DAKSHIN HARYANA BIJLI VITRAN NIGAM

Instruction No.19/MON/2007

From

The Xen/Monitoring,
DHBVN, Hisar

To

All CEs (OP)/S.E./(OP)/XENs (OP)/SDOs(OP)
JEs-I Incharge in DHBVN.

Memo No:Ch- 52/MON-260 Dated: 11 /1/2007

Subject: Understanding AT&C losses and loss reduction plan thereof. PART-II

It has been observed that Nigam is purchasing an average of 3 crore of units daily for its distribution to various categories of consumers but billing of only 2 crore units is being made by the Nigam and the balance 1 crore units goes as loss to the Nigam by one or the other way, mostly due to theft of energy by unscrupulous consumers. It has been viewed seriously by the Nigam.

It is noticed that presently about 36% to 38% AT&C losses are pertaining/occurring under DHBVN. Out of which approximately 20-21% shall be the Technical losses and balance 16-17% shall be Commercial losses. It is essential to reduce the AT&C losses so as to avoid the revenue loss to the Nigam and to improve the financial health/position of the Nigam.

Therefore it has been further decided that following steps shall also be taken to reduce the AT&C losses. In addition to **"Loss Reduction Plan"** already issued vide Instruction No. 15/MON/2006 dated 15.12.2006. The concerned have to ensure that Loss Reduction Plan, Part-II is implemented in letter & spirit and completed as per time frames specified.

Technical Losses steps:

The Technical losses are categorized as under:

A. L.T. Losses
B. H.T. Losses.

A) Reducing LT side losses:-

As per field reports it has been noticed that proper maintenance of Distribution Transformers and L.T. lines are not being carried out in the field offices so it has been decided that S.E.s (OP) shall ensure proper maintenance of the distribution transformers and L.T. lines to ensure the reduction of losses by taking various steps.

a) **Analysis and survey of Distribution Transformers**:-

One time survey of installed distribution transformer shall be carried out with regard to their detail of capacity/Date of installation/Pre maintenance/Loading etc.

Due Date: 15.02.2007.

Record to be maintained during survey/Analysis:

Name of S/Divn	(OP) Divn	Capacity of T/F	Date of manufacture	Date of installation	Visual physical check	Status of earthing

Oil status	Loading status	Remarks

Action taken : S.Es/XENs (OP)

b) Steps to be taken by field offices.

Distribution Transformers:

The following steps shall be taken to ensure proper functioning of Distribution transformers to avoid their damage and high Technical losses.

i) R&M of DTs :

Repair and maintenance of existing distribution transformers shall be ensured. The job may be got carried out by the respective S.Es (OP) on "Turnkey basis". The R&M job for all the existing transformers shall be completed by 30.9.2007.

ii) Capital Maintenance of Distribution Transformer:-

The capital maintenance of all the distribution transformers found installed of more than 5 years as per Survey Analysis shall be got carried out as per standing norms.

It is estimated that 20% of the installed transformers shall be of more than 5 years so it has been decided that each operation circle shall carry out capital maintenance of 200 distribution transformers per month. The capital maintenance of the transformer will include the proper earthing as per norms and their load balancing.

Action taken : S.Es/XENs (OP)/COS/TRW

iii) **DT Earthing**:

It shall be ensured that all the distribution transformers under DHBVN are properly earthed. The earthing shall be got checked with the help of earth tester and needful shall be got done to ensure the earthing as per norms.

Time Frame: Each (OP) circle shall ensure earthing of 200 distribution transformers per month.

Action taken : S.Es/XENs (OP)

iv) Load Balancing:

So as to ensure balancing in the loading on the distribution transformers the loading on each phase shall be checked with instrument and it shall be ensured that load on all the three phases R, Y & B is equal i.e. balance so as to avoid its damage/functioning.

Time Frame: 200 No. each OP circle per month.

Action taken : S.Es/XENs (OP)

v) **<u>Periodic maintenance of transformers</u>**:
It shall be ensured that periodical maintenance of all the transformers has been carried out as per norms. The thermo vision cameras shall also be used.

Record to be maintained in field offices as below:

1.	2.	3.	4.	5.	6
Sr.No.	Name of S/Divn.	Total No. of T/fs installed	No. of T/Fs more than 5 years old	Capital maintenance carried out up to previous month	Capital maintenance carried out during the month

7	8	9	10	11	12
Earthing checked carried up to previous month	Earthing checked carried during the month	Load balancing upto previous month	Load balancing during the month	Periodical maintenance upto previous month.	Periodical maintenance during the month.

Additional features to be checked:

i) Mechanical operation of G.O. switch shall be satisfactory having proper size/ current carrying capturing capacity.

The various above said maintenance jobs on the distribution transformer can be carried out at site through contract (turnkey basis) OR by TRW's staff.

c) **<u>Proper maintenance of LT lines:</u>**

To ensure the proper maintenance of LT lines for its satisfactory working and to reduce the technical losses the following steps are required to be taken:

1. **<u>Reconductoring:</u>**

It shall be ensured that the conductors installed/provided are of proper size and if needed the existing conductor be replaced with proper size conductor. The conductor under replacement shall be probably "Rabbit".

2. **<u>Reconfiguration</u>**:

3. **<u>Reduction of joints</u>**:

It shall be ensured that joints are minimum. The joints shall not be allowed at any cases.

