

REPORT
of
EQUIPMENT QUALITY CONTROL COMMITTEE

(Constituted under Section 128 of Electricity Act 2003
by Uttar Pradesh Electricity Regulatory Commission
as “**Investigating Authority**”)

Submitted to

Uttar Pradesh Electricity Regulatory Commission
Kisan Mandi Bhawan, Gomti Nagar, Lucknow-226010

14 July, 2008

**Report of the 'Investigating Authority' Constituted by UPERC
Regarding 'Electrical Equipment Quality Control'**

14th July 2008

Shri Vijoy Kumar
Chairman, Uttar Pradesh Electricity Regulatory Commission
Kishan Mandi Bhawan, 2nd Floor,
Gomti Nagar, Lucknow-226010

Dear Sh. Vijoy Kumarji,

The UPERC, through its order dated 1st October 2007, had constituted an "Investigating Authority" under section 128 of Electricity Act 2003 to look into Electrical Equipment Quality Control. In absence of providing the desired documents and details, asked by the Committee, from Discoms, extension of its term was requested, which has been approved by UPERC till 15th July, 2008.

During the course of investigation, the committee could visit certain installations in MVVNL, KESCO, NPCL and PuVVNL and gather informations about equipment quality related issues in the state from few other sources. The recommendation of the committee has been made covering some aspects of the System Planning, Equipment and Work Specifications, Procurement and Equipment Quality Assurance, Equipment Repair & Inventory Management, Installation Standards & Safety Issues, and Human Resource & Ethical Issues.

We are extremely happy to submit five copies of the report of the Committee to you.

The Committee would like to thank various Discoms and NPCL for providing necessary document and for extending all support during visit of the Committee to their office and installations. We would specifically like to thank Sh. A.K. Sahu of Electrical Safety, who helped the committee in almost all its meetings and provided his valuable inputs regarding safety issues.

With regards

S.C.Srivastava
Chairman

Arun
Vice Chairman

Arun Kr. Srivastava
Member & Convenor

Vijai Pal Singh
Member

Awadhesh Kr. Verma
Member

**THE MEMBERS OF THE INVESTIGATING AUTHORITY/
EQUIPMENT QUALITY CONTROL COMMITTEE**

Dr. S.C.Srivastava Professor, Department of Electrical Engineering IIT Kanpur	Chairman
Shri Arun Director (Distribution) UPPCL, Lucknow	Vice Chairman
Shri Arun.K. Srivastava Secretary UPERC, Lucknow	Member & Convenor
Shri Vijai Pal Singh Director Electrical Safety, Lucknow	Member
Shri Awadhesh Kumar Verma President U.P. Rajya Vidyut Upbhokta Parishad, Lucknow	Member

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SECTION-1

BACKGROUND

BACKGROUND

1. Electricity is an essential input to the economic growth of any country. An efficient and competitive power sector is, therefore, vital to the country's development.
2. Consequent to the restructuring of the U.P. Electricity Sector and creation of four separate Distribution Companies (Discoms) and Kanpur Electricity Supply Company (KESCO), there has been a phenomenal spurt in the level of investments related to:
 - System improvement work to cater to the load growth and ensure quality and reliable supply to the end users. This involves erection of new sub stations, enhancement of power transformer capacities, erection of interlinking lines, reinforcement of conductors, installation of capacitors etc.
 - Release of new services and additional loads.
 - Execution of rural electrification schemes such as Rajiv Gandhi Gramin Vidyutikaran Yojana (RGGVY).
 - High Voltage Distribution System (HVDS) work.
 - Various operation and maintenance work required for the upkeep of and provide efficient and economic supply to the consumers.
3. Therefore, procurement of the required materials and equipments, ensuring their quality as per the laid down specifications, in a timely manner is essential to ensure the satisfactory execution of various works.
4. Out of the total investments for various works, the materials cost constitutes nearly 70-75% of the total expenditure involved. Thus, material management is of significant importance in a distribution company and has a serious impact on its overall financial performance.
5. The organization in charge of the material procurement activity has to, therefore, ensure:
 - Uninterrupted material flow for works, while ensuring at the same time that the inventory holdings are kept to the minimum.
 - Procurement of materials of high quality competitively and in a transparent manner.
 - Development of alternative sources of supply.
6. Regulatory Requirement:
 - a) Pursuant to section 42(i) of the Electricity Act 2003, it is the duty of a licensee to develop and maintain an efficient, coordinated and economical distribution in its area of supply and to supply electricity in accordance with the provisions of the Act.
 - b) Section 14 of the Act and consequent Distribution licensee regulation & conditions framed by the Commission give a platform to the consumer to avail the supply under section 43 of the Act and agree to the conditions imposed by

- licensee after payment of such prices / charges determined by the Commission.
- c) Further to this, in accordance with the sections 57-60 of the EA 2003 related to the consumer protection, provides powers to the Commission to lay performance standards, and monitor licensee's levels of performance as well as compensations to the consumers for not achieving the specified levels of performance.
 - d) All the above has to be within the ambit of safety regulations under sec 53 and relevant standards with respect to quality, continuity and reliability of services by the licensees framed by the Commission under section 86(1)(i).
 - e) To achieve the desired level of performance in terms of services with respect to safety, quality, continuity & reliability in accordance with the guaranteed and specified standards of performance of the Commission, which are the output parameters, it is essential that input systems and processes, that directly govern these output parameters i.e. standard procurement policies and materials management, require a well coordinated effort between the engineering, finance and accounting wings of the licensee.
 - f) Also, the functions of the Commission, as laid down in Section 11 of the U.P.Electricity Reforms Act 1999, "Functions of Commission" clause no. 10(e) require the Commission, inter alia, to regulate the efficient and economical working of Licensees and to regulate the assets of the Electricity Industry in the State.
 - g) The clauses in the Supply license as well as the Distribution tariff regulations of the Commission, requires that the licensee shall make an application to Commission for its prior approval for schemes involving major investments as per the procedure which the Commission may specify from time to time, and requires the Licensee not to make any investment except in an economical and efficient manner and in accordance with the approved investment plan. The condition further provides that the proposed investment plan for the forthcoming financial year shall be submitted by the Licensee to the Commission along with the expected revenues from charges calculation, for approval of the Commission. This has been made a prerequisite for undertaking any investment by the licensee.
 - h) The Commission has a very significant role cast on it by the Act to ensure that the costs of power supplied to the consumer are kept at the minimal and at optimal level. A substantial portion of the cost is on account of the interest and repayment of loans in respect of the investment programme, which expenditure is allowed by the Commission to pass through to the consumer, in the Tariff. The Commission, therefore, has to regulate the expenditure on capital investment so that the burden of capital investment costs that are ultimately borne by the consumers is reduced, by efficient planning of the investment.

7. As regards to enforcing these standards of performance, the Commission had designed the formats of reporting placed in the Supply Code for the reliability index at the feeder level as well as at the consumer level, the guaranteed time limits for various break downs, levels of frequency variations, voltage unbalances, voltage variations, minimum billing mistakes and rectification of billing disputes, installation/replacement of faulty meters as well as schedule of compensation including the manner of payment. The Commission has also defined SAFI, SAIDI, MAFI indices of reliability, as well as given the method of its calculation for rural and urban systems separately for each month. Due to lack of reliable information provided by the licensees and non-submission of reports in the formats prescribed, the Commission is unable to notify the target levels for these indices annually or effectively monitor the standards of performance, as has been mandated to it in terms of the National Electricity policy, as well as the Electricity Act 2003.

In this regard, the provision in the National Electricity Policy is quoted as below.

“5.13 Protection Of Consumer Interests And Quality Standards:

5.13.1 Appropriate Commission should regulate utilities based on pre-determined indices on quality of power supply. Parameters should include, amongst others, frequency and duration of interruption, voltage parameters, harmonics, transformer failure rates, waiting time for restoration of supply, percentage defective meters and waiting list of new connections. The Appropriate Commissions would specify expected standards of performance.

5.13.2 Reliability Index (RI) of supply of power to consumers should be indicated by the distribution licensee. A road map for declaration of RI for all cities and towns up to the District Headquarter towns as also for rural areas should be drawn by SERCs. The data of RI should be compiled and published by CEA.”

8. Chairman, UPERC, consequent to his discussions with the Chairman, CEA on 27th April 2005, had sent a D.O. letter No UPERC/Chairman/Metering/2005 dated 2nd May 2005 pointing out that in accordance with the functions and duties of the Authority under section 73 (b) of the Electricity Act 2003, CEA is mandated to specify Technical Standards for construction of electrical plants, lines and connectivity to the Grid, and as per the section 73(n), it can advise the appropriate Government & Commission on all technical matters including distribution of electricity.
9. Since several ongoing APDRP and Rural Electrification Schemes have found to be unsatisfactory in U.P. and elsewhere, in the wake of above functions of the CEA, as manifested in the Act, it is important to address, with a sense of urgency, the issue of unsatisfactory progress attained by the APDRP and the rural electrification projects and factors contributing to such failures such as use of poor quality products, wrong selection of vendors, poor maintenance and the procurement norms and also to evolve the 'Best practices' to be followed in future projects.

10. As a first step, the Commission stressed that priority should be accorded to specify the standards, evaluation criteria for procurement & third party inspection, especially for Distribution Transformers and Energy Meters, which is critical for the distribution system up-gradation. These are important elements that assume significance in order to ensure quality of supply, reduction in T & D losses and achieving higher efficiency. Commission's letter No. UPERC/ Secy (AKS)/2005-4605 dated 7/9th March 2005 on the subject was sent to all the Discoms, including NPCL, to make their Materials Specification and Tender Evaluation Procedure available along with the following information, as to whether:
- (a) the procurement of equipments has been decentralized to the Discoms.
 - (b) the equipment standards and safety norms conform to those specified by the CEA and are uniform for all the Discoms.
 - (c) the standard bidding documents for inviting bids, third party inspection of equipments before dispatch and quality assurance plan are being followed.
 - (d) the cost bench marks have been developed for lines and equipments in substations.
11. The replies received from the Discoms were incomplete and evasive. Only NPCL could provide some information on the procedures being followed by them.
12. The Commission felt that the key areas, that require impetus, were (i) Vendor development & rating (ii) Material requirement & planning (iii) Purchase of material at optimal cost (iv) Ensuring the quality, and (v) Inventory control. Of these, the (iii) & (iv) directly impact the output parameters specified in the Act, the regulations of the Commission and the CEA, and as such, the compliance with the conditions and requirements of license by the licensees is absolutely imperative.
13. The State Advisory Committee is a statutory body framed under Section 87 of the Electricity Act, which has been mandated to advise the Commission in pursuance of the sec 88(iii), (iv) and (v), regarding compliance by licensee to the conditions of license protection of consumers' interest and electricity supply and overall standards of performance by utilities.
14. Accordingly, in the 6th meeting of the State Advisory Committee, held on 6th August 2007, the issue of quality control of equipment was raised owing to frequent break-down, unnecessary expenditures on maintenance/replacement, and high failure rate of transformers in the state of U.P. which is reported, in some cases, as high as 30% as compared to an All India figure of 2%.
15. The Committee advised the Commission to investigate the issue of Equipment Quality Control under sec 128, on being satisfied that a licensee has failed to comply with any of the conditions of licensee. It also suggested forming an '**Investigation Authority**' to look into the prevailing procurement and quality control practices, inspect, & investigate the matter under the various provisions of the Act.

16. The Commission could also have exercised option under sec 142 or sec 143 for the licensees failing to adhere to sec 43 and sec 57 and the Distribution license conditions. An Investigation Authority has, therefore, been formed under section 128 of the Act by the Commission to point out the deficiencies in the system, and methods to overcome them with respect to the above. The Commission's Order dated 1st October, 2007 is reproduced herewith for ready reference, as Annexure-A.
17. The Committee's report given in the subsequent sections reviews the current practices being followed by Discoms in the state of Uttar Pradesh towards the procurement process and equipment quality control and makes few suggestions to develop the best practices.

SECTION-2

MEETINGS CONDUCTED BY THE COMMITTEE

MEETINGS CONDUCTED BY THE COMMITTEE

1. The Commission had constituted an “Investigation Authority” under section 128 of the Electricity Act 2003 on 1st October 2007, which was circulated to all members vide letter no UPERC/Secy/07-1233 dt. 3.10.2007, to look into the quality control of equipments being procured by the State Government owned distribution companies, and advise improvement on the same. The committee consists of the following members.

