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Instruction No.15/MON/2006

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- 34/MON-260 Dated: 14/12/2006

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

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 that if such a heavy loss is allowed to continue then financial position of the Nigam may come to critical stage and the Nigam may not be in a position to ensure the quality supply to its consumers so it becomes very necessary to take necessary measures for reduction of losses. Accordingly following **"Understanding of AT&C losses and loss reduction plan thereof**" have been finalized.

This instruction consists of two parts – Part I defines ATC losses; Part – II is the DHBVN Loss reduction plan with definite time frames. All concerned have to ensure that the Loss reductions Plan is implemented in letter and spirit and completed as per time-frames specified.

Part – I

Technical Loss: Every element in a power System (a line or a transformer etc) offers resistance to power flow and thus consumes some energy while performing the duty expected of it. The cumulative energy consumed by all these elements is classified as **"Technical Loss."**

Commercial Loss: Losses occur on account of non-performing and under performing meters, wrong applications of multiplying factors, defects in CT & PT circuitry, meters not read, pilferage by manipulating or by passing of meters, theft by direct tapping etc. These are all due to non-metering of actual consumption and are called commercial losses. The total of "Technical" and "Commercial" losses are termed are **T&D loss.** It is unfortunate that in addition to the above, there is also a loss in revenue due to non-realization of billed demand. This is in addition to commercial losses and the aggregate of T&D loss and revenue loss due to non-realization is termed as **"AT&C loss"** (Aggregate technical and Commercial loss).

Therefore AT&C loss to the utility is the sum total of technical loss, commercial losses and shortage due to non-realization of total billed demand.

Example:

Units Input	100 MU	Revenue collection with reference to billed demand	90%
Unit billed	70 MU	This means out of 70 MU sales realization is for 90% of 70MU	63%
T & D Losses	30 MU	ATC losses	37%

Power systems are highly cost intensive and the investments needed to reduce technical losses by every 1% are too high. Computer aided load flow studies are to be made to arrive at peak power loss and also to arrive at technical losses based on load-duration curves.

FACTORS CONTRIBUTING FOR HIGH TECHNICAL LOSSES

The main factors that contribute for high technical losses are usage of lower size conductors, low voltage pockets, lack of reactive power control, etc. The methods to reduce technical losses in the order of priority based on cost impact are:

1. Re configuration (change over of loads or feeding source).
2. Re conductoring (Replacing existing conductor by higher size or conversion of single to double circuit).
3. Shunt or series capacitor installation (switched and fixed).
4. Auto voltage booster.
5. Additional link lines.
6. Combination of two or more of the above.
7. As a last resort to go in for another sub-station followed up by reconfiguration.
8. Software tools are available for the studies to be made is termed as IOSP (Integrated Optimum System Planning) in order to determine and prioritize such works, which result in maximum LRVI (loss reduction and voltage improvement) with least investment. Based on cost benefit ratio, the best option for investment can be chosen.
9. Combination of GIS and network analysis tools like Power Net.
10. However these studies are to be done keeping in view future load growth aiming for a five-year horizon. For computer aided studies the following are required:

Hardware	Software packages available	
Work Stations	CADPAW, CAD PAD	ABB, USA
Plotters	DINIS	ICL, UK
Digitisers	PRAO	EDF, France
Printers	CYME	CYME inc., Canada
Scanners	DPA	SCOTT & SOOTT, USA
	PSS	Power Technologies
	SINIX	Siemens, Germany
	DISBUT	APSEB
	CAPSI	WIPRO
	DISTPLAN	CPRI
	POWER NET	GECE

HVDS: Distribution systems should be at high voltage and the L.T. system shall be the least or eliminated as far as possible. HVDS reduces the technical losses appreciably. This can be explained by one single illustration that for a 100 KVA load the amperage at 11KV is 5 Amps where as it is 140 Amperes at L.T. voltage of 415 Volts.

Amorphous Core Transformers: Recently DTRs with amorphous core have entered Indian market and few utilities have installed these. DHBVN is also procuring amorphous core transformers now. The core (magnetizing or no load losses) get substantially reduced.