4. **<u>Span Length:</u>**

Proper span length shall be maintained. The span length shall be maximum 50 meters.

5. **<u>Sagging of conductor</u>**:

The conductor status shall be checked which shall not be in loose condition shall be got tightened and proper spacers shall be provided, Tree cutting shall be done from the LT lines.

6. **Replacement of steel poles/strengthening of PCC poles**:-

The existing old steel poles Poles are required to be replaced with PCC poles and the PCC pole if loose any shall be strengthen

C.E./OP, DHBVN will review the status of progress of above said steps for their Zones and will furnish consolidated report (Zone) to this monthly for the appraisal of the management.

Time Frame:- The work/job shall be completed by March-2008.

B) HT losses:

It has been observed that out of the technical losses resulted in DHBVN about 30% are the HT losses and balance 70% are of LT side so to reduce/minimize the HT losses it has been decided that at least following steps shall be taken by the field offices to ensure the reduction in HT losses.

a) Power transformer:

Analysis of Power Transformers:

Analysis/survey of the existing power transformers shall be got carried out with regard to their existence on the system capital maintenance, periodical maintenance etc. The analysis job shall be got carried out through IIIrd Party Agency and various actions required shall be ensured on the basis of analysis/survey report by respective S.Es (OP). The work shall be started immediately and completed by 15.2.2007 positively and reports furnished.

Name of S/Divn	(OP) Divn	Capacity of T/F	Date of manufac-ture	Date of install ation	Visual physical check	Status of earthing

Oil status	Loading status	Remarks

The following steps shall be taken to ensure proper functioning of transformer to avoid its damage and high Technical losses .

i) **Capital Maintenance of Power Transformer**:-

The capital maintenance of all the Power transformers found installed of more than 5 years as per Survey Analysis shall be got carried out as standing norms.

It is estimated that 20% of the installed transformers shall be more than 10 years so it has been decided that capital maintenance of all the power transformers installed more than 10 years as per above survey/analysis shall be got carried out. The work shall be got carried on turnkey basis/TRW's staff. The capital maintenance of the transformer will include the proper as per norms earthing and load balancing. The work shall be completed by 31.3.2008.

Action taken: S.Es./XENs (OP)

ii) **Earthing:** It shall be ensured that all the Power transformers under DHBVN are properly earthed. The earthing shall be got checked with the help of earth tester and needful shall got done to ensure the earthing as per norms.

Time Frame: Each (OP) circle shall have earthing of 5 Power transformers per month.

iii) **Load balancing**: So as to ensure balancing the loading on the transformers the loading on each phase shall be checked with instrument and it shall be ensured that load on all the three phases R, Y & B is equal i.e. balance.

iv) **Periodic maintenance of transformers**: It shall be ensured that periodical maintenance of all the transformers has been carried out as per norms. The thermo vision cameras shall also be used.

Record to be maintained as below:

1.	2.	3.	4.	5.	6
Sr.No.	Name of S/Divn.	Total No. of T/fs installed	No. of T/Fs more than 5 years old	Capital maintenance carried out up to previous month	Capital maintenance carried out during the month

7	8	9	10	11	12
Earthing checked carried upto previous month	Earthing checked carried during the month	Load balancing upto previous month	Load balancing during the month	Periodical maintenance up to previous month.	Periodical maintenance during the month.

The various above said maintenance jobs on the Power transformers can be carried at site through contract (turnkey basis) OR by TRW's staff.

b) **HT lines**:

To ensure the proper maintenance its satisfactory working and to reduce the technical losses the following steps shall required to be taken:

1. **Reconductoring:**

   It shall be ensured that the conductors installed/provided are of proper size and of needed the existing conductor be replaced with proper size conductor. The conductor under replacement shall be probably "Rabbit".

2. **Reconfiguration**:

3. **Reduction of joints**:

   It shall be ensured that joints are minimized. The joins shall be allowed at exceptional cases.

4. **Span Length:**

   Proper span length is maintained. The span length shall be maximum 50 Mtr.

5. **Sagging of conductor**:

   The conductor status shall be checked which shall not be in loose condition and shall be got tightened and proper spacers if required shall be provided.

6. **Replacement of steel poles/strengthening of PCC poles**:-

   The existing old steel poles Poles are required to be replaced with PCC poles and the PCC pole if loose any shall be strengthen

7. **Cable joints:-**

   Cable joints existing if any shall be removed and there shall be no cable joint at any site

c) **HVDS/LVDS**:-

Keeping in view the high line losses it has been decided that HVDS/LVDS system shall be followed in future specially in rural areas. The S.Es (OP) shall ensure that HVDS/LVDS system is followed in rural area.

Time Frame:

All villages shall be on HVDS/LVDS in DHBVN by 31.12.2007 with priority to problems villages (where the line losses are on higher side).

d) **DHANIS:-**

In Dhanis the single phase transformation system shall be followed in future. With regard to existing supply system to Dhanis all efforts shall be made for conversion on single phase transformation system and the work shall be completed by 31.12.2007.

C.E./S.Es (OP)

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C.E./OP, DHBVN will review the status of progress of above said steps for their Zones and will furnish consolidated report (Zone) to this monthly for the appraisal of the management

All the steps with regard to commercial losses shall be followed/implemented as per previous instruction issued.

This issues with the approval of MD, DHBVN, Hisar

Xen/Monitoring,
DHBVN, Hisar