1) Dr. S.C.Srivastava, Professor, Department of Elect. Eng., IIT Kanpur	Chairman
2) Shri Arun, Director (Distribution), UPPCL	Vice Chairman
3) Shri Arun.K. Srivastava, Director* (Distribution), UPERC	Member
4) Shri Vijai Pal Singh, Director (Electrical Safety)	Member
5) Shri Awadhesh Kumar Verma, President, UP Rajya Vidyut Upbhokta Parishad	Member Member

(* Now Secretary, UPERC)

2. The **first meeting** of the committee was convened on 22.10.2007 in UPERC to lay down the working modalities. The Committee after deliberations made Shri Arun Kr. Srivastava to function as Convenor of the committee. In order to fulfill its mandate, it was felt necessary to understand the following issues:
 - 1) List out the major equipments in addition to transformers.
 - 2) Compile the quality standards prescribed by manufacturers, BIS, CEA & CBIP.
 - 3) Study the existing standards of quality and safety of the transformers, identify the gaps at specification level followed by the Discoms
 - 4) The specifications and contracting systems for transformers and other major equipments
 - 5) The procedure followed by the licensees in ensuring the product quality
 - 6) Storage and inventory management.
 - 7) Procedure, documentation, inspection for procuring the new equipments, documentation, inspection for repairs of equipments.
 - 8) Quality systems of the manufacturers and repairs of equipments and their accreditation with ISO 9001:2000
 - 9) Procurement practice of the manufacturers/repairers to address the quality of input materials.
 - 10) Compiling the specifications followed by the manufacturers and repairers in their activity.
 - 11) Practices followed in rating of transformers and procedure for new connections to address overloading of transformers.
 - 12) Practices of tracking movement of floating assets (Transformers, Meters) and its effect on quality issues

For achieving the above, the Committee explored the possibility to visit the offices of the Discoms, CEA, stores & repair workshops in Discoms, as well as their distribution system sites. Accordingly, it was decided to visit

- Madhyanchal Vidyut Vitran Nigam Ltd on the same day and inspect their stores as well as the transformer repair workshop in Lucknow.
3. Subsequently, the Committee sought for submission of certain documents/ reports from all Discoms and KESCO for its perusal by 5th November 2007.
 4. The Committee conducted its **second meeting** in the office of MD, KESCO on 19th November 2007, and also visited a store, transformer repair workshop and a substation.
 5. Until 19th November 2007, only KESCO submitted some of the documents. Therefore, as the details were not received from most of the Distribution companies, required by the Committee to proceed further and make its recommendations, the Chairman of the Committee, vide his letter dated 21st November, 2007 addressed to Chairman UPERC, sought extension of the term of the committee by 3 months. It was also requested that the Committee would like to visit some more installations and test facilities of the Discoms. The Commission extended the term of the committee, vide its letter No. UPERC/ Secretary/ Equipment Committee/ 2007- dated: 29.11.2007, by 3 months i.e. until 29th February 2008.
 6. The Committee conducted its **third meeting** in the office of Director (Commercial & Distribution), U P Power Corporation Ltd, Lucknow on 22nd December, 2007. It was decided in this meeting to send a request to all the Discoms, including NPCL, to make the committee available their procurement norms, vendor rating, equipment inspection criteria, and any other suggestions for improving the procurement system within 15 days. Accordingly the letters were sent to all these companies. However, no response was received from any of the Discoms.
 7. Subsequently, the **fourth meeting** of the Committee was held in the Office of CEO, Noida Power Company Ltd., Commercial Complex H-Block, Alpha Sector II, Greater Noida – 201 308 on 5th January, 2007, who made a presentation of their procurement and inventory management practices. They were again requested to make the NPCL's procurement norms, vendor rating, equipment inspection criteria, any suggestions for improving the procurement system, available to the Committee. Some of these documents were e-mailed to the Secretary of the committee by the NPCL.
 8. The information sought in this respect was not received from any of the Discoms in response to the letter No. UPPCL/28C-PSDD/2007 dated 28.12.2007 sent by the Director (Distribution) UPPCL, and also no report were received from Madhyanchal Vidyut Vitran Nigam Ltd in response to the letter No. UPERC/Dir (AKS)/EC/2007-1339 dated 22.10.2007. Some of these have been subsequently received from them later after pursuance.

9. The Committee conducted its **fifth meeting** on 23.2.2008 in UPERC before expiry of its term on 29th February, 2008. A decision was taken to seek further extension in view of the information about the procedures being followed to ensure quality of the material being procured including stages of their inspection process not being received from any of the Discoms. The Committee also wanted to make further site visits to other Discoms before submission of its final report. In response to the request of the Committee, the Commission granted extension of time for a further period of three months i.e. upto 31st May, 2008 so as to submit its report by that date to the Commission. However, in view of non co-operation of Discoms in making available the required documents to the Committee, the Commission was requested on 26.2.2008 of its desire to hire the services of an external independent agency in terms of section 128(1), first proviso, of the Electricity Act, 2003, wherein it has been stated that the investigating authority may “ employ any auditor or any other person for investigation under this section”. The same was, however, not approved by the Commission.
10. The Committee held its next unscheduled **sixth meeting** on 27.2.2008 in the Office of Director (Distribution), UPPCL at Shakti Bhawan and also conducted meeting with MD, MVVNL, in his office. It was assured by the MD that all the documents as has been desired by the Committee through its various letters would be submitted at the earliest. The MD also arranged visits to the 132KV Gominagar Sub-Station, and two Rural Electrification sites under RGGVY at Sohramau, Block Nawabganj, Unnao.
11. The Committee issued reminder letters dated 29.2.2008 and 11.3.2008 on which there was no response from the concerned Discoms. Consequently the next meeting was scheduled for 25.4.2008 after the 7th SAC meeting. The repeated inaction of the Discoms was reported at the meeting of the State Advisory Committee dated 25.4.2008. The SAC advised the Commission that in accordance with Section 128(3) of the Electricity Act, the information asked for has to be mandatorily given to the Investigation Authority, failing which, the Commission may issue notice to the defaulting licensee under Section-142, of Electricity Act, 2003 asking them to give reasons as to why the action provided under Section 142 be not taken.
12. Consequent to the decision taken in the **7th meeting** of the Committee held immediately after the 7th SAC meeting on 25.4.2008, the matter was placed before the Commission for issuing notice to the defaulting licensee under section 142 of the Electricity Act, 2003. Accordingly, the Secretary of the Commission, on being directed, issued notice to the MD, MVVNL to appear before the Commission in person on 15.5.2008. Consequent to the hearing, the Commission, on the request of the MD, MVVNL, granted further time to submit the information that was pending to the Committee.
13. The status of various documents received from Discoms, Kesco and NDPL are given in Table-1, a copy available in the UPERC office.

Table-1 Documents Received From Discoms

Documents received from MVVNL
<ul style="list-style-type: none"> • Purchase Order No. 75 dated 15.2.2007 for supply of 11/0.433 25 KVA Distribution Transformer - Base Date 01.10.2006 (Qty. 100 Nos)
<ul style="list-style-type: none"> • Purchase Order No. 97 dated 15.2.2007 for supply of 11/0.433 25 KVA Distribution Transformer – Base Date 01.10.2006 (Qty 350 Nos)
<ul style="list-style-type: none"> • Information with reference to Commission’s letter No. 1339 dated 22.10.2007: <ol style="list-style-type: none"> 1) Consolidated report for 2007-08 and for FY 2006-07 in respect of Distribution Transformers failures. 2) Instructions to tenderers (contracting procedures), Form-B and General Requirement for specification. 3) Form A for works 4) Vendor selection criteria of major equipment suppliers alongwith Vendor list itemwise.
<ul style="list-style-type: none"> a. Letter No. 209 dated 2.5.2008 in response to Commission’s letter No. 1339 dated 22.10.2007 enclosing following information: <ol style="list-style-type: none"> 1) Consolidated report for 2007-08 and for FY 2006-07 in respect of Distribution Transformers failures. 2) Instructions to tenderers (contracting procedures), Form-B and General Requirement for specification. 3) Form A for works 4) Vendor selection criteria of major equipment suppliers alongwith Vendor list item wise
<ul style="list-style-type: none"> • Letter No. 637 dated 14.5.2008 in response to Commission’s letter No. 2317 dated 1.5.2008 alongwith details of balance of new Distribution Transformers received w.e.f. 01.10.2007 lying at various Store Centers & their testing position.
Documents received from PVVNL
<ul style="list-style-type: none"> • Letter No. 4584 dated 05.03.2008 in response to Commission’s letters Nos. 1339 dated 22.10.2007, 2010 dated 23/25.02.2008 and 2046 dated 29.02.2008 alongwith information as under: <ol style="list-style-type: none"> 1) Consolidated report for 2007-08 and for FY 2006-07 in respect of Distribution Transformers failures. 2) Vendor selection criteria of major equipment suppliers alongwith Vendor list item wise • Also stated that information regarding the following have already been submitted vide PVVNL letter No. 4106 dated 19.11.2007 alongwith soft copy: <ol style="list-style-type: none"> 3) Copy of instructions to tenderers (contracting procedures), Form-B and General Requirement for specification. 4) Form A for works

<ul style="list-style-type: none"> Letter No. 4912 dated 23.05.2008 in response to Commission's letter dated 12.05.2008 alongwith the details of test performed before accepting supply of Aerial Bunched Cable, Power/Distribution Transformer and Energy Meter.
<ul style="list-style-type: none"> Letter No. 4926 dated 26.05.2008 intimating that the information as desired have already been submitted.
<p>Documents received from PuVVNL</p>
<ul style="list-style-type: none"> Letter No. 2728 dated 30.11.2007 of Suptd. Engineer (MM), PuVVNL addressed to Chief Engineer (Equator), PuVVNL, Varanasi alongwith information regarding Vendor selection, instructions to tenderers (contracting procedures), and Form A for works. It was stated that there is no registration of vendors in PuVVNL.
<ul style="list-style-type: none"> Letter No. 2049 dated 11.12.2007 of CE (Equator), PuVVNL stating that information desired by EQCC except on points 2(b) and 3 has been sent and on points 2(b) and 3 shall be sent shortly.
<ul style="list-style-type: none"> Letter No. PTIA/002/08-9 dated 2.5.2008 of Purvanchal Transformer Industries Association, Varanasi addressed to MD, PuVVNL regarding corrupt practices in inspection of transformers for trial order.
<ul style="list-style-type: none"> Letter No. PTIA/003/08-09 dated 2.5.2008 of Purvanchal,Transformer Industries Association, regarding the matter as mentioned above.
<ul style="list-style-type: none"> Letter No. 531 dated 26.05.2008 of CE (Equator), PuVVNL, Varanasi, in response to 2351 dated 12th May, 2008 enclosing therewith the information on point No. 3 as desired by the Commission in its letter No. 1339 dated 22.10.2007.
<p>Documents received from DVVNL</p>
<ul style="list-style-type: none"> Letter No. 4035 dated 14.11.2007 of CE (MM), DVVNL, alongwith all documents/reports as desired by Commission's letter No. 1339 dated 22.10.2007.
<p>Documents received from KESCO</p>
<ul style="list-style-type: none"> Letter No. 1736 dated 3rd November, 2008 of MD, Kesco's Office giving information as desired vide Commission's letter No. 1339 dated 22.10.2007.
<ul style="list-style-type: none"> Letter No. 1886 dated 11.12.2008 of MD, Kesco's office giving details of officials attended the Equipment Quality Control Committee meeting held on 22.10.2007 and details of damaged Power Transformers during 2007-08 By email-Specifications & procedures
<p>Documents received from NPCL</p>
<ul style="list-style-type: none"> E-Mail dated 10.1.2008 of Shri Sarnath Ganguly, giving details of Specifications of major electrical equipment, Vendor selection criteria, Evaluation criteria, Form for Supplier Surveillance Audit, and Supplier Registration Form.

14. In its **8th meeting** dated 21.5.2008 held in Director (Distribution) Office of UPPCL, it was decided to seek further extension of the Committee's term from Commission for the last time upto 15th July 2008. The term was accordingly extended upto 15.7.2008, and, therefore, the Committee decided to conclude after visiting the office and making site visits in PuVVNL, Varanasi on 13.6.2008.
15. During its **9th meeting**, held at PuVVNL office in Varanasi, a briefing was given by the Chief Engineer and few documents, asked by the committee, were also produced. The Committee also visited a 33/11 kV and a pole mounted 11/0.415 kV substation, a transformer repair workshop of PuVVNL and another owned by a private company.
16. The **10th and 11th meetings** of the committee were held in Lucknow on 3rd July 2008 and at IIT Kanpur on 14th July 2008, respectively, to finalize the report.
17. The report, given in subsequent sections, is based on the the information made available by the Discoms (kept in UPERC office), the material gathered on some of the best practices in vogue in other organizations and the inspections made by the Committee.

