, the relays both at Farakka & Malda s/s operated on zone-II set time. The relays ( REL 521 & LZ 96) at FSTPS end possibly operated faster than MICRO MHO relays at Malda s/s. The Event Logger / D/R print outs at FSTPS and Malda s/s would help to establish whether there was delay in fault clearing at Malda s/s.
- d. The observation of FSTPS on the severity of this fault current and its persistence for longer duration led to tripping of units on GT back up E/F relay operation which has IDMT characteristic and operated faster than Main-I & II relays at FSTPS.

However, GT of FSTPS unit no-I did not trip.

- The same needs to be investigated.

Powergrid & FSTPS, NTPC were requested to submit the detailed report including E/L and D/R print outs.

#### Deliberation in the OCC meeting

*Considering the prevailing operational importance of 400kV Farakka-Malda line-I & II, NTPC opined of the following :*

- i. There is no disturbance recorder / event logger for line-II at Farakka end.*
- ii. The settings of distance protection Main-I & II (RAZFE & MDT- 45, present settings – 300 mSec., 600 mSec. ) of line-I continued even after the line was upgraded ( converted from 220kV to 400kV ). The above relays which were replaced by Powergrid are very old (5 years) and*

services from the manufacturer are not readily available. FSTPS pointed out the same during March'07.

- iii. The distance protection relay setting for line-II is also continued without any revision by Powergrid. However, FSTPS has changed the settings of REL 521 & LZ 96 relays with intimation to Powergrid.
- iv. Due to severity and persistent of the fault current, 51 NGT relay ( GT backup earth fault relay) which is a CDG 11 relay having IDMT characteristic operated to isolate the units and save the equipment. The present settings for 200MW units – plug setting – 0.4, Time MF – 0.2 sec. CT ratio-500/1Amp, for 500MW units – plug setting -0.2, Time MF -0.3 sec., CT ratio -1000/1 Amp.

Powergrid observed that due to persistent fault condition at the time of test charging of 400kV Malda-Purnea line-II, immediate tripping of faulty feeder on SOTF is desirable. So, failure of SOTF function of both main-I & main-II protection at Malda s/s and its healthiness is required to be ascertained on urgent basis with help of manufacturer (M/s AREVA). However, main- I & II ( REL 521 & LZ 96) protection of line-II and generator protection both at Farakka end might have acted faster and isolated the fault before zone-II time of MICRO- MHO relay of 400kV Malda-Purnea line-II. This is required to be investigated and studied by Protection Committee of ERPC.

ERLDC observed that the tripping of bus coupler breaker and 315 MVA ICT –V on O/C & E/F at Malda end saved the grid from major hazards. However, the Protection Coordination between Farakka, NTPC and Powergrid s/s from Farakka–Malda–Purnea is required urgently in order to overcome the problem in future. It was also opined that the tripping of the units of Farakka through 51NGT relay might have been caused due to their timers set faster than the Zone-II time setting of 400kV Farakka - Malda lines from Farakka end.

OCC desired that the issue regarding protection coordination of the above is required to be resolved in the next Protection Committee meeting to be held in the month of May'08. ERPC requested Powergrid and NTPC to submit all the present relay settings of Farakka, Malda & Purnea s/s immediately for study and analysis before putting up to Protection Committee meeting likely to held in May'08 at Siliguri under the aegis of Powergrid.

As per decision of OCC, Powergrid carried out joint testing of Main-I & II protection installed in 400 kV Malda-Purnea lines at Malda S/s on 05.05.08 and 06.05.08. The tests result of SOTF feature of both relays were found to be satisfactory.

It was also observed that zone-III time setting at Farakka for 400kV Farakka-Malda line-II was 1500 mSec. whereas the same for Farakka-Durgapur lines was 1000mSec.

Considering the above facts, the followings are suggested for deliberation in the meeting:

- i) Provision of Disturbance Recorder/ Event Loggers for 400 kV Farakka- Malda lines.
- ii) Same zone-III time setting at Farakka STPS may be adopted for all 400kV lines emanating from Farakka.
- iii) Adequate time coordination of relays installed in transmission lines emanating from Farakka STPS as well as 400kV substations adjoining Farakka STPS, with the relays installed in GTs neutrals ( 51NGT) at Farakka STPS, so that fault in adjoining areas is cleared by tripping of lines prior to GTs.

In other words, the GT neutral relays (51NGT) at Farakka STPS shall not operate prior to Zone-III time of distance relays installed at Farakka end. For this, NTPC and Powergrid may resolve the issue jointly and intimate.