Commercial Losses: A good distribution network should be put in place for providing reliable power supply at assured voltage levels to consumers and the same shall be with least technical losses. The commercial losses can be

reduced by accurate metering, efficient billing and prompt collections - by implementing:

- Accurate Metering (A metering plan for installing meters with sustained accuracy).
- Appropriate range of meter with reference to connected load.
- Electronic meters with (TOD, tamper proof data and remote reading facility) for HT & HV services.
- Intensive inspections by pooling up staff.
- Reduce meter exceptional.
- Use energy Audit as a tool to pinpoint areas of high losses.
- Eradication of theft.
- AMR systems.

LOSSES-REASONS and REMEDIES

The major amount of losses in a power system is in primary and secondary distribution lines; while transmission and sub-transmission lines account for only about 30% of the total losses. Therefore the primary and secondary distribution systems must be properly planned to ensure within acceptable limits.

The factors contributing to the increase in the lines losses in the primary and secondary systems:

1. Lengthy Distribution lines:

In practice, 11 KV and 415 volts lines, in rural areas are hurriedly extended over long distances to feed loads scattered over large areas. Thus the primary and secondary distribution lines in rural areas; by and large radially laid, usually extend over long distances. This results in high line resistance and therefore high I^2R losses in the line.

2. Inadequate Size of Conductors:

As stated above, rural loads are usually scattered and generally fed by radial feeders. The conductor size of these feeders should be adequate.
The size of the conductors should be selected on the basis of KVA X KM capacity of standard conductor for a required voltage regulation.

Table 1&2 give the length of lines for 11 KV and 415 volts corresponding to different loads for the voltage regulation prescribed by IE rules; for different sizes of conductors respectively.

Table-1: Length of 11 KV line corresponding to different loads

Size of conductor (with code No.)	KVA-KM for 8% voltage drop at at 0.8 PF	Maximum of length of line (KM)	Load that can be connected (KW)
50 MM^2 ACSR Rabbit	10, 640	30	355
30 MM ACSR Weasel	7,200	20	360
20 MM^2 ACSR Squirrel	5,120	15	341

. The figures are for a conductor temperature of 60^{o} C. For a conductor temperature of 50^{o} C, the above figures shall be about 3% higher and for a temperature of 70^{o}C about 3% lower.

Table-2: Length of 415 volts line corresponding to different loads

Size of conductor (with code No.)	KW-KM for 8% voltage drop at at 0.8 PF	Maximum of length of line (KM)	Load that can be connected (KW)
30 MM^2 ACSR Rabbit	11.76	1.6	7.35
20 MM^2 ACSR Weasel	7.86	1.0	4.86
13 MM^2 ACSR	5.58	1.0	5.58
30 MM^2 AAC ANT	12.06	1.6	7.54
16 MM^2 Gnat	6.96	1.0	6.96

The figures are for a conductor temperature of 60o C. For a conductor temperature of 50o C, the above figures shall be about 3% higher and for a temperature of 70o C about 3% lower.

3. Distribution Transformers not Located at Load center on the Secondary Distribution System:

Often DTs are not located centrally with respect to consumers. Consequently, the farthest consumers obtain an extremity low voltage even though a reasonably good voltage levels maintained at the transformers secondaries. This again leads to a higher line losses. (The reason for the line losses increasing as a result of decreased voltage at the consumers terminally are explained in para-5)

Therefore in order to reduce the voltage drop in the line to the farthest consumers, the distribution transformer should be located at the load center to keep voltage drop within permissible limits.

4. Over-rated Distribution Transformers and hence their Under-Utilization:

Studies on 11 KV feeder have revealed that often the rating of DTs is much higher than the maximum KVA demand on the feeder. Over rated transformers draw an unnecessary high iron losses. In addition to this iron losses in over rated transformers the capital costs locked up is high.

From the above it is clear that the rating of DT should be judiciously selected to keep the losses with the permissible limits.

For an existing distribution system the appropriate capacity of distribution transformer may be taken as very nearly equal to the maximum KVA demand at good PF (say 0.85)

5. Low Voltage (less than declared voltage) Appearing at Transformers and Consumers Terminals:

Whenever the voltage applied to induction motor varied from rated voltage, its performance is affected. Within permissible voltage of +/- 6% of the affect practice, the supply voltage varies by more than 10% in many distribution systems. A reduced voltage in case of induction motor results in higher currents drawn for the same output.

For a voltage drop of 10%, the full load current drawn by the induction motors increase by about 10% to 15% the starting torque decreases by nearly 19% and the line losses in the distributor increases by about 20%

As the bulk load of rural areas and small scale industrial areas consists of induction motors, the line losses in the concerned distribution systems may even touch 20%.