SECTION-3

NOTES ON INSPECTIONS MADE BY THE COMMITTEE (In Hindi)

कमेटी के मध्यांचल विद्युत वितरण निगम दौरे का विवरण

दिनांक 22.10.2007 को इक्यूपमेन्ट क्वालिटी कंट्रोल कमेटी के सदस्यों द्वारा मध्यांचल विद्युत वितरण निगम के अन्तर्गत लखनऊ स्थित सीतापुर रोड स्टोर व ट्रांसफारमर वर्कशाप का निरीक्षण किया गया। निरीक्षण के पूर्व कमेटी द्वारा मध्यांचल कंपनी के प्रबन्ध निदेशक को यह अवगत करा दिया गया था कि कमेटी के सदस्यों द्वारा जो भी जानकारी मांगी जाये उसे क्षेत्रीय अधिकारियों द्वारा कमेटी को उपलब्ध कराया जाये, के लिए अपने स्तर से निर्देश दे दे। कमेटी के सदस्यों द्वारा सीतापुर स्थित स्टोर का निरीक्षण किया गया, मौके पर उपस्थित अधिशासी अभियन्ता स्टोर द्वारा कमेटी के सदस्यों ने यह जानकारी मांगी कि जो रजिस्टर व जरूरी फाईल हो जिसमें उपभोक्तावार सामग्री दर्ज की जाती है उसे दिखाया जाये इस पर अधिशासी अभियन्ता द्वारा कमेटी के सदस्यों को यह अवगत कराया गया कि प्रबन्ध निदेशक महोदय द्वारा केवल यह निर्देश दिये गये है कि क्वालिटी कंट्रोल कमेटी के सदस्यों को केवल स्टोर का निरीक्षण करा दिया जाये परन्तु उन्हें कोई भी रिकार्ड न दिखाया जाये। सदस्यों द्वारा जब यह जानकारी मांगी गयी कि निरीक्षण परीक्षण के उपरान्त जो भी उपभोक्ता सामग्री स्टोर में फर्मो द्वारा ली जाती है उसे कैसे सत्यापित किया जाता है कि जिन फर्मो में जो भी उपभोक्ता सामग्री का निरीक्षण परीक्षण कराया गया है वही लाट स्टोर में आ रही है अथवा कोई दूसरी लाट, इस पर कमेटी के सदस्यों को कोई संतोषजनक उत्तर उपस्थित अभियन्ताओं द्वारा नहीं दिया गया। मौके पर कुछ उपभोक्ता सामग्रियों को जब देखा गया तो उसमें कही भी कोई बेंच मार्क व ऐसा टैग नहीं दिखायी दिया जिससे यह साबित हो कि जिस उपभोक्ता सामग्री का निरीक्षण-परीक्षण फर्म के परिसर पर किया गया है, वही उपभोक्ता सामग्री स्टोर में ली गयी है। क्वालिटी कंट्रोल कमेटी के सदस्यों द्वारा स्टोर के बगल में स्थित ट्रांसफारमर वर्कशाप का भी निरीक्षण किया गया जहां पर पूरी तरह अव्यवस्था फैली हुयी थी। एक ओर ट्रांसफारमर ऑयल को गर्म करके ट्रांसफारमर में भरा जा रहा था वहीं दूसरी ओर कामचलाऊ व्यवस्था के तहत ट्रांसफारमरों की मरम्मत का कार्य किया जा रहा था जो पूरी तरह मानक के विपरीत था। पूरे वर्कशाप में जमीन पर तेल ऐसा बिखरा पड़ा था कि एक छोटी सी चूक पर भी कोई भीषण दुर्घटना कभी भी हो सकती है। ट्रांसफारमर वर्कशाप में मानक के अनुरूप जो भी उपकरण होने चाहिए वह नहीं थे।

दिनांक 27.02.2008 को इक्यूपमेन्ट क्वालिटी कन्ट्रोल कमेटी के सभी सदस्यों ने मध्यांचल कंपनी पहुंचकर कंपनी के प्रबन्ध निदेशक के साथ विचार-विमर्श किया। कमेटी के सदस्यों द्वारा प्रबन्ध निदेशक को अवगत कराया गया कि मध्यांचल कंपनी द्वारा कमेटी का कोई भी सहयोग नहीं किया जा रहा है और न ही मांगी जा रही वांछित सूचना उपलब्ध करायी जा रही है जिस पर प्रबन्ध निदेशक महोदय द्वारा कमेटी के सदस्यों को यह आश्वस्त किया गया कि सभी मांगी गयी सूचनायें शीघ्र ही कमेटी को उपलब्ध करा दी जायेगी। प्रबन्ध निदेशक महोदय द्वारा यह भी इच्छा जाहिर की गयी कि कमेटी द्वारा आर0जी0वी0वाई0 के जो कार्य विगत में कराये गये है की भी मौके पर क्या स्थिति है को देख लिया जाये साथ ही गोमती नगर स्थित एक नया सब स्टेशन जो विगत में

बनकर तैयार हुआ है को भी देख लिया जाये तो काफी कुछ कमेटी को स्वतः मालूम हो जायेगा कि सही स्थिति क्या है?

132 के0वी0 सब स्टेशन गोमती नगर, में किये गये निरीक्षण की रिपोर्ट विस्तृत तौर पर दिया जाना सम्भव नहीं हुआ क्योंकि उक्त के सम्बन्ध में मांगी गई टेण्डर प्रक्रिया सम्बन्धी कोई भी सूचना मध्यांचल द्वारा अनेको बार पत्र लिखने पर भी कमेटी को उपलब्ध नहीं करायी गयी अन्ततः धारा-142 के तहत प्रबन्ध निदेशक, मध्यांचल को नोटिस दी गई फिर भी सूचना प्राप्त नहीं हुई।

कमेटी के सदस्यों द्वारा प्रबन्ध निदेशक की इच्छानुसार यह तय किया कि उन्नाव स्थित किसी एक गांव को मौके पर चल के देखा जाये जहां पर आर0जी0जी0वी0वाई0 स्कीम के अन्तर्गत विद्युतीकरण का कार्य पूरा किया गया है। कमेटी के सदस्यों द्वारा चक सोहरामऊ, ब्लाक-नवाबगंज, जिला-उन्नाव स्थित विद्युतीय अधिष्ठापनों का निरीक्षण किया गया जिसमें निम्नलिखित कमियाँ पाई गई :-

कमेटी के सदस्यों द्वारा चक सोहरामऊ, ब्लाक-नवाबगंज, जिला-उन्नाव का दौरा किया गया जहां मौके पर यह पाया गया कि आर0जी0बी0वाई0 स्कीम के अन्तर्गत मेसर्स ए0बी0बी0 द्वारा जो कार्य किया गया है वह पूरी तरह मानक के अनुरूप नहीं है। खम्बो पर जो क्लेम्प लगे थे वे जंक खाये हुए थे इससे ऐसा प्रतीत होता है कि वे सही तरीके से गैलवनाइज्ड नहीं है। गांव वालो द्वारा कमेटी के सदस्यों को यह अवगत कराया गया कि जो खम्बे लगे है मानक के अनुसार उनकी सीमेन्टेड ग्राउटिंग होनी चाहिए वह नहीं है। जब कमेटी के सदस्यों द्वारा उपस्थित क्षेत्रीय अधिशासी अभियन्ता व मेसर्स ए0बी0बी0 के उपस्थित क्षेत्रीय कर्मचारियों द्वारा यह पूछा गया कि गांव वाले जो कह रहे है कि ग्राउटिंग नहीं है इसकी क्या सच्चाई है, इस पर ए0बी0बी0 के सदस्यों द्वारा अपनी बात पर अडिग होते हुए यह कहा गया कि ग्राउटिंग मानक के अनुरूप है। गांव के सदस्यों द्वारा कमेटी से अनुरोध किया गया कि हम गांव वाले इसकी खुदाई करके यह साबित कर सकते है कि ग्राउटिंग नहीं है इस पर क्वालिटी कंट्रोल कमेटी द्वारा गांव वालों की बात मान कर एक खम्बे की खुदाई करायी गयी और यह बात सही साबित हुयी कि खम्बों की जो भी ग्राउटिंग की गयी थी वह मात्र आधा फीट से ज्यादा नहीं थी जो पूरी तरह मानक के विपरीत पाया गया। अनेको जगह यह देखने को मिला कि जिन खम्बो पर ट्रांसफारमर लगाये गये थे वह खम्बे एक साईड को झुके हुए थे इससे ऐसा प्रतीत होता है कि खम्बो की डिजाईन ट्रांसफारमर का भार वहन करने के लिए नहीं बनाये गये है जबकि मानक के अनुरूप खम्बों की डिजाईन ट्रांसफारमर वेट ओरियेन्टेड होनी चाहिए थी। सुरक्षा के मानक पर जब कमेटी के सदस्यों द्वारा सुक्ष्मता से परीक्षण किया गया तो निम्न कमियाँ सामने आयी:

1. रोड कासिंग पर 11 के0वी0 लाइन में गार्डिंग नहीं पायी गयी।
2. सड़क के किनारे एक पोल टेढ़ा पाया गया।

3. नौदहा गाँव, नवाबगंज में स्थित पोल का अर्थ राड जमीन में नहीं लगा हुआ है, बल्कि आर0सी0सी0 वर्क के अन्दर है, इससे अर्थिंग नहीं हुई है। एक पोल ग्राउटिंग टूटी हुई है।

4. गाँव में दो पोल टेढ़े पाये गये।

5. लाइन का कार्य पूर्ण नहीं पाया गया।

दो गांवों में जाते वक्त कमेटी के सदस्यों ने यह पाया कि नहर के किनार जो भी विद्युत लाईन बिछायी गयी है वह मानक के अनुरूप नहीं है क्योंकि ज्यादातर तार झूलते नजर आये जिससे कभी भी दुर्घटना हो सकती है।

कमेटी के केस्को कानपुर दौरे का विवरण

दिनांक 21-11-07 को इक्वूपमेन्ट क्वालिटी कन्ट्रोल कमेटी द्वारा केस्को कानपुर का दौरा किया गया जहाँ सर्वप्रथम कमेटी द्वारा केस्को के अभियन्ता अधिकारियों के साथ विचार-विमर्श किया गया। कमेटी के सदस्यों के द्वारा केस्को अभियन्ताओं द्वारा जब यह जानकारी मांगी गयी कि आपकी कम्पनी में सामग्री क्रय की क्या प्रक्रिया है तो उनके द्वारा पावर कारपोरेशन द्वारा बनाये गये मानक को ही अपनी कम्पनी में लागू किये जाने की बात कही गयी। सामग्री क्रय के उपरान्त विभिन्न उपभोक्ता सामग्रियों के बारे में जब कम्पनी अभियन्ताओं द्वारा यह जानकारी मांगी गयी कि फील्ड से सामग्री की परफारमेन्स के बारे में कम्पनी के पास जो भी रिपोर्ट हो उसे प्रस्तुत किया जाये। केस्को अधिकारियों द्वारा कोई भी पिछली परफारमेन्स रिपोर्ट किसी भी सामग्री के बारे में उपलब्ध नहीं करायी गयी है। कमेटी सदस्यों द्वारा सामग्रियों के निरीक्षण-परीक्षण के बारे में कम्पनी में क्या मानक है? क्या रोस्टर है? की प्रतिलिपि जब मांगी गयी तो कम्पनी अभियन्ताओं द्वारा इसका कोई सार्थक उत्तर नहीं दिया गया। कमेटी के सदस्यों द्वारा केस्को अभियन्ताओं से कुछ स्थानों का भौतिक निरीक्षण कराये जाने के लिए कहा गया। विचार-विमर्श के बाद क्वालिटी कन्ट्रोल कमेटी की पूरी टीम रीवर साइड पावर हाउस (33/11 के0वी0 एवं 33/66 के0वी0) सब स्टेशन केस्को कानपुर पहुंची जहां पर प्रथम दृष्टया कमेटी को यह देखने को मिला कि जो अनुरक्षण मानक के अनुसार होना चाहिए वह नहीं मिला साथ ही रख-रखाव की कमी की वजह से सब स्टेशन की स्थिति मानक के अनुरूप नहीं थी। इलेक्ट्रिकल सेफटी पर सब स्टेशन पूरी तरह खरा नहीं उतरा जिसमें अनेकों कमियाँ पायी गयी जो निम्न है :-

रीवर साइड पावर हाउस (33/11 के0वी0 एवं 33/66 के0वी0) सब स्टेशन केस्को, कानपुर।

1. केबुल सपोर्ट स्टैण्ड की अर्थिंग नहीं पायी गयी।
2. केबुल की आर्मरिंग को स्टैण्ड से जोड़ा गया है।
3. न्यूट्रल प्वाइंट की केवल एक ही अर्थिंग पायी गई।
4. सब स्टेशन में उच्च विभव अधिष्ठापनों के खुले भागों (बुशिंग आदि) की न्यूनतम ऊँचाई 2.8 मीटर अनुरक्षित नहीं पायी गयी।