*Members may please discuss and opine.*

#### **Deliberation in the meeting**

***The incident was discussed in detail. It was concluded that due to non-operation of SOTF feature of distance protection of 400kV Malda-Purnea line-II at Malda 400kV s/s , the fault was cleared by tripping of the followings:***

- i. 400kV Farakka-Malda line-II from Farakka end,***
- ii. Tripping of Malda 400/220kV ICT on backup overcurrent protection***
- iii. Opening of 400kV bus-coupler breaker at Malda s/s.***

***However, the earth fault protection (IDMT characteristic) of GTs # 2,4 and 5 at FSTPS of NTPC appeared to have responded faster than zone-III time of Main-I & II relays at FSTPS end, thereby leading to tripping of the generating units.***

***Representative from FSTPS was of the view that Farakka-Malda line-II tripped from Farakka end in zone-III time delay since the fault was located at a distance of 40% of the length of 400kV Purnea-Malda line from Malda end. He further informed that the GT backup protection cannot sustain fault feeding for more than 1000 mSec. In view of this, it is desirable to set the zone-III time delay to 1000ms for all distance protections at FSTPS.***

***Powergrid representative informed that the MICRMHO relays at Malda 400kV s/s were tested with the help of M/s AREVA and were found to be operated successfully for a switch – on to fault (SOTF) condition. However, the action for replacement of existing RAZFE & LZ96 relays by numerical relays, at Farakka end, have been initiated. In the meanwhile, in addition to the existing Ac Logic for detection of SOTF in MICOMHO Relay , two additional inputs have been incorporated in the existing Micro-mho relays at Malda,***

- (i) ***I/P of Trip-Close Control Switch: During closing of CB, zone-II timer will remain bypassed & any Fault sensed in Z2 shall be cleared instantaneously.***
- (ii) ***I/P from Circuit breaker NC contact, to give feedback to Relay, of the Line Dead Condition***
- The above additional I/P's should ensure successful operation of the relay under a SOTF condition.***

Provision of Disturbance Recorder/ Event Loggers for 400 kV Farakka- Malda lines: POWERGRID intimates that procurement procedure is nearly over & LOA for Retrofitting existing MDT-45 with Numerical relay, along with default DR & Event Recorder facility, shall be issued within few weeks.

***Powergrid and NTPC were requested to refer the tripping incident to their Corporate Engineering department, giving details of relay indications received and existing setting of the relays for further analysis and remedial measures, if any.***

#### **ITEM NO. 4 ANALYSIS OF TRIPPING INCIDENT AT FARAKKA STPS ON 03.05.08 DUE TO R - PHASE 400kV CT FAILURE**

At 23:53 Hrs of 03.05.08, 400kV Farakka-Durgapur line-II, Farakka-Kahalgaon line- I & II tripped with relay indication zone-II fault from Durgapur & Kahalgaon with fault locator showing 99%. 400kV bus-I at FSTPS became dead on tripping of all connected breakers due to bursting of CT of 400kV Farakka –Durgapur line-II at Farakka end.

A detailed report of the tripping incident received from FSTPS, NTPC is enclosed in Annexure-I.

*FSTPS, NTPC may please explain and suggest remedial actions taken.*

##### **Deliberation in the meeting**

***FSTPS representative explained the incident in detail. Fire hazard in newly installed CT 19 led to operation of differential protection for 400kV bus-I with consequent opening of all CBs connected to the bus. Tripping of 400kV Farakka-Durgapur-II, Farakka-Kahalgaon-II and Farakka-Kahalgaon-I was attributed to operation of their respective LZ96 relays distance relays, which has the feature of sensing close-in faults.***

#### **ITEM NO.5 DISTURBANCE IN ORISSA SYSTEM ON 06.05.08 LEADING TO TRIPPING OF RUNNING UNITS OF TALCHER, NALCO ETC.**

A major grid disturbance occurred in Orissa system beginning at 15:20Hrs when 220kV Talcher – Talcher STPS line tripped on zone-II E/F protection. At 15:44 Hrs 220kV Theruvalli-Bhanjanagar line-I tripped due to snapping of earth wire on R-Phase conductor. Subsequently, a bus fault occurred at Meramundali S/S due to snapping of R-Phase jumper

between isolator and breaker of Bhanjanagar circuit-I. Thereafter, all the running units at Nalco as well as Talcher TPS tripped.

The detailed report was received from SLDC/OPTCL which is enclosed at Annexure-II.