The above situation is corrected by operating an “on-load-tap changing” in the power transformers situated at high voltage sub-stations 66/11 KV sub-stations and providing on the 11 KV feeders a combination of switched capacitors and automatic voltage regulators.

Further, the “off load tap changing” in distribution transformers is adjusted prior to the commencement of agricultural load season, which is readjusted before the one-set of monsoons when the rural load is small the off-load tap changing gear is available.

6. Lower Power Factor:

In most LT distribution circuits, it is found that the PF ranges from 0.65 to 0.75. A low PF contributes towards high distribution losses. For a given load, if the PF is low, the current drawn in high. Consequently, the losses proportional to square of the current, will be more.

Thus, line losses owing to the poor PF can be reduced by improving the PF. This can be done by application of shunt capacitors.

Shunt capacitors can be connected in the following ways:

i) Shunt capacitors are connected on the secondary side (11 KV side) of the 33/11 KV power transformers.

Table 3 shows from the studies carried out on 11 KV lines, how the improvement of power factor results in considerable reduction of losses.

Table-3: Reduction of Line Losses with improvement in Power Factor

Load (KW)	PF	KVA	Current (A)	Line Loss (KW)	Remake
300	0.7	428	38.9	27.2	Before
300	1.0	300	27.2	13.4	After

ii). Line losses in LT distribution lines may also be considerably reduced by installing shunt capacitors of optimum rating at vantage points.

The optimum rating of capacitor banks for a distribution system is 1/3rd of the average KVAR requirement of that distribution system. The vantage point is at 2/3rd the length of the main distributor from the transformer.

A study made in an urban distribution system fed from a 200 KVA. 11 KV/415 volts transformer with 300 HP CL of more than 200 consumers having small loom loads showed the range of PF of the distribution system varied from 0.65 to 0.70. The reactive power requirement was 135 KVAR.

The inductive loads occurred on the distribution system between 7 AM and 8 PM; on all the working days with almost constant load-cycle. The capacitor bank rating 42.5 KVAR were installed at 2/3rd the distance from the transformer on the main distributor and were switched on and off manually at 7 AM and 8 PM respectively on all working days. The loss reduction was thus fund to be 6-7%. The released capacity in this particular study was 42 HP, which could be supplied to the additional consumers.

iii) A more appropriate manner of improving this PF of the distribution system and thereby reduce the line losses is to connect capacitors across the terminals of the consumers having inductive loads. The extent of reduction of line losses in this manner depends mainly on the extent to which the PF of consumers is improved. In this case, the capacitor is connected in parallel to the terminals, the capacitors being switched on and off together with the equipment itself.

By connecting the capacitors across individual loads, the line loss is reduced from 4-9% depending upon the extent of PF improvement.

7. Bad Workmanship Resulting in Poor Contacts at Joints and Connections:

Bad Workmanship contributes significantly towards increasing distribution losses. Efforts should, therefore, be made to have the best possible workmanship. In this context the following points should be borne in mind:

i) Joints are a source of power loss. Therefore the number of joints should be kept to a minimum. Proper jointing techniques should be used to ensure firm connections.
ii) Connections to the transformer bushing-stem, drop out fuse, isolator, and LT switch etc. should be periodically inspected and proper pressure maintained to avoid sparking and heating of contacts.
iii). Replacement of deteriorated wires and services should also be made timely to avoid any cause of leaking and loss of power.

Pilferage of Energy:

In addition to the factors discussed above, causing an increase in line losses there is, unfortunately, a certain amount of theft of electrical energy.

Since it is often not possible to find out culprit, the stolen energy cannot be measured and, therefore can not be charged to any one. Stolen energy is, therefore, considered as a part of line losses.

Unscrupulous consumers extract energy illegally by-passing the energy meter or by connecting leads directly to the distribution lines. Various measures to stop theft of energy are as below:

1) Surprise inspections are carried out by vigilance squads.

2) The energy meter is housed in a separate box sealed and made inaccessible to the consumers. The fuse cut-outs are provided after the meter.

3) Multicore PVC cables are used as service mains instead of single core VIR wires.

4) The energy meter manufacturers are asked to provide the potential link inside the body of the energy meter rather than inside thermal cover. This prevents the potential link to be disconnected by the consumer.

5) Heavy fines are imposed on consumers found committing theft of energy.