उक्त सब स्टेशन के बगल में 100 के0वी0ए0 का ट्रांसफारमर लगा पाया गया जिसमें निम्नलिखित कमियाँ/त्रुटियाँ पाई गई :-

1. ट्रांसफारमर बाडी की केवल एक अर्थिंग अण्डर साइज (जी0आई0तार) से की हुई पायी गयी।
2. ट्रांसफारमर के न्यूट्रल प्वाइन्ट की केवल एक अर्थिंग पी0वी0सी0 तार से की हुई पायी गयी।
3. ट्रांसफारमर के प्राइमरी एवं सेकेन्ड्री साइड में कोई सुरक्षा युक्ति लगी हुई नहीं पाई गई।
 4. ट्रांसफारमर के चारों तरफ फेन्सिंग नहीं की गई है।
 5. एल0टी0 केबुल बिना सपोर्ट के ले जाया गया है।
 6. उपयुक्त स्थानों पर "सावधान" बोर्ड नहीं लगाये गये हैं।

33/11 के0वी0 सब स्टेशन कन्ट्रोल रूम :-

1. केबुल इन्ट्री बाक्स की अर्थिंग नहीं की गयी है।
2. ओ0सी0बी0 एवं दीवार के बीच में अस्थायी व लटकते हुये केबुल ले जाये गये हैं।
3. समस्त केबुल अस्थायी स्थिति में है।
4. 11 के0वी0 सर्किट ब्रेकर पैनल की अर्थिंग नहीं की हुई है।
5. 33 के0वी0कन्ट्रोल पैनल की अर्थिंग नहीं पायी गयी।
6. आफिस,वाटर पम्प एवं मेन हेतु लगे मेन स्विच की अर्थिंग नहीं की गई है।
7. जितने भी एल0टी0 के मेन स्विच लगे हुये हैं, उनमें अर्थिंग नहीं पाई गई।
8. सब स्टेशन के अन्दर एवं बाहर लाइट की वायरिंग अस्थायी है एवं उसमें लगे पी0वी0सी0 पाइप कई जगहों से टूटें हैं।

ट्रांसफारमर वर्कशाप, केस्को, कानपुर :-

1. हीटिंग चैम्बर नं0-1 के लिए दिया गया सप्लाइ वायर अस्थायी है एवं उसमें जोड़ खुले पाये गये।
2. मेन स्विच के पास काफी वायरिंग अस्थाई व खुली अवस्था में पाई गयी।
3. मेन स्विच की अर्थिंग की हुई नहीं पाई गई।
4. लाइट के प्रयोग हेतु अस्थायी वायरिंग की गयी है।

क्वालिटी कंट्रोल कमेटी की पूरी टीम रीवर साइड पावर हाउस से सीधा केस्को स्टोर पहुंची जहाँ पर टीम द्वारा पूरे स्टोर को देखा गया। उपभोक्ता सामग्रियों स्टोर में क्रमवार न होकर एक के ऊपर एक पूरी तरीके से बिखरी पड़ी थी। जब वहाँ पर उपस्थित स्टोर

कीपर से यह जानकारी मांगी गयी कि निरीक्षण परीक्षण के उपरान्त जब फर्म द्वारा उपभोक्ता सामग्रियों स्टोर में भेजी जाती है तो किस तरह आप यह तय कर पाते है कि अभियन्ता अधिकारियों द्वारा जिन सामग्रियों का निरीक्षण-परीक्षण कर उन्हें पास किया गया है उसी लाट की सामग्री आप के स्टोर में भेजी गयी है इसका मिलान किस प्रकार करते है इस पर स्टोर कीपर द्वारा कोई उचित उत्तर नहीं दिया गया और न ही कोई ऐसा दस्तावेज उपलब्ध कराया गया जिसके आधार पर यह तय पाया जाता कि जो उपभोक्ता सामग्री निरीक्षण परीक्षण के उपरान्त पास पायी गयी वही उपभोक्ता सामग्री स्टोर में भेजी गयी है।

कमेटी के नोयडा पावर कंपनी दौरे का विवरण

दिनांक 03.01.2008 को इक्युपमेंट क्वालिटी कन्ट्रोल कमेटी द्वारा सर्वप्रथम नोयडा पावर कंपनी के उच्चाधिकारियों के साथ सामग्री प्रबन्ध व्यवस्था पर व्यापक विचार-विमर्श किया। नोयडा पावर कंपनी द्वारा कमेटी के सदस्यों के समक्ष एक प्रेजेन्टेशन दिया गया जिसमें नोयडा पावर कंपनी के अन्तर्गत उपभोक्ता सामग्री की क्रय प्रक्रिया पर क्या व्यवस्था है बिन्दुवार सदस्यों को अवगत कराया गया। कमेटी के सदस्यों द्वारा जब यह जानने की कोशिश की गयी कि सामग्री क्रय की प्रक्रिया नोयडा पावर कंपनी में टेंडर के माध्यम से होती है अथवा कोटेशन के माध्यम से इस पर एनपीसीएल के अधिकारियों द्वारा यह अवगत कराया गया कि चूंकि कंपनी का क्षेत्र बहुत ही छोटा है उस हिसाब से सामग्री की आवश्यकता बहुत ही कम होती है। इसीलिए यहां पर सामग्री क्रय वेन्डर सेलेक्शन के आधार पर कोटेशन के माध्यम से कर लिया जाता है। कमेटी के सदस्यों ने जब यह जानने की कोशिश की कि वर्तमान में आपकी कंपनी के अन्तर्गत जो उपभोक्ता उपकरण ट्रांसफरमर, मीटर, कंडेक्टर इत्यादि जो फील्ड में लगे है उनकी परफारमेन्स के संदर्भ में कोई रिपोर्ट है तो इस पर एनपीसीएल द्वारा कोई संतोषजनक उत्तर नहीं दिया गया। कमेटी के सदस्यों द्वारा एनपीसीएल मुख्यालय से फील्ड में क्या व्यवस्था है को देखने की इच्छा जाहिर की गयी जिस पर सदस्यों द्वारा नोयडा स्थित विद्युतीय अधिष्ठापनों का निरीक्षण किया गया। जिसमें निम्नलिखित कमियाँ पाई गई :-

किसी भी ट्रांसफारमर पर मानक के अनुसार जो भी रख-रखाव अनुरक्षण होना चाहिए वह पूरी तरह नगण्य था। ट्रांसफारमरों को देखने से ऐसा प्रतीत होता था जैसे महीनो से वहां कोई कर्मचारी आता ही नहीं। अनेको जगह एनपीसीएल के जो सब स्टेशन देखे गये वहां पर साफ-सफाई की व्यवस्था पूरी तरह ठीक नहीं थी।

सेक्टर अल्फा-II

आई पाकेट :-

1. कन्ट्रोल रूम में एल0टी0 केबिल ट्रेन्च खुली पाई गई।
2. कन्ट्रोल रूम में लाइट की वायरिंग अस्त-व्यस्त है।

एलिस्टोलिनया स्टेट-प्रथम स्ट्रीट :-

1. एच0टी0 पैनल रूम में ट्रेन्च खुली पाई गई।
2. कन्ट्रोल रूम में फायर इक्सटिंग्वीशर तथा फायर बकेट्स की व्यवस्था नहीं पाई गई।
3. विद्युत शाक से पीड़ित व्यक्तियों को होश में लाने से सम्बन्धित अनुदेशों का चार्ट हिन्दी में टंगा हुआ नहीं पाया गया।

ट्रांसफारमर (400 के0वी0ए0, 11/.4 के0वी0)

1. दो ट्रांसफारमर (प्रत्येक की क्षमता 400 के0वी0ए0, 11/.4 के0वी0) की वाडी की अर्थिंग की हुई नहीं पायी गयी।
2. ट्रांसफारमरों के न्यूट्रल की एक ही अर्थिंग की हुई पायी गयी।
3. कोई भी अर्थपिट्स जमीन की सतह पर दिखायी नहीं पड़ा।

साँई कृपा नीलू भवन-I-368 के सामने (अल्फा-II) फेज स्वीच फ्यूज यूनिट बाक्स लगा है। इस बाक्स की केबिल इन्ट्री खुली हुई है और बाक्स की अर्थिंग भी नहीं पाई गई।

कमेटी के पूर्वाचल विद्युत वितरण निगम दौरे का विवरण

दिनांक 13.6.2008 इक्यूपमेन्ट क्वालिटी कंट्रोल के सदस्यों ने पूर्वाचल विद्युत वितरण निगम का दौरा किया। सर्वप्रथम क्वालिटी कंट्रोल कमेटी बनारस पहुंचकर कंपनी मुख्यालय पर उपस्थित अधिकारियों के साथ विचार-विमर्श किया और कमेटी के सदस्यों द्वारा उपभोक्ता सामग्री की क्रय व गुणवत्ता सहित रख-रखाव की प्रक्रिया के बारे में विस्तार से विचार-विमर्श किया गया। कमेटी के सदस्यों द्वारा जब यह जानकारी मांगी गयी कि सामग्री के क्रय के उपरान्त कंपनी में क्या व्यवस्था है जिससे आप सभी पता लगाते है कि उपभोक्ता सामग्री की परफारमेन्स अच्छी है अथवा नहीं, इस पर उपस्थित अभियन्ता अधिकारियों द्वारा कोई भी संतोषजनक उत्तर नहीं दिया गया। कमेटी के सदस्यों द्वारा उपभोक्ता सामग्री के निरीक्षण परीक्षण के बारे में क्या व्यवस्था है के संबंध में जब जानकारी मांगी गयी तो कंपनी के अधिकारियों द्वारा एक कार्यालय ज्ञाप की छायाप्रति उपलब्ध करायी गयी जिसमें निरीक्षण परीक्षण के संबंध में एक रोस्टर कुछ अधिकारियों को लेकर बनाया गया है को दिया गया और यह बताया गया कि उक्त रोस्टर के अनुसार ही उपभोक्ता सामग्री का निरीक्षण परीक्षण कराया जाता है। सदस्यों द्वारा जब यह जानकारी चाही गयी कि निविदा विशिष्टीकरण का प्रारूप इस कंपनी में क्या है इस पर अधिकारियों द्वारा यह अवगत कराया गया कि पावर कारपोरेशन द्वारा जो पूर्व से चला आ रहा निविदा विशिष्टीकरण विद्यमान है, वहीं इस कंपनी में भी लागू है। थोड़ा बहुत आवश्यकता के

अनुरूप किसी-किसी उपभोक्ता सामग्री में विशिष्टीकरण द्वारा बदलाव किया जाता है। कमेटी के सदस्यों द्वारा मौके पर कुछ सब स्टेशनों को देखने की इच्छा व्यक्त की गयी जिस पर अधिकारियों द्वारा सर्वप्रथम कमेटी के सदस्यों को ट्रांसफारमर वर्कशॉप का निरीक्षण कराया गया था। कमेटी के सदस्यों ने पाया कि ट्रांसफारमर वर्कशॉप पूरी तरह सही तरह मानक के अनुरूप पाया गया जो भी जरूरी उपकरण एक ट्रांसफारमर वर्कशॉप में होने चाहिए वह उपलब्ध थे। रखरखाव की व्यवस्था काफी अच्छी थी। मानक के अनुरूप जो भी उपकरण ट्रांसफारमर वर्कशॉप में स्थापित थे उन्हें कमेटी के सदस्यों द्वारा चेक किया गया वह पूरी तरह कार्यशील अवस्था में मानक के अनुरूप पाये गये। कमेटी के सदस्यों द्वारा वाराणसी स्थित एक सबस्टेशन का दौरा किया गया जहां पर रख-रखाव की व अनुरक्षण की व्यवस्था पूरी तरह मानक के अनुरूप नहीं पायी गयी। संक्षेप में विभिन्न स्थानों पर निम्नलिखित कमियाँ पाई गई :-

33/11 के0वी0विद्युत उपकेन्द्र, चॉदपुर इण्डस्ट्रियल एरिया, वाराणसी की त्रुटियां :-

(अ) 5000 के0वी0ए0 ट्रांसफारमर से सम्बन्धित त्रुटियां :

1. प्लिन्थ माउन्टेड 5000 के0वी0ए0 ट्रांसफारमर के नीचे आयल सोकपिट का प्राविधान नहीं किया गया था। ट्रांसफारमर से आयल रिसकर जमीन पर फैला था।
2. 33 के0वी0 लाइन के आइसोलेटर के एक फेज का कन्टैक्ट क्षतिग्रस्त था।
3. उक्त ट्रांसफारमर की वाडी अर्थिंग क्षमता के अनुरूप नहीं है।
4. 11 के0वी0 के इन्डोर स्विच गियर पैनल की अर्थिंग में एक जगह ज्वाइंट के बाद कम क्षमता के अर्थ स्ट्रिप का प्रयोग किया गया।