*Members may please discuss.*

**Deliberation in the meeting**

***OPTCL representative explained the sequence of events that had occurred on 06.05.08. Tripping of 220kV TSTPS-TTPS line, 220kV Theruvali - Bhanjanagar line and 220kV NALCO-Rengali HPS line and running units at NALCO were isolated events and had no consequent relation with each other tripping incidences. The 220kV bus fault at Meramundali s/s aggravated the disturbances by causing multiple line trippings connected to the said bus section. He further added that in order to enhance the reliability of power supply to Bhubaneswar ( the capital city of Orissa) , OPTCL has been planning to connect 220kV Meramundali - Bidanasi and Meramundali - Chandaka lines from different 220kV bus sections at Meramundali s/s.***

**ITEM NO.6 PROVISION OF BUS BAR DIFFERENTIAL PROTECTION SCHEMES FOR BIDHANNAGAR 220kV S/S OF WBSETCL, BIHARSHARIFF 220kV S/S OF BSEB, JAYNAGAR /THERUVALLI /BHANJANAGAR 220kV S/S AND MERAMUNDALI 400/220kV S/S OF OPTCL – PRESENT STATUS OF INSTALLATIONS THEREOF**

In the last Protection committee meeting, OPTCL, SLDC representative mentioned that the bus bar differential protection at Meramundali 400kV s/s was kept out of service. It was also learnt that although, Theruvali & Jeynagar 220kV s/s are having one and half breaker scheme, there was no provision of TEED Protection at these sub-stations.

After detailed deliberation in the meeting, members recommended that OPTCL should ensure provision of bus differential protection scheme for 220 kV Jeynagar, Theruvali, Bhanjanagar & 400/220 kV Meramundali sub-stations to which OPTCL agreed to consider the above.

Similarly, the bus bar differential protection scheme for Bidhannagar s/s of WBSETCL and installation of LBB & bus differential protection for Biharshariff s/s of BSEB was to be provided by the concerned constituent on urgent basis.

*OPTCL, WBSETCL & BSEB may please intimate the present status of installation of bus differential protection at their respective sub-stations.*

**Deliberation in the meeting**

***WBSETCL representative apprised that technical evaluation of ABB made RADSS relay for installation of bus bar differential protection at their 220kV Bidhannagar s/s, is almost completed. The work order is expected to be placed by end of June,2008.***

***BSEB representative informed that although 220kV CTs (1200/1 Amp) of ICT-III have been commissioned by Powergrid, the existing differential protection panels at 220kV Biharshariff s/s which had been installed earlier, have now become obsolete. As such the present differential protection scheme could not be commissioned by M/s AREVA. The scheme is expected to be upgraded by the supplier by June end.***

***For installation of bus bar differential protection scheme at Meramundali, Jeynagar, Bhanjanagar and Theruvali 220kV sub-stations in Orissa, OPTCL representative apprised that the entire differential protection scheme needs to be assessed in the changed network scenario in order to avoid the consequences of their mal-operation. A comprehensive assessment of the existing scheme is being done by their Engineering Department, which will be informed to ERPC accordingly.***

**ITEM NO. 7 PHASING OUT OF P 40 / P 10 RELAYS AT KOLAGHAT TPS AND OTHER SUB-STATIONS IN ORISSA – ACTIONS TAKEN THEREOF**

In the 3<sup>rd</sup> Protection Sub-Committee meeting held on 31.01.07, it was recommended that P40 / P10 relays are required to be phased out because it found to be obsolete and exhibited inconsistent performance on several occasions. Moreover, the spares are not available and due to operational experience those relays should be replaced with standalone numerical relays which are being commonly used in distance protection in transmission line.

In the 4<sup>th</sup> Protection Sub-committee meeting, both WBPDC and Powergrid representatives confirmed that actions have been initiated to phase out P40 relays from Kolaghat TPS end for 400kV Kolaghat – Baripada & Kolaghat - Arambag lines.

Regarding phasing out of P10 relays existing in the Indravati (Powergrid)-Indravati (OHPC) tie line, OHPC and Powergrid were impressed upon to done tripping with the above relays at the earliest in order to prevent undesired tripping of the above line due to frequent mal-operation of P10 relays. The above relay at both ends acting as Main-II protection has been kept out of service since single bus operation of Indravati HPS units.

*WBPDC /WBSETCL /OHPC /Powergrid may please intimate the present status of installation of standalone numerical relays in distance protection of the transmission lines.*

**Deliberation in the meeting**

***WBSETCL representative informed that P-40 relays at both ends of 400kV KTPS - Arambag line have been replaced by numerical relays. It was gathered that for replacement of the P-40 relays by numerical relays in 400kV KTPS-Baripada S/C line, Powergrid has already placed order with M/s AREVA. For 400kV Indravati (PG) - UIHEP line, numerical relays have already been procured for both ends by OHPC, for replacement of the existing P-10 relays. However, M/s AREVA is yet to commission them.***

POWERGRID intimated that program for Retrofitting of Old relays with Mew MICOM-P442 relays has been fixed on 16.06.2008 at Baripada S/S & subsequently, the same shall be done at WBPDC, Kolaghat. Necessary shutdown of 400KV Kolaghat-Baripada Line will be indented very soon.