Part- II

Loss Reduction Steps to be implemented in DHBVN

I. POLE MOUNTED STEEL METER BOXES

1 WHY POLE MOUNTED BOXES:

Pole mounted boxes are proposed in high loss and theft prone areas due to the following reasons.

a. Difficulty in entry into the houses.
b. Meters fixed at inconvenient locations inside the house.
c. Difficulty in meter reading and inspection by meter readers or officers.
d. Tampering service wires and tapping supply before the meter by neutral wire or phase wire meddling with switch control.
e. Tapping the supply by making pin hole puncture on service wire and bypassing.
f. Tampering the Terminal Cover seals and meter cover seals in invisible fashion and indulging in theft.
g. Abnormal low consumptions even though the connected loads are more.

2 PROVISION FOR RELOCATION OF METERS IN CEA METERING REGULATIONS, 2004:

Keeping in view rampant theft and HIGH losses, shifting the meters outside the house on utility premises is allowed by CEA Metering Regulations, 2004.

3 PRECAUTIONS TO BE TAKEN:

For successful implementation of the above programme the following precautions are needed to be taken.

a. It should be implemented on war footing basis duly completing the programme within six months i.e by end of March 2007.
b. Providing the pole mounted meter boxes with suitable polycarbonate seals in addition to locks.

c. Providing seals to terminal cover of each meter without fail. Failure to provide seal would be seriously viewed.
d. Fixing responsibility on the meter reader / contractor agencies for failure to report damage to Meter Box or Meters or defect in meter.
e. Assistant Engineers have to lodge complaints on damage of meters / meter boxes to local police – Electricity Act 2003 -….. 138 Section.
f. The connection from the LT line to the meter box is by way of cable only.

4 RECORDS TO BE MAINTAINED:

Assistant Engineer/Operation shall maintain the record in section office as shown in Survey Proforma and Annexure – I.

SURVEY PROFORMA FOR ERECTION OF POLE MOUNTED BOXES

DTR LOCATION: **STRUCTURE CODE:**

Sl.No.	Pole Location in front of house no. / Land Mark	No of Services Existing on the pole		Single Boxes required	Multi type Boxes required
		Single Phase	3 Phase		

ANNEXURE – I

Register to be maintained at JE/AFM level and maintained by AE/OP

SECTION:

TOTAL PUBLIC DTRS:
TOTAL COMPLEX DTRS:
TOTAL DTRS:

Sl. No	DTR Structure Code	No of services existing on DTR	No of pole mounted boxes required		Date of Estimate Submitted	Date of Estimate Sanction	Date of 100% Boxes Erected	Whether all Services under DTR Transferred	Date of Submission of bill	Date of Pay-ment
			Single Type	Multi Type						
1	2	3	4		5	6	7	8	9	10

5 REVIEW:

Superintending Engineer/Operation is requested to monitor/review the pole mounted in boxes as enclose in Annexure – II.

ANNEXURE - II

Review performance for fixing of Pole Mounted Boxes

S.No	Name of 11 KV Feeder	Total DTRS on feeder	Total Services Existing	No. of DTRS 100% pole mounted (up to Pre. Month)	No. of Services Pole Mounted (up to Pre. Month)	No.of DTRS 100% Pole Mounted this month	No. of Services Pole Mounted this Month	Total DTRS 100% Pole Mounted	Total Services Pole Mounted	Balance DTRS to be 100% Completed	No. of Services to be Pole Mounted
1	2	3	4	5	6	7	8	9	10	11	12

II. SEALING OF TERMINAL COVERS

1. ISSUE

1a. Inspection of services in the field by various agencies has revealed that more than 60% of the services in villages/Towns are without terminal cover seals. In the absence of seals a number of theft cases were detected where looping across current terminal is seen within the terminal cover. This situation causes heavy loss of revenue to the company and needs rectification immediately.

1b. Terminal cover sealing is basic to prevention of theft and the statuary duty and responsibility of the concerned ALM/LM/AFM/JE. Knowingly, continuing the meters without seals is a serious offence and amounts to encouraging power theft.

1c. In view on the above all SEs are requested to take up sealing of 100% of the meters and to closely monitor progress. (The proforma shown in annexure-IV may be used)

2. DUE DATE:

By end of March 2007.

3. RECORDS TO BE MAINTAINED:

Assistant Engineer/Operation shall maintain the register as per the proforma shown below.