(ब) 33/11 के0वी0 विद्युत उपकेन्द्र के परिसर में 11/0.433 के0वी0 प्लिन्थ माउन्टेड ट्रांसफारमर एवं उपकेन्द्र के बाहर सड़क के पास पाई गई त्रुटियां :-

1. 11/0.433के0वी0 प्लिन्थ माउन्टेड ट्रांसफारमर के एच0टी0 साइड में टी0पी0एम0ओं0 नहीं पाया गया।
2. उक्त ट्रांसफारमर का वाडी एवं न्यूट्रल की अर्थिंग अलग-अलग नहीं की गयी। अर्थिंग हेतु जी0आई0 वायर प्रयुक्त था जो क्षमता के अनुसार नहीं है।
3. उक्त ट्रांसफारमर की फेंन्सिंग को अलग से अर्थ नहीं कराया गया है।
4. सड़क के किनारे लगे ट्रांसफारमर के एल0टी0 साइड से निकली एल0टी0लाइन में रोड कासिंग पर गार्डिंग की व्यवस्था नहीं है।
5. सड़क के पास स्थित ट्रांसफारमर की वाडी एवं न्यूट्रल की अर्थिंग अलग-अलग नहीं की गयी है
6. एल0टी0 लाइन एवं एच0टी0 लाइन के मध्य गार्डिंग की व्यवस्था नहीं पाई गई।
7. ट्रांसफारमर के सेकेन्ट्री साइड की एल0टी0 केबिल का इन्सूलेशन जगह-जगह क्षतिग्रस्त पाया गया। ट्रांसफारमर का आयल रिसने से केबिल, आयल से तर था।

कमेटी के सदस्यों को पूरी क्षेत्र में यह देखने को मिला कि जो भी विद्युत लाईन क्षेत्र में स्थापित है उसके तार ऐसे झूल रहे हैं कि कभी भी दुर्घटना को दावत दे सकते हैं। मानक के अनुरूप विद्युत लाईन ज्यादातर क्षेत्रों में जहाँ कमेटी के सदस्यों ने दौरा किया वहाँ देखने को नहीं मिला।

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1- VklQkjej ds {kfrxLr gkus dk eq; dkj. k %&

- (i) VklQkjej ds i kbejh l kbM ea Vh0i h0, e0vk0 Q; wt ; k l fdM cxdj dk u gkukA
- (ii) VklQkjej ds l dslMh l kbM ea fLofpax fMokbt dk u gkukA
- (iii) VklQkjej ds okMh dh vffkx ds v. Mj l kbt dk gkuk vFkok fl fixy vFkz gkuk vFkok vffkx dk u gkukA
- (iv) VklQkjej ds U; W/y VfeLuy dh vffkx dk u gkukA
- (v) VklQkjej ds duD'ku VfeLuy yhM+ ij dcy XyM dk iz; kx u fd; k tkukA
- (vi) VklQkjej okMh l s vk; y yhd djukA
- (vii) VklQkjej dh : Vhu pfdax u fd; k tkukA

2- duVksy i suYl ds l Ecu/k ea %&

- (i) 11 d0oh0 i suYl dh vffkx i klkj u gkukA
- (ii) vukf/kdr 0; fDr }kk i suy dks vki jv/ djukA
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3- vkvj gM ykbu ds l Ecu/k ea %&

- (i) ykbu ds dUMDVI l dh xkm. M Dyh; jll fu; ekuq kj u fd; k tkukA
- (ii) vkvjgM ykbu ea vupefnr i zdkj dk d. MDVj iz; kx u djds th0vkbD d. MDVj dk iz; kx fd; k tkukA
- (iii) i ksy ds es/fyd i kvll dh vffkx u fd; k tkukA
- (iv) ykbu ea duVhuqvl vFkok; j dk u yxk; k tkukA

4- VklQkjej odZ kki ds I EclU/k ea %&

- (i) v0; fLFkfr rjhds I s VklQkjej fji s; fjæ djuk] tS s %&
- (ii) VklQkjej ea iz; Ør gkus okys vk; y ea [kys ea gkus ds dkj .k ml ea i kuh@ekbLpj feyukA
- (iii) vk; y dh MkbZ byfdVd LVdFk dh VflVæ dh mfpr 0; oLFkk u gkukA
- (iv) VflVæ d{k dk I kekl; rkj ij cBus vkj LVkj dh rjg iz; ksx ea yk; k tkukA
- (v) VflVæ odZ kki ea tehu ij rsy dk Qsyk gkukA
- (vi) VklQkjej ds VflVæ I s I EclU/kr ok; j tehu ij Qsys gkukA
- (vii) VklQkjej ds VflVæ I s I EclU/kr dk; ka dks LVsi ckbZ LVsi 0; ofLFkfr u djukA
- (viii) odZ kki ea fo | r dh ok; fjæ vLFkkbZ : Ik ea gkukA

5- I kekl; r; k fuEu I ko/kkfu; ka dk i ky u djuk %&

- (i) deþkfj; ka }kjk dk; Z djus I s i odZ ykbu vkj , D; q edV dh vffkæ u djuk rFkk ftI I D'ku ij dk; Z dj jga gsa ml ds vkl & i kl tWQj [kksy dj ykbu dks I gjf{kr u djukA
- (ii) [kjk c bl'kys ku okys rkj dks u cnyukA
- (iii) Ykkbu ds I ehi i M+ dh Mkfy; kWu dkVukA
- (iv) deþkfj; ka dh mfpr i xkj I s Vfuæ u fn; k tkukA
- (v) I c LVs ku ij I QVh fMokbl st tS s gS M Xyct] >nyk] I h<h] vffkæ psu dk Uk gkukA
- (vi) 'kV Mkmu dh i fdz; k =fVi w kZ gkukA
- (vii) ekS [kd 'kV Mkmu dk fy; k tkuk vkj ml dh blVh ykkk cpl ea u djukA

SECTION-4

OBSERVATIONS OF THE COMMITTEE

OBERVATIONS OF THE COMMITTEE

It is well known that an utility power system consists of three main organs, viz. Generation, Transmission and Distribution. Whereas the Generation and Transmission systems have been expanded in fairly planned manner, adopting best possible practices, the distribution has been, in the past, a neglected sector. It has been expanded in almost unplanned and relatively haphazard manner under various political, financial pressures and time constraints, resulting in increased feeder length, inadequate equipment size and protection system leading to increased losses and frequent equipment failure. There is hardly any system study being carried out for network expansion, specifically at L.T. level. The formation of the present Investigating Authority/Committee was triggered from the increased equipment failures (specifically distribution transformers) resulting in huge revenue loss and poor quality of supply, observed in the state of Uttar Pradesh.

The observations of the Committee, given in this section, is based on the visits to some of the Discoms in U.P., documents submitted by various Discoms and additional informations given by the office of the UPERC, UPPCL and few other sources, during the course of the investigation. Since the Committee had representations from UPERC, UPPCL, Vidyut Upbhokta Parishad, Electrical Safety, and Academics, it could also utilize the feedback from respective angles.

- The informations provided by the Discoms to the committee, with respect to the transformer failures during the last two years, are given below in Table-2. It is quite clear that the transformer failure rate in the state is quite high and much higher than the country's average.
- The main reasons for the transformer failures, as told by most of the Discoms, is due to overloading of the transformers, specifically resulting from illegal connections and connection of loads beyond sanctioned value by the consumers.
- An article published by a retired Chief Engineer (System), Jabalpur in IEEMA journal, based on survey of failed transformers, mostly sealed units in sizes 16, 25, 63 and 100 KVA, indicate the following factors and their percentage contributions behind the failure.
 - Manufacturing defects 75%
 - Storage/transport issues 5%
 - Operational problems 10%
 - Maintenance practice 7%
 - Unknown causes 3%

Table-2: Distribution Transformers' Failures during 2006-07 & 2007-08

Discom	Status of Damaged Transformers						Projected % Failure for 2007-08 (Pro-rated)
	No. of Transformers Installed upto March 2007	Year 2006-07		No. of Transformers Installed (until)	Year 2007-08		
		Nos. Failed	% Failed		Nos. Failed (until)	% Failed	
1	2	3	4	5	6	7	8
MVVNL	83545	19211	22.99	107897 (March 2008)	19037 (March 2008)	17.64	17.64
PVVNL	113663	30032	26.42	123530 (Oct. 2007)	14971 (Oct. 2007)	12.12	20.78
PUVVNL	102524	26946	26.28	117056 (Sept. 2007)	14532 (Sept. 2007)	14.17	28.34
DVVNL	76047	12163	15.99	94113 (Oct. 2007)	6837 (Oct. 2007)	7.26	12.45
KESCO	2924	1014	34.68	3251 (Oct. 2007)	666 (Oct. 2007)	20.49	35.13

- The committee is of the view that there are two major factors contributing to the failure of equipment. One relates to poor quality of equipment getting procured/supplied and the other is due to improper operation and maintenance. The later one also includes poor repair work of transformer being carried out, their highly unbalanced loading and improper protection.
- Discoms, sometimes, purchase transformers, meters and other equipments from those firms, which have been blacklisted in other states. There is no practice of preparing vendor list and system of vendor surveillance in any of the Discoms.
- The Distribution Transformers are supposed to be provided with HRC fuses of proper rating on H.T. side and MCCB/switch fuse of appropriate size on L.T. feeders. Most of the places, the protections are not functional due to replacement of fuses with improper size, generally of higher rating, which results in transformer failures under sustained overloading.
- It has been observed that the specifications of various equipments are not standard for all the Discoms. Some of the clauses in the specifications are against good engineering practice, e.g. in the specifications of some of the

Discoms for distribution transformers, it is mentioned that the neutral should be earthed to the body of the transformer tank, whereas the relevant Indian standards clearly says two separate earthing to be provided for the neutral. The specifications of certain equipments have been drafted such that they appear to favor the product of few specific firms.

- None of the Discoms are complying with Standards and Labelling of Distribution Transformers, as introduced by Bureau of Energy efficiency (see Appendix-D). As a result, low quality transformers are being procured as they are invariably cheaper. There is no process adopted for loss capitalization in the evaluation of the bids, resulting in procurement of transformers of relatively lower efficiency.
- It came to the notice of the committee and as also mentioned in a letter received by the committee, given in Appendix-C, that for some of the materials such as conductors, the local bidders are regularly resorting to formation of cartel.
- Often the execution of field works is hampered due to non availability of several minor materials leading to authorizing the contractors to procure the same and complete the works. In this process, quality becomes a casualty resulting in frequent breakdowns and interruptions.
- The notice inviting tenders are often published in the newspapers which does not have wide circulation. This is against the GOI/GOUP guidelines.
- The inspection/testing of material of different equipments, as per the standard specification norms, has been proving a bane in all the Discoms where it relates to inspection/test of transformers/meters/conductors, as the standard norms are not being followed by most of the Discoms. This may be due to a large number of equipments being tested in short period, which forces them to pass the material with limited tests.
- The firms, some times, dispatch the equipments without having seals/markings of inspection to the consignee's stores of the Discoms. As a result the unscrupulous material/equipments find their way into the stores, where these are sometimes received without proper checking, verification, codification and, in most of the cases, proper records are missing. As a result, it is difficult to ascertain that the material/equipment received is the same as the one dispatched and that had been inspected by the Discom officers. It has also been seen, that quite often, even the equipment/material that had failed the tests conducted by a set of the officers, finds its way to the stores after inspection/testing done by another group of officers.
- Often it has been observed that the tracking of the equipments ordered, received, and its dispatch is not properly recorded, nor codified, and there exists serious anomalies in this regard as it may, sometimes, lead to short supplies. Although none of the Discoms gave details of inventory management to the committee, it appears that they are following the manual system of record keeping.

- It has also been observed that, in most of the Discoms, except a few, same set of officers are chosen for inspection and there is no system of maintaining a batch of officers and a method of rotation, that ensures that the same batch does not go to the same firm for inspection again and again.
- It has also been observed that the inspection/tests of certain equipments get the waivers, generally on pretext of shortage of time, as a result of which the material of unchecked quality finds way into the system, which results in frequent failures. These had specially been in the case of transformers, where the incidents of the failures have been the highest in the country.
- Subsequent to the formation of the present Committee, the Discoms are setting up their own committees for checking the quality of the transformers already received and lying at their stores, which had already been passed the factory inspection/tests. It came to the notice of the committee that in MVVNL, on rechecking 1058 nos. transformers by three phase power analyzers, 525 nos. transformers were found in order, whereas 533 nos. failed the test. It appears that the payments to the firms, who supplied these transformers, were stopped, the questions were raised on the credibility of the firms and also the inspection made by the concerned officers, who had passed these transformers.
- The committee also got information that, in a workshop at Lucknow, when body of newly procured transformers were opened, by a committee separately formed by Director (Distribution), cores of some of these were found old and rusted. There was also variation in the weight of the windings (HV/LV coils), their diameters and size of conductors, etc. All these raises question mark on the quality of tests/inspections being carried out.
- Committee also came across newspaper reports on failures of newly installed Aerial Bunch Conductors (ABC) melting at higher ambient temperatures, which may be either due to undersizing of conductors or due to poor jointing/workmanship. This also reflects poor quality of procurement. When the Committee enquired for the report from Discoms, it was not made available to it and neither the specifications of the ABC conductors were provided to the Committee. During visit to some of the Discoms, the heights and the clearances of the ABC conductors were also not found in order.
- All the Discoms have transformer repair workshops, either owned by themselves or by private companies. In some of the workshops, such as one in MVVNL, it was noticed that most of the test equipments were either non functional or tests were not being carried out at proper values. Transformer oils were simply being heated before being filled back in the repaired transformers. Oil Centrifuge was found to be not working. Moreover, a substantial spillage of oil was found on the floor of the workshop, making it quite unsafe to work. Some of the workshops, such as one owned by PuVVNL, were, however, found to be in order with most of the test equipments being functional.