**ITEM NO. 8 INSTALLATION OF DF/DT RELAYS IN ER AND RAISING OF UFRs STAGE-I SET FREQUENCY FROM 48.5Hz to 48.6 Hz**

In the 5<sup>th</sup> TCC meeting held at Bhubaneswar on 18.02.08, the TCC members principally agreed to raise the first stage UFR setting 48.6 Hz (Inst.) in ER, as per decision taken in the joint meeting among NR, WR & ER held at ERPC, Kolkata on 27.11.07. However, before implementing the same it had to be established that the load relief obtained in NR & WR UFR stage-I settings at 48.8Hz were in accordance with the recommended scheme.

The actual load relief obtained from UFRs Stage-I ( 48.8Hz) in WR constituents and number of UFRs trippings occurred on daily basis during the month of January'08 as per the recommended load relief was put up to 24<sup>th</sup> OCC meeting for reference of OCC members.

Regarding introduction of df/dt relay in ER, TCC members in general opined that the feedback from NR & WR on effectiveness of existing df/dt relay was required before any final decision could be taken by ER in respect of the implementation of the same.

In this connection, it may please be noted that WRPC in its 6<sup>th</sup> meeting held on 11.01.08 advised WRLDC to discuss the matter with NRLDC and ERLDC for arriving at agreed df/dt setting. The existing df/dt stage-I & II settings in WR are 48.8Hz at 0.1Hz per second and 49.0Hz at 0.2Hz per second whereas, revised setting in the combined NEW grid as agreed in the meeting on 27.11.07 are:

Stage-I - 49.9Hz at 0.1Hz per second and,  
Stage-II- 49.9Hz at 0.2Hz per second respectively.

WRPC opined that the initiating frequency of df/dt relay at 49.9Hz might result in rise in system frequency to unsafe levels. Member Secretary, NRPC vide its letter dated 28.02.08 requested WRLDC to

resolve the issue for early implementation of the df/dt relays at revised settings in the combined grid operation.

In view of above, it was opined in the 24<sup>th</sup> OCC meeting that, if the question of implementation of DF/DT relays in ER arises at all, then West Bengal and Orissa having the facility of bulk shedding feeders, would be considered.

*WBSETCL & OPTCL may please intimate the bulk shedding feeders identified and corresponding load relief expected from the above feeders for installation of proposed Df / Dt relays in their respective system.*

**Deliberation in the meeting**

***ERLDC urged the constituents to agree to the proposal of raising Stage-I UFR setting from existing 48.5Hz to 48.6Hz, in view of the fact that such under-frequency condition may occur for 6 or 7 days at the most in a year and the load relief to be provided by ER is much less compared to that to be shared by the constituents of WR and NR.***

***Regarding installation of Df / Dt relays in ER, ERLDC emphasised that the primary objective of providing such relays is to maintain integrated system operation and relieving network congestion in the event of total loss of generation from super thermal power stations like FSTPS/KHSTPS/TSTPS in ER. It was therefore, stressed the need for identifying loads to be shed through Df/Dt relays, close to such power stations. The threshold frequency of 49.9Hz and 0.125Hz/ sec. for initiating Df / Dt actuated loadshedding in ER was already decided at ERPC, Kolkata among NRPC, NRLDC, WRPC, WRLDC and ERPC, ERLDC. OPTCL and WBSEDCL were requested to furnish details of bulk loadshedding feeders that could be brought under Df / Dt actuated loadshedding .***

***As regards, sharing of the cost of Df/DT relays to be installed in West Bengal and Orissa system, the philosophy adopted by NRPC & WRPC for NR & WR would be ascertained, before arriving at a consensus.***

**ITEM NO. 9 TRIPPING OF ALL UNITS IN CTPS, DVC AND INTERRUPTION OF POWER SUPPLY TO BSL ON 11.05.08**

At 11:23 Hrs, a fault occurred reportedly in 132kV CTPS-Rajabera line which could not be cleared by the relevant breaker from CTPS end. As a result, all running units, associated lines (including CTPS-BSL lines) and ATRs connected to 132kV CTPS tripped from their remote ends. Due to this, there was total interruption of power supply from DVC to BSL thereby, all running units of BSL tripped.