ANNEXURE – III

DTR WISE SEALING REGISTERS TO BE MAINTAINED AT SECTION LEVEL

11 KV Feeder: **No of Services Existing Under DTR:**

DTR STRUCTURE CODE: **No of Services Terminal Covers to be Sealed :**

Sl.No.	Name of the Consumer	Address	Land Mark near SC.No.	SC.No.	Category	M.No.	Make	Capacity	TC Seal No.	Date of Sealing
1	2	3	4	5	6	7	8	9	10	11

Whether any UDC/OSL Services are Existing in Premises If So, SC Nos to be Mentioned	Whether Meter Inside or Outside	Whether Service Wire Concealed or Joints	Signature of the Consumer	Signature of staff	Name of the Staff Member
12	13	14	15	16	17

4. WORKING INSTRUCTIONS:

1. One time survey is to be conducted while sealing the terminal cover in getting the information of condition of service wires and locations, class of accuracy of meter, etc., as per annexure-III.
2. Ensure sealing of services DTR wise.
3. Ensure that no loops are existing inside the terminal cover before sealing.
4. Ensure seal number is entered in the register and obtain signature of consumer in the register.
5. The concerned LM has to affix his name and signature in the register.

Violation of the above instructions shall not be allowed or permitted under any circumstances.

5. Review Information shall be maintained in proforma given below.

ANNEXURE - IV

REVIEW PROFORMA FOR TERMINAL COVER SEALING (DISTRIBUTION CODE WISE)

S.No	Name of Section	No. of DTRS Existing	Total services existing	No. of DTRS completed upto the end of previous month	No. of DTRS where 100% sealing completed this month	Total No. of DTRS 100% sealed	Total No. of Services Sealed So Far	Balance DTRS to be sealed 100%
1	2	3	4	5	6	7	8	9

III. REPLACING THE OLD ELECTRO MECHANICAL METERS WITH HIGH QUALITY STATIC METERS

1. <u>THE ISSUE:</u>

The field reports from various distribution engineers are indicating that there are still number of electro mechanical meters of various makes existing in the field.

Electro mechanical meters are prone to mechanical defects, effecting the recording of consumption, it is preferred to replace all electromechanical meters with High Quality Static Meter as per the CEA directives.

2. <u>ACTION NEEDED</u>

Hence, all Superintending Engineer/Operation are requested to instruct the field engineers to replace the electromechanical meter with High Quality Static Meter in High Energy Loss distribution as first priority (Also Recommended by CEA).

3. RECORDS TO BE MAINTAINED :

CA shall maintain register as per following proforma.

ANNEXURE – V

Register to be maintained at section level and maintained by AE/Operation

DTR NAME & LOCATION: **DTR STRUCTURE CODE:** **CAPACITY:**

S.No	Service No	Category	Name of the Consumer	Address of the Consumer	Land Mark	Details of New Meter			Date of Replacement	Remarks
						Meter No	Meter Make	Capacity		

<u>REVIEW :</u>

Superintending Engineer/Operation shall review the program of meter replacement as per proforma given below:

ANNEXURE – VI

REVIEW PROFORMA FOR PROVIDING HIGH QUALITY METERS

S. No	Name of the Section	No of DTRs existing	No of Services existing	No of DTRs for which 100% High Quality Meters provided till previous month	No of DTRs for which 100% High Quality Meters Provided in this month	Balance DTRs for which 100% High Quality Meters to be provide	Balance services to be provided with High Quality Meters	
							1Ph	3Ph
1	2	3	4	5	6	7	8	9

<u>CAUTION:</u> Ensure that the meter seals and meters are intact before replacing with High accuracy static meters.

IV. JOINTS IN SERVICE WIRES / CONCEALED SERVICE WIRE / METERS INSIDE THE CONSUMER PREMISES

1. ISSUE:

Inspection by various agencies has indicated that a large number of service meters are at inconvenient locations inside the house, and service wire is either concealed or having joints before entering the meter.

2. ACTION NEEDED:

A. Bring out the meters to convenient location.

B. Ensure that the service wire is not concealed and has no joints.

3. RECORDS TO BE MAINTAINED:

The register is to be maintained at section is as below.

ANNEXURE – VII

REGISTER TO BE MAINTAINED FOR THE SERVICES HAVING CONCEALED SERVICE WIRE/METERS INSIDE THE PREMISES AND JOINTS IN SERVICE WIRE

DTR Name: & Location **Cap:** **Structure Code:** **No of Services Under the DTR:**

S.No.	Service No	Name of the Consumer	Address of the Consumer	Land Mark	Category	Whether Meter is shifted to outside the premises	Whether service wire is replaced if the service wire is having joints	Whether the service wire is run open up to meter box entry
1	2	3	4	5	6	7	8	9

4. REVIEW:

The Superintending Engineers / Operation shall review the fortnight progress and maintain review records as given below.

ANNEXURE - VIII
REVIEW PROFORMA FOR BRINGING OUT THE METERS FROM CONSUMER PREMISES

S.No	Name of the section	No of DTRs existing in section	No of DTRs for which 100% Meters are brought out from the consumer Premises till the end of the month	No of DTRs for which 100% Meters are brought out from the consumer Premises this month	Balance DTRs for which 100% Meters are to be brought out from the consumer Premises	Remarks
1	2	3	4	5	6	7

5. Working instructions for bringing out the meters from inconvenient location to outside the premises:

a. All the meters shall be brought outside..

b. Ensure that all meters are fixed at 5’ height in open Verandah/pole/boundary wall.

c. Ensure the service wire is visible up to the meter box entry.

d. Ensure the service wire has no joints.
e. Ensure proper sealing of Meter Terminal Cover and Meter Box with relevant entry in the register and consumers acknowledgment.

6. DUE DATE: End of March 2007.

V. ARREARS DUE FROM DISCONNECTED SERVICES

1. THE ISSUE:

It is observed that there are a large No. of PDCO services existing in each distribution with huge outstanding arrears. It is further seen that little effort is being made to collect the arrears.

2. ACTION NEEDED:

There is immediate need to identify the service connections under disconnection and those transferred to Out Standing Ledger (OSL) in each distribution circle and recover the amount due immediately.

All Superintending Engineers / Operation are requested to take immediate action on war footing and XENs are made responsible to monitor the PDCO recovery following the working instructions given below.

a. Identify the live services existing in PDCO premises.
b. The other live services if any standing in the PDCO premises shall be effectively disconnected for realization of the dues.

c. Three month notice of termination of agreement is to be issued.
d. If no other live services are available, apply LR Act (Land Recovery Act) for recovery of dues.

3. RECORD TO BE MAINTAINED :

CA shall maintain register in the proforma given below.

ANNEXURE – IX

REGISTER FOR INSPECTION OF PDCO SERVICES

Sl.No	S.C.No	Name of the consumer	Address of consumer	Land Mark	Category	PDCO service	Date of Aerial Disconnection with Meter Reading	Amount Due Today	Whether theft of energy /Malpractice involved if any
1	2	3	4	5	6	7	8	9	10

Whether link services are existing or not if yes write the service numbers	Whether Identified link service is disconnected	Whether R.R act notice served with date
11	12	13

4. DESIRED RESULT:

A. All dues to the company are to be recovered without fail.
B. No theft / malpractice occurs in any of the PDCO premises.

5. Superintending Engineers / Operation shall review the monthly progress of PDCO services of each sub-division and maintain records as per Proforma given below:

ANNEXURE – X

REVIEW PROFORMA FORPDCO SERVICES

S.No	**Name of Section**	**No. of UDC services existing**	**No. of OSL services existing**	**Amount due UDC**	**Amount due OSL**	**No. of Services aerially disconnected along with meter readings**	**No of Services against when TE/Mp cases booked**
1	2	3	4	5	6	7	8

No of Services with Link Services Existing	**No of Services with Link Services Disconnected**	**No of Services Served Notices Under RR Act**	**No of Services Where Amt Recovered**	**Success Percemtage**
				12/(3+4)
9	10	11	12	13

These instructions may kindly be gone through and measures/steps as provided shall be implemented with immediate effect as detailed in above instructions so as to get the losses reduced and save the Nigam from such a heavy line losses/revenue loss and strengthen the financial position of the Nigam.

C.Es/S.Es/XENs (OP) shall direct their all field offices under their control to comply with these instructions (reduction of losses) meticulously with immediate effect. It shall be ensured that instructions are followed strictly with time frame.

S.Es. (OP) will furnish the consolidated monthly progress report for all the five steps based on S.Es Review Performa as per instruction (Part-II) as prescribed in the above said instructions positively for the information of management.

This issues with the approval of MD, DHBVN, Hisar.

Xen/Monitoring,
DHBVN, Hisar