- Discrepancies related to safety practices as observed by the Committee in the inspections made of the workshops, stores, substations, workmanship at the sites inspected, have been highlighted in the previous section on 'Report of Inspections made by the Committee'. The discrepancies pointed out are of global nature pervading in all the discoms.
- The safety hazards posed by the precariously low hanging conductors, cables, and dangling and jungle of wires on the poles, slanted and tilted poles structures are an unsightly sight everywhere, besides being a threat to lives of the people.
- There appears to be utmost confusion in the role of neutral connections and earthing system in most of the places. The earthing system, in many cases, are being used as return neutral path, even in 3-phase, 4-wire L.T. systems. This poses two major problems, one increasing the system losses and the other creating shock hazard to the personnels as, with the neutral current being allowed to flow in the earthing system, it raises its potential. Since, most of the L.T. circuits are highly unbalanced, it results in large amount of neutral current to flow.
- Transformer neutral earthings in most of the installations are found to be improper. In almost all the installations, double earthing of neutral was not found. This may be due to the improper practice mentioned in the specifications itself. Many places the earth conductors/strips used are undersized for the level of the fault current in the system.
- In one of the 33kV substations having 5 MVA transformers, no earth pit were found to be provided. This substation was shown to the committee as one of the model substations in Lucknow under MVVNL. Many other shortcomings related to earthing, clearances, cable terminations, noticed by the committee, are given in the previous section.
- In several installations, proper cable glands/cable boxes/panel bottom plates and termination kits have not been used at the transformer/switchgear ends, resulting into safety hazard.
- In many places, the earthing of major equipments were found to be either missing or of lower size. The cables inside substations have been found to be installed lying in a haphazard manner and cable trenches, at most of the places, were found without any cover.
- In several installations of lines and equipments, proper clearances have not been provided. This results in frequent faults with flashover damaging bushings and puncturing radiators/tanks. At certain places, no guard wires have been used below H.T. lines at the road crossings. It has come to the knowledge that there is some supply-demand gap for equipments, particularly for single-phase distribution transformers, CTs, Static voltage meters for below poverty line and isolators. This is, therefore, resulting in delay of projects and cost overheads.

- It has been observed that the turn-key contractors, whom the works are awarded, are reputed concerns in the country but the sub-contractors engaged by them for various jobs, have been either overstretched, or are not upto the mark because of their limitations in having requisite trained manpower and resources.
- During visit of the work executed by M/s ABB under RGGVY in Unnao district, several substandard installation practices were noticed. These include improper grouting, inadequate foundation of the poles, resulting into some of these getting tilted, improper earthing system, inadequate clearances at certain places and use of low quality clamps and accessories, which were getting rusted.
- Poor voltage profile have been observed at several places in the distribution networks. There seems to be inadequate planning of reactive power compensators in the system. Also there seems to be total ignorance about the harmonic problems, which the distribution networks are going to face increasingly due to addition of nonlinear loads and power electronics based devices/controllers.
- The deployment of Information Technology (IT) in the distribution networks is still in a limited sense. The softwares used by different meter manufacturers having provision for IT interface are not standard. There is reluctance in following the open system protocol by meter manufacturers and suppliers of other IT equipments.
- Most of the distribution licensees/Discoms are facing problem of decreasing number of manpower resources, lack of proper training to the new technology, including usage of IT tools, which is now increasingly being used.

SECTION-5

RECOMMENDATIONS OF THE COMMITTEE & CONCLUDING REMARKS

COMMITTEE'S RECOMMENDATIONS

In the initial stage of power development in the country, power supply facilities and Transmission and Distribution (T&D) system were built mainly for catering to urban areas/towns to feed mostly domestic and commercial loads. After independence, with the thrust given to power development in the five-year plan programmes, the extent and reach of electricity has undergone dramatic changes. With the thrust on programme for rural electrification and large-scale energization of pump sets from the 3rd five-year plan onwards, there has been growth in sub-transmission and distribution networks. Further, the rise in industrial and agricultural pumping load increased the reactive power requirements. Adequate attention has not been given to compensate this reactive demand, which resulted in poor voltage regulation and increased losses. The distribution systems today are characterized by high T&D losses, poor voltage profile, frequent interruption/ outages etc.

The sub transmission and distribution systems were completely neglected and expanded in haphazard manner without any planning, which resulted in extremely poor quality of system with high losses in the system. Ministry of Power (MOP) decided to give top priority to the improvement of distribution sector and came out with a scheme known as 'Accelerated Power Development Programme (APDP)', which is now termed as 'Accelerated Power Development and Reforms Programme (APDRP)'.

From the inspections carried out and observations made by the committee during its limited visits to Discoms, it is quite clear that the present condition of the distribution network is pathetic and requires a major effort to improve it. The quality of equipments being procured and the quality of supply is quite poor and needs urgent attention. Ensuring quality of electricity supply and associated equipments is a continuous process and it starts right at the stage of planning of the network, drafting of specifications and should be maintained at the stage of procurement, storage of equipments, its installation, operation and maintenance. Accordingly, the recommendations/suggestions of the committee are being made, as given below, covering some of the aspects of System Planning, Equipment and Work Specifications, Procurement and Equipment Quality Assurance, Equipment Repair & Inventory Management, Installation Standards & Safety Issues, and Human Resource & Ethical Issues.

1. System Planning

- A major factor that has contributed to the poor quality and increased losses in the distribution networks, specially the low voltage network is their expansion in almost unplanned manner. Proper planning of substations and various feeders are required before setting up the system.
- The process of planning starts with forecasting of demand in a particular area, which must take into account the load growth pattern, various societal, economical & political conditions, and any special development programme

envisaged in the area. A new system should be planned for at least 5-10 years load projection and must have spare capacity for future/any unforeseen expansion.

- The sub –transmission and distribution system would have to be expanded to meet the growth in demand. The expansion may be to augment the transformation capacity at the existing substation, rearranging/reconfiguring the feeders by using higher size conductors, increasing the number of feeders, or it may be for establishing new substations nearer to the load centers and redistributing the loads between existing and new substations and feeder strengthening.
- The locations for augmentation/new substations have to be worked out on the basis of assessment of the area wise power demand potential. Once the radius of operation of the substation has been determined from the loading and voltage considerations, new substations have to be planned to cater to the loads not covered by the existing substations. The proposed locations of the new substations have to be chosen considering the proximity to the load center and availability of suitable and adequate site. In the case of augmentation of existing substations, the availability of land and feasibility of adding new transformer/additional lines have to be kept in view.
- Planning for site of substation and feeders in rural areas should be based on the load survey and load centers in the village.
- Various options for the system should be evaluated on techno-economic considerations to decide on the final alternative. The study of each alternative should be analyzed under normal condition as well as outage condition.
- It should be ensured that the network does not experience overloading and the voltage variations, in all the alternatives, remain within the permissible limits. The load flow studies would give the losses for the various alternatives and total cost of each alternative can, then, be worked out based on capital cost of each alternative and the cost of losses.
- The voltage regulation and the power losses along each feeder section upto distribution transformer should be worked out under peak demand scenario. Based on the results of studies, the feeder section requiring reconductoring/addition of new feeder and its conductor size may be decided.
- Preliminary single line diagram, indicating the feeding and bus bar arrangement, and preliminary substation and control room layout drawings should be prepared at planning stage itself and may form the part of basic engineering document. The substation and control room must be planned for adequate operating clearances and space for future expansion.

- The conductor sizes must be decided based on the short circuit capacity and continuous rating, considering various derating factors. It may be ensured that the voltage is within the limit at each node/distribution transformer.
- After planning the power network, proper protective system has to be planned. A basic engineering has to be carried out to decide the type and rating/range of the protection equipment (breakers/relays).
- There is a need to have a small system study cell opened at least at each circle level. The cell must be provided with some of the standard simulation software (such as for load flow studies, short circuit studies, grounding studies, protection coordination). All the network planning must be carried out using the simulation software.
- Looking at the need of increased IT implementation in the distribution networks for Customer Information Services/Remote Billing/System automation, it will be desirable to have a separate IT Cell, as this requires expertise of Communication and Computer Technology. Careful planning of IT needs and system is required in consultation with the subject experts.
- UPPCL must bring out a detailed design criteria of the distribution system planning, following the best engineering practices and it should be made compulsory for all the discoms to follow the design criteria while planning their system.

2. Equipment and Work Specifications

- After completing the task of system planning, preparation of tenders for electrical works and procurement of various equipments start. An important component of any tender or equipment supply enquiry is the specifications of various equipments and the electrical works.
- A major exercise will be required by UPPCL, alongwith various Discoms to bring out detailed, foolproof and standard specifications for each and every type of electrical equipments, whether it is normally procured separately or through contractors, under the turn-key contract. The standard specifications must comply with relevant Indian and International standards and should be expanded to cover any specific requirements of the UPPCL.
- The standard specifications should be focused on best possible quality of equipments to be procured, it should be globally acceptable to most of the reputed suppliers and should not be tailored to favor a particular set of manufacturers. It must include all the interfaces required for IT implementation/distribution automation.
- For major equipments, certain already available standard specifications prepared by central government agencies or reputed consultants can be

taken as the baseline and can be improved further. For example, CEA has already brought out standard specifications for three phase as well as single phase Distribution Transformers and the same can be taken for drafting the standard specifications by UPPCL/Discoms. The detailed test and inspection procedures and a complete list of factory acceptance tests, along with test procedures, must be specified. The anomalies in the existing specifications, certain clauses being against good engineering practice, must be removed.

- To improve the operational flexibility, minimize restoration time of power supply and to prevent overloading of lines and transformers in real time mode, modern feature such as distribution automation may be incorporated.
- For transformers the acceptable level of losses may be specified. It is recommended that UPPCL should go ahead with a minimum Star-4 labeling of the transformers. The bid evaluation must take into account the loss capitalization. For transformers, a detailed standard data sheet must be developed including various accessories, preferred make of accessories should be specified in the specifications. While floating enquiry of the transformers, data sheet for each of them can be separately filled up.
- Similarly to draft standard specifications for meters, the draft specifications for APDRP prepared by Committee formed by Ministry of Power can be taken as the baseline. It is recommended that the meters having AMR facility must be procured with a common open source protocol. Relevant IEC standard protocols are already being used in different countries.
- The work specifications can be prepared in two parts, one the standard specification, which should be common to all the Discoms, and the second the particular specifications to bring out detailed requirement of a particular work.
- The standard specifications of the works should cover the detailed requirement including, installation, test and commissioning requirements of works such as different equipment installations in outdoor/indoor substations, cabling, lighting, grounding work etc.
- In case of the turn key projects, the standard specifications of all the electrical equipments along with specific data sheets must also form the part of the tender. In case of detailed engineering also being in the scope of the contractor, general guidelines and specific factors to be considered must be specified.
- Technical/Commercial Specification should be comprehensive, complete and well structured to avoid any sort of ambiguities and any scope of contradictions be avoided. Reference to latest version of various standards and other document should be clearly brought out in the specification.

- The deviation in respects of both technical as well as commercial should also be clearly brought out in the tendered document and purchaser must ensure from the manufacturer/supplier before the order placement that there are no deviations other than those brought in the tender and tender negotiations.
- Chapter on bidding instructions/procedures should be clearly defined to ensure that the vendors correctly respond to technical requirements, deliverable items (essential as well as optional) performance requirements, pricing schedule etc.
- The clauses should be added in the tender to ensure the quality of work by any sub-contractor, if envisaged. It is generally preferable to ask for the profile of subcontractors and agree to the list after establishing their credibility, before awarding the contract.
- A standard purchase manual, detailing the procedures to be followed for award of contracts for procurement of materials/equipments and execution of works, is imperative and is required to be followed by all the Discoms.
- The equipment/work specifications should be as detailed as possible. It should be kept in mind that vendor/contractor is not obliged to provide any extra feature or carry out any additional work, whatever small requirement it may be, without any cost implication. General clauses safeguarding such situations and binding the vendor/contractor to meet additional requirements, in view of good engineering practice must be built in the enquiry/ tender and the vendor/contractor must be asked to agree to it while placing the order.

3. Procurement and Equipment Quality Assurance

- The materials to be procured by the DISCOMs range from major items such as power transformers to small items like various consumables. Although a careful drafting of specification and enquiry are the necessary initial steps, essential for procurement of quality equipments, a healthy process is required to be evolved for bid evaluation, vendor selection, approval of detailed specifications/drawings submitted by the vendors, factory acceptance and after and material acceptance tests at the stores/site, performance evaluation of various makes and types of equipments.
- All the major equipments should preferably be procured in a centralized manner. It is desirable to have separate Procurement and Contracting divisions, preferably at each Discom level, or at least at centralized level.
- Procurement decisions are to be based not only on the initial cost, but also on the time phased effect of all related costs which could include.
 - Annual operating maintenance cost (such as loss capitalization)
 - Cyclical renewal costs

- User functional costs
 - Revenues
 - Salvage/Residual Values
- It will be preferable to receive technical and commercial bids/offers separately. Technical bids should be first evaluated and commercial bids of only those parties who qualify the technical requirements should be opened.
 - For most of the major equipments, such as transformers, breakers/switchgears, meters etc., it is suggested to have approved vendor lists common to all the Discoms to ensure the quality of the equipments and material used in its manufacturing.
 - In the first instance, where the technology is new or/and complex, the bidders are required to be short listed depending upon their capability/ experience/financial position/reputation. Choice of bidders for participation during conceptual and proposal stage is crucial. It normally requires visits to vendor's factories, site of other installed equipment by vendor, along with opinion of consultants/experts to identify a list of recommended bidders. For a proper evaluation, vendors need to be assessed from the point of view of technical and commercial capabilities.
 - It appears that the distribution companies have been registering the vendors for each material. Vendors are invited periodically typically two years, to apply for registration through an advertisement in all leading news papers and on the website of the DISCOM. Vendor registration is done separately for centralized items and non-centralized items. However, a more rigorous process of vendor development and surveillance is required. NPCL has evolved a more systematic process of vendor development and surveillance as given in Appendix-E. Similar or even improved procedure may be evolved by the Discoms.
 - Utmost care should be exercised in Vendor selection for each item. A preferred vendor list should be made part of the enquiry, listing only reputed qualified vendors. The list may also be made available at the Discom's website. The items may be procured only from those vendors. Similar vendor list should be developed for various important meters/sensors/relays etc. of major equipments and form part of enquiry.
 - Vendors' performance evaluation is also an important step in proper surveillance. A systematic procedure should be evolved for periodic performance evaluation of each and every supplier, based on the working of equipments installed at the Discom itself, feedback received from other Discoms in the state and other states.
 - Discoms must blacklist a vendor whose performance/ quality of equipment supplied is not found satisfactory following due procedure. In case a supplier/vendor is blacklisted in other Discoms in the country, after getting full details, the registration of the vendor may be suspended in the Discoms in U.P. as well. The Discoms should list out the vendors, with whom commercial

relations are suspended indicating the period of suspension should be maintained on their websites.

- It is proposed that the material/quantity required in large numbers and which are common to all the Discoms should be tendered by the Central Procurement Committee of UPPCL. This would ensure competition as well as optimization of rates quoted by the Firms. The quality and specifications of material procured for all the Discoms would also remain uniform.
- The present practice of witnessing factory inspection tests by officers of discoms need to be streamlined. Each Discom must prepare a roster of officers for tests and inspections. A strict action may be taken against those relaxing the tests or found passing the equipments without carrying all the tests given in specifications. It should be made clear that quality can not be sacrificed merely due to time constraints. All the tested materials must be properly tagged and sealed after signature of the witnessing officers and it should be tallied when received at the stores of the Discom.
- On receipt of transformers by the consignee at the Store Division, no-load loss, load loss and no-load current should be checked and entered in the Measurement Book before releasing payment. Strict adherence to the prescribed norms as laid down in the specifications should be made. If the losses, as a result of tests, are found to be more the whole lot should be rejected and the balance lot shall also be cancelled.
- Practice of entrusting inspections of major materials at suppliers' premises to third parties is indeed a step in the right direction in ensuring quality of supplies. However, the Discoms may review the performance of the inspecting agencies periodically and make suitable changes wherever necessary. A panel of reputed inspection agencies may be maintained and their services may be utilized by rotation.
- There should be facility of third party checking at the Discom Headquarters in liaison with CPRI, ERDA, etc so that the departmental interference in respect of the inspections could be checked.
- There is need for establishing small procurement cell comprising of personnels drawn from accounts/finance wings to assist in financial analysis of the bids and perform the role of internal audit. This cell may also keep track of the trends in prices of different materials and advise the stores purchase committee on the cycle of tendering for procuring the annual requirement of various materials.
- A separate Cell may be established in each Discoms to collect market intelligence reports and information relating to latest advances in technology, which will enable the top management to take appropriate procurement decisions. This cell will be scanning through advertisements, vendor seminars, technical journals and the internet and also communicate with other utilizes and collect information, process the same and feed to the top management, to pave the way for better purchasing options. This cell will

maintain a library by collecting various directories, hand books, periodicals, technical journals, brochures etc and store them properly. Similarly database of critical/high value components will also be maintained by the cell. The material wise information can be computerized for easy reference.

- It is needless to point out that quality assurance which focuses on procedural compliance, product conformance to specifications and systematic documentation must receive utmost importance. It is felt that there is a need to establish one quality control division exclusively under the control of the procurement wing at the corporate office in each Distribution Company.

4. Equipment Repair & Inventory Management

- Recurrence of failure of transformers is also attributed to the poor quality of repair work being carried out at the majority of the transformer repair workshops. As observed by the committee poor quality of the rewinding of coils, filling of poor quality oils cause them to fail again in a short span of time.
- It is highly recommended that some sort of performance audit and quality check of all the repair workshops must be carried out by higher authorities by independent agencies. All the private workshops, not having adequate repair and test facilities, must be blacklisted. Those owned by the Discoms themselves must go major rejuvenation. A periodic and random inspection of these workshops, and strict actions if not found upto the mark, may help in improving their work culture.
- The test equipments used in the workshop must be regularly checked for their functioning and accuracy. It will be desirable, if only those workshops are given the job, who meet the standards of quality circle. Each Discom may try to set up at least one such model repair workshop themselves.
- A record of preventive maintenance and repair of all the equipments may be maintained. Discoms must set up committees to analyze and take corrective measures to prevent frequent failure of major equipments, like transformers.
- CBIP standard for transformers upto 100 kVA specifies dropout fuses on HV side and MCCB on LT side. Non operation of these devices causes delay in fault clearances and isolation, resulting in transformer damages. Replacement by properly rated fuses or settings of overload trip devices on MCCB is necessary during every maintenance shutdown, at least once a year.
- Modern inventory management procedures should be followed in the stores. Efforts should be made to computerize all the entries in the stores so that movement of all the items, their current status can be easily made available on line.
- The equipments lying in the stores need to be properly accounted for with date of receipt, supplier's name, name of consignee and regular audits and inspections are needed.

- Phasing of deliveries is to be worked out keeping in view that there shall not be any over stocking of materials leading to high inventory holding costs. Care is to be taken to see that inventory carrying costs are minimized without, however, effecting the smooth execution of the works.
- In the Discoms, zero stock concept is not feasible as the works are scattered all over the company's jurisdiction for which materials are to be arranged from different stores. There is need for expediting the institutionalization of 'IT enabled Inventory Management System'...

5. Installation Standards and Safety Issues

- After award of contract for an Electrical Works and finalizing the schedule of activities, contractor starts its procurement process, preparation of detailed design and engineering documents. The detailed design and engineering documents, including layout drawings, installation details, schematic drawings, interconnection drawings, relay coordination etc. must be checked carefully to ensure that it meets completely the requirements given in tender specifications. The specifications for all the items being supplied by the contractors themselves, must be checked for their compliance to the Discom's specifications and other relevant standards.
- In case of equipments procured separately by Discom and supplied to the contractor for erection, testing and commissioning, Discom engineers have to carefully coordinate the two agencies, specifically in ensuring proper installation, cabling, termination and interconnection details supplied to the contractor in advance.
- Discom engineers must ensure proper quality of standards and make sure that the equipments, cables and all other items, being used by the contractor is of same specification and make as approved by Discom following specifications.
- The design of supporting structures, stay wires and foundations must be checked to ensure the required strength and quality of material in compliance with the tender specifications and relevant standards.
- In order to ensure the quality of equipments, all necessary site tests must be performed in presence of Discom engineers. A thorough check on the quality of execution works by subcontracting agencies must be carried out.
- For rural electrification works, the standard guidelines and specifications issued by the REC should be strictly followed by the implementing agencies and contractors. Detailed procedures for quality mentioned in the manual should be adhered to.

- The Discoms have to ensure a third party check by the implementing agencies which will be on 50% sample basis. The results of the second tier quality monitoring which is done by REC on 10% sample and tier national quality monitoring on 1% sample should be closely monitored. Accordingly the issues towards the implementation of projects in respect of standardization of equipment, right of way, fixing scope of work, inspection, payments, material reconciliation, etc should be closely monitored along with the manufacturers' quality plan as well as the field quality plan.
- The Discom engineers must ensure that all safety requirements are fully met, specifically with respect to the clearances between conductors, conductor to ground clearance, earthing of equipments, neutral earthing, provision of guard wires below overhead lines on road crossings, soak pit for transformers, proper termination of cables and conductors, covering of trenches inside substations, operating height of electrical equipments etc.
- A periodic check of earthing system with respect to continuity and grounding resistance values must be carried out. In case it falls below desired values, necessary maintenance of earth pits etc. must be carried out.
- All the substations must be provided with fire fighting equipments and the electrical safety charts must be displayed inside the indoor substations.

6. Human Resource & Ethical Issues

- The success of any organization largely depends on the availability of required trained, skilled and motivated manpower. The fast changing in technology requires continuous updating of knowledge of officers and other employees through organizing specialized training programmes and attending workshops and seminars.
- The earlier integrated U.P. State Electricity Board has a glorious past, known for taking lead in adopting several new technologies for the first time in the country and having image of very competent engineers and associated staff. Of late the U.P. state electricity sector is amongst the list of relatively poor performing power corporations in the country. There seems to be lack of interests and commitment shown by a majority of its officers and other staff due to various compelling reasons. The fingers are point out on the ethical standards of the employees in their working.
- The lack of interests in the working of officers come from either due to dissatisfaction in their work, most of the time due to lack of posing enough challenge and opportunity, or due to poor compensation/salary package. This also, partly, leads to deteriorate the ethical standards and forces one to adopt unfair practices, which ultimately results in poor quality. Although achieving ethical standards is a burning national issue, which has marred the progress of several sectors, however, Discoms and Power Corporations must examine

this issue urgently and may restructure the working of their organization. A proper review of performance and placement of officers, through some appropriate independent agency may help in formulating the structural changes.

- Since the initiation of the electricity reform process, there has been little change in the work culture of the restructured entities. They are still working in their same old style with the age old mind set. For reforms to be effective, at least, simple reward and punishment schemes should have been implemented, if not the advance concept of management. Such schemes could have incentivized the officers and staff to improve their performance, which in turn could have improved the work culture also. However, in absence of any incentive/disincentive schemes, lack of recognition of work or offering any carrier prospect, the officers and staff of the restructured entities are left with no motivation to improve the performance, and hence not motivated to adopt the competitive environment. It is, therefore, high time for the management of the restructured entities to start nurturing and caring about their most important resource i.e. human resource, else the absence of suitably trained and motivated workforce would mar the entire process of reforms and success of the organization.
- It is suggested that the operation and maintenance, construction, commercial and administration activities of each of the Divisions should be properly documented and analyzed by, first of all, establishing the number of work drivers in each Division, such as length of lines, number and type of transformers and numbers in each category of consumer.
- Then staffing norms need to be established for the activities carried out by each Division. The staffing norms should give the number of staff required in each grade for each task in each activity in terms of either the work drivers or geographical location. Where geographical differences or population density impact on staffing requirements separate norms may be developed for each classification.
- Applying the staffing norms for each activity, appropriate to each Division's geography and population density to the work drivers, would determine the total number of staff required in each grade to undertake the work of each Division. It appears that the: surplus labor is mainly amongst the technical unskilled grade. There tends to be excess staff in the urban Divisions and staff shortages in the rural Divisions. There is a skill shortage amongst linesmen (skilled workers whose principal tasks involve line inspection, general repair and construction activities), with each zone requiring training of staff in this category. Skill shortages may be corrected through recruitment.
- Fitment and re-designation of officers to higher grades, and removal of severe stagnation among the engineer should be planned, which is a cause of a great deal of resentment and heartburn.

- Human Resources Development and Finance are separate skilled functions and it is suggested that new departments on Human Resources, Finance and Information Technology should be created and, if required, their Heads and management staff be appointed through external recruitment.
- Difficulties being experienced in ensuring quality supply, compliance on standards of performance, reliability indices, implementing new IT strategies by the Discoms are due to constant decline of trained manpower and lack of mobilization of available resources, complete absence of a proper business plan, presumably due to inadequate attention off top management to uplift the lack of will and sagging morale of employees.
- Major thrust is needed in training and development activities if the power sector reform and the organization are to succeed. A department of HRD, as suggested above, having a separate Training and Development wing, will help in making assessment in employees' understanding of their role and responsibilities and in the range of skills they are able to apply to their role and formulating as well as organizing the training programmes.
- Apart from training of engineers in the emerging new technology, various training programmes required are to Improve understanding of implementing sound business practices, help managers make the ideological shift to viewing the Division as a profit centre, train engineers/ managers in the use and analysis of financial operational information, information technology management like computerizing business processes, increasing computer awareness among the officers and staff, stores and inventory management, etc.
- A programme to address the needs of those involved in the procurement of materials and stores management should be designed in modular form and delivered concentrating on the principles of procurement and stores management, and the role of the persons involved in stores management, stores procedures to improve the operation of stores.
- The training of workers, below the rank of Junior engineer like linesmen, electricians and helpers assisting in the distribution system required significant training to upgrade their knowledge and skills.
- Special seminars and lectures may be organized on Ethical and Moral values. There are few voluntary organizations helping in the organization of such programmes.
- Two to four weeks course should be organized on Electrical Safety issues and should be imparted at all the levels, possibly with the help of the Electricity Safety Inspectors and State Training Institutes.

- It may be worth training few select unemployed personnels, having technical qualifications, for employment in the RGGVY works by the turn-key contractors, as well as the State Discoms for maintaining the projects after it has been handed over to them. State Discoms may plan to establish their own training institutes or take the help of technical institutes in the state,

CONCLUDING REMARKS

- The main mandate given to the Committee has been to explore the reasons behind poor quality of equipments and electricity supply and make suggestions which will form basis to work out best practices.
- The Committee has made certain observations and recommendations based on its limited number of visits to two of the Discoms, Kesco and NDPL. The observations and suggestions of the committee, made in this report, should not be taken as criticism to any sector. Rather, it should be viewed as the input, which may be helpful in improving the quality and reliability of the electricity supply.
- The Committee had to seek extension of its term and could complete its limited observations and recommendation due to Discoms not providing all the desired documents and details in time. Still some of the views and details from the Discoms have not been received. Discoms' cooperation in providing the details would have helped in possibly formulating more comprehensive views of the committee.
- While discussing the equipment and supply quality issue, few suggestions have been made on related aspects of System Planning, Equipment and Work Specifications, Procurement and Equipment Quality Assurance, Equipment Repair & Inventory Management, Installation Standards & Safety Issues, and Human Resource & Ethical Issues.
- Improvement in each of these aspects are important and, themselves, huge task. The suggestions given in the report are indicative and limited in nature. UPPCL/Discoms may form separate task force on each of them to formulate detailed strategy in achieving excellence in each of these aspects.
- Finally, the Committee is of the view that its report will help UPPCL and all its Discoms to initiate the process of taking corrective measures in improving the quality standards. The Committee is quite hopeful that with intensive efforts, the power utilities in the state will regain their glorious image and will become a role model to other power utilities in the country.

Appendix-A
Commission's Order Dated 1.10.2007

Present:

1. Shri Vijoy Kumar, Chairman
2. Shri P.N. Pathak, Member
3. Shri R.D. Gupta, Member

IN THE MATTER OF: Constitution of the Committee under section 128 of Electricity Act, 2003 to study the Specifications and contracting systems adopted by the State Government owned Distribution Companies for procurement of material/equipments as well as to examine the procedure adopted for ensuring adherence to the standards of quality, safety, continuity and reliability of service by licensees and advise improvement.

ORDER

The State Advisory Committee, a statutory body under section 87 of Electricity Act, 2003, which has been mandated to advise the Commission, in pursuance of section 88, on –

- (i) major questions of policy;
- (ii) matters relating to quality, continuity and extent of service provided by the licensees;
- (iii) compliance by licensees with the conditions and requirements of their license;
- (iv) protection of consumer interest; and
- (v) electricity supply and overall standards of performance by utilities in its 6th meeting held on 29th August, 2007 raised the issue of quality control of equipment and stressed that owing to poor quality material /equipment there are frequent breakdown and unnecessary expenditure on maintenance/replacement, the cost on all of which is then passed through to retail consumers through the annual revenue requirement. Figures were quoted and substantiated through report that on all India basis the transformer damage rate is 2% as compared to a very high figure of 30% in the state of Uttar Pradesh. The Committee also called the attention to the contracting system of UPPCL wherein contractors often sub-contract the work to petty contractors, potentially effecting quality of work adversely. The committee members urged the commission that since it has a mandate to protect consumer interest, it should call for regular reporting of quality and contracting procedures, the Committee also suggested that in order to ensure quality control the first step would be to examine the specifications for various equipments and to see whether the equipment so ordered conform to specified standard and are likely to deliver establish norms of performance standard and safety.

In view of above advise/suggestion of the Advisory Committee and also various news paper reports flashing poor upkeep/maintenance of equipments adversely affecting the reliability and quality of supply as well as almost regular safety hazards,

the Commission cautiously but carefully examined its own role to enter into the domain of equipment quality control within the four walls of the Electricity Act, 2003. But before discussing the relevant provision of 2003, it would be proper to touch upon the directive issued by the Commission in respect of transformer failure rate and the response of the licensee in this respect. Leave aside the rate of transformer failure; the licensees have not even bothered to submit information regarding this despite categorical directive of the Commission in this respect. Para 3.21 of tariff order 2004-05 is noteworthy in this respect and is being reproduced:

“The Commission had also asked the details regarding transformer failure rate in response to which UPPCL has submitted details for transmission wing stating that details for distribution would be submitted separately. However, the Commission has not received any report regarding distribution transformer failure rate. The commission is aware that transformer failure rate carries a real significance for distribution sector due to its alarmingly higher failure rates on a regular basis. **Further, it is in the notice of the Commission that the information is readily available at various levels of licensees. Non-submission of this report is tantamount to concealing the information, which cannot be accepted.**”

The Commission again directed through its tariff order 2004-05 the licensees to submit distribution transformer rate on quarterly basis. In response to the same, the licensees submitted information for first three quarter of 2005-06 and the range of transformer failure rate was shown as hovering between 3% to 6%. However, the Minutes of Meeting, issued by the Managing Director, UPPCL, held on 26th June, 2007 chaired by Hon’ble Energy Minister, Uttar Pradesh, as placed before the Commission by one of the members of State Advisory Committee, exhibit a completely different picture. The relevant portion of the minutes is reproduced below:

“ ~~Å tkz {ks=ka , oa fMLdkk~~ ~~ea {kfrxLrrk vR; f/kd gS rFkk insk ea ifjorZka dh~~
~~{kfrxLrrk 30 ifr’kr gS rFkk ns’k dh vkSj r [kfrxLrrk 2 ifr’kr l s dgha vf/kd gA --~~
~~----- bl en ea dkj i kjs’ku dks yxHkx : 0 120 djkm+dk 0; ; ogu djuk iM jgk~~
~~gA”~~

Accordingly, it is abundantly clear that either the licensees are not willing to submit the information regarding equipment quality control despite categorical directive of the Commission or the information submitted by them in this regard is merely an attempt to mislead the Commission. This is a serious matter and in fact touches the periphery of estoppels. The trite saying of Lord Keynon, that a man shall not be permitted to “blow hot and cold” with reference to the same transaction or insist, at different times, on the truth of each of two conflicting assertions according to the promptings of his interest, is available for reference in law. Such a situation is unacceptable to the Commission and it cannot remain a mute spectator to such grossly contradicting claims of the licensee with respect to an activity, which is at the nucleus of quality, continuity and reliability of service by licensees.

Having stated the factual position and the recommendation of State Advisory Committee, the Commission examined its role to enter into the domain of equipment quality control which directly affects the quality, continuity and reliability of service by licensees, within the framework of Electricity Act, 2003. Although there is no express

power given to the Commission for examining the quality control of the equipments under section 86 of the Electricity Act, 2003 however, section 86(1)(i) mandates the Commission to specify or enforce standards with respect to quality, continuity and reliability of service by licensee. The Commission has also been envisaged as custodian of the conditions of license and Act as well as a proactive watchdog of consumer interest and performance standard achieved by utilities in various sections of Electricity Act, 2003 by way of express provisions (sections 19, 24, 50, 57, 128, 129, 142, 146) and also on the basis of advice rendered by the State Advisory Committee in pursuance of section 88 of Electricity Act, 2003. These powers conferred by the Act on the Commission for enforcing continuity and reliability of supply; monitoring of license conditions; and protection of consumer interest have to be seen along with necessary implications to make these powers effective. Hon'ble Supreme Court, in its various judgments chiefly in **ITO Cannanore Vs. M.K. Mohammad Kunhi** has held that express grant of statutory power must be seen as carrying by necessary implication the authority to use all reasonable means to make such grant effective. Accordingly, if it is an admitted position of UPPCL that transformer failure rate is as high as 30% and the upkeep of equipments is making the consumers bleed then the Commission is constrained to investigate the issue of equipment quality control, in face of conflicting reporting, as it forms the core of quality and reliability of supply. Having established the jurisdiction of the Commission to look into the issue of equipment quality control as it directly affects the quality continuity and reliability of supply, the Commission would also like to reproduce the first and foremost responsibility that has been cast upon the distribution licensee by way of section 42(1) of Electricity Act, 2003:

"It shall be the duty; of a distribution licensee to develop and maintain an efficient, coordinated and economical distribution system in his area of supply and to supply electricity in accordance with the provision contained in this Act."

If the up-keep of licensees equipments is in such a condition viz distribution transformers failure rate of 30% against an average of 2% nation wide (as per their own report) then the only possible inference is that the licensees in the State are violating the legislative intent at will, which most certainly requires the Commission to intervene otherwise the Commission would be lacking in discharge of its own responsibility. In view of aforesaid situation, the Commission decides to invoke section 128 of Electricity Act, 2003 thereby constituting an Investigating Authority to investigate the issue of quality control of the licensee under the terms of reference given to it, as discussed in the later part of this order, and report to the Commission. The relevant portion of section 128(1) is reproduced for reference:

"The Appropriate commission may, on being satisfied that a licensee has failed to comply with any of the conditions of license or a generating company or a licensee has failed to comply with any of the provisions of this Act or the rules or regulations made there under, at any time, by order in writing, direct any person (hereafter in this section referred to as "Investigating Authority") specified in the order to investigate the affairs of any generating company or licensee and to report to that Commission on any investigation made by such Investigating Authority"

Accordingly, after being satisfied that by poor upkeep/maintenance/procurement of electrical equipments, the State Government owned licensees have failed in complying the provisions of Electricity Act, 2003, the Commission, in pursuance of section 128 read with section 86(1)(i) of Electricity Act, 2003 and on the strong advise of State Advisory Committee in its 6th meeting, constitutes a committee of five members with an objective to study the specifications and contracting systems adopted by the State Government owned distribution companies for procurement of material/equipments as well as to examine the procedure adopted for ensuring adherence to the standards of quality, safety, continuity and reliability of service and advise improvement . The five members of the Committee are:

SL. No. Name and Department Designation

1. Dr. S. C. Srivastava
Dean of R&D & Professor
Electrical Engineering Department, IIT Kanpur
Chairman
2. Shri Arun
Director (Distribution)
UP Power Corporation Limited, Lucknow
Vice Chairman
3. Shri A. K. Srivastava
Director (Distribution)
UP Electricity Regulatory Commission, Lucknow
Member (Rep. UPERC)
4. Shri Vijai Pal Singh
Director (Electrical Safety)
Government of U.P., Lucknow
Member (Rep. Electrical Safety)
5. Shri Awadesh Kumar Verma
President, UP Rajya Vidyut Upbhokta Parishad
Lucknow
Member (Rep. Consumer)

The Committee would undertake the following tasks:

- i. **Examine the existing standards of quality and safety.**
- ii. **Examine the specifications and contracting systems for transformers and other major equipments and the procedure followed by the licensees in ensuring the same.**
- iii. **Suggest improvements in equipment specifications, contracting systems and procedures.**
- iv. **Suggest a system