The issue was discussed in the 26<sup>th</sup> OCC meeting held on 16.05.08 wherein DVC submitted a detailed report of their testing team. As per

the report, the propagation of disturbance due to such incidents can be mitigated only through LBB protection scheme. DVC is planning for replacing/retrofitting relays for their lines when LBB protection will be an in-built feature.

The tripping incidences on 20.04.08 & 24.04.08 were also discussed in the OCC meeting. It was decided that DVC will submit detailed report of the above incidences mentioning the reason of tripping and their findings and remedial measures suggested for deliberation in the 5<sup>th</sup> Protection Committee meeting.

*DVC may please submit the detailed report and explain.*

**Deliberation in the meeting**

***DVC representative informed that existing relays at CTPS have been planned to replace by numerical relays, equipped with LBB features. In the interim period, DVC and SAIL would discuss and resolve the issue bilaterally and report to next OCC meeting to be held on 20.06.2008 at ERPC.***

**ITEM NO. 11 DATE AND VENUE OF THE NEXT (6<sup>th</sup>) PROTECTION COMMITTEE MEETING**

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**LIST OF PARTICIPANTS IN THE 5<sup>TH</sup> PROTECTION COMMITTEE MEETING OF ERPC HELD AT  
400kV NEW SILIGURI S/S OF POWERGRID ON 21.08. 07**

Sl. No.	ORGANISATION	NAME	DESIGNATION
1.	BSEB	MD. S.AHMED	
		Shri M.K.VERMA	
2.	JSEB	Shri J.KISHORE	ESE /CRTL
3.	DVC	Shri S.NAYAK	SE
4.	WBSETCL	Shri S.GUPTA	SE
		Shri A.BISWAS	SE
		Shri T.K.GHOSH	SE
		Shri D.GANGULY	CE/SLDC
5.	NTPC	Shri S.K.SHYAM CHOUDHURY	CE (TESTING)
		Shri C.GHOSH	SR.SUPDT
		Shri S.K.MITRA	DGM/FARAKKA
		Shri R.P.SINGH	SR.MGR(OS) /PATNA
6.	OPTCL	Shri N.DASH	SR.GM /SLDC
		Shri B.N.MAHAPATRA	GM/SLDC
7.	OHPC	Shri D.SETHI	AGM(E)
		Shri M.BISWAL	MANAGER
8.	NHPC	Shri S.K.MISHRA	DY.MGR /RANGIT
		Shri S.ADHICARI	SR.MGR /RANGIT
9.	CHPC	Shri TENZIN DORJI	
		Shri P.WANGDUK	
10.	SAIL	Shri T.BANERJEE	AGM(OPN)
11.	RANGIT HPS	Shri S.ADHICARI	SR.MGR(E)
12.	POWER DEPTT. SIKKIM	Shri B.KUFLEY	AE (EHV)
		Shri B.S.NEGI	AE(EHV)
13.	TEESTA-V	Shri U.K.NAND	DM (E )
		Shri P.K.DAS	DM (E )
14.	POWERGRID	Shri S.K.SINGH	CH.MANAGER(OS)
		Shri M.PAUL	CH. MANAGER /BINAGURI
		Shri S.J.LAHIRI	CH. MANAGER(OS)/KOL
15.	ERLDC	Shri P.MUKHERJEE	DGM
		Shri S.BANERJEE	CH. MGR
		Shri G.MITRA	CH. MGR
16.	ERPC	Shri B.SARKHEL	EE



भारत सरकार  
Government of India  
विद्युत मंत्रालय  
Ministry of Power  
पूर्वी क्षेत्रीय विद्युत समिति

**Eastern Regional Power Committee**  
14, गोल्फ क्लब रोड, टालीगंज, कोलकाता-700033  
14 Golf Club Road, Tollygunj, Kolkata-700033



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**NO. ERPC/SE(OPRN)/PROTECTION/2008/**

**DATE:: 09.06.2008**

**To,**

**Members of Protection Sub-Committee of ERPC  
( As per the list enclosed )**

**Subject: Minutes of the 5<sup>th</sup> Protection Sub-Committee of ERPC held at New Siliguri  
400kV substation of POWERGRID on 23.05.08 at 11:00 Hrs.**

Sir,

Please find enclosed a copy of Minutes of the 5<sup>th</sup> meeting of Protection Sub-Committee of ERPC held at **New Siliguri 400kV substation of POWERGRID on 23.05.08 at 11:00 Hrs.** for reference and record. Comments, if any, may please be forwarded to ERPC for necessary action.

These minutes are also available at ERPC website: [hppt://www.eastrpc.org](http://www.eastrpc.org).

Yours faithfully,

**( R.K.Grover )  
Member Secretary**

Encl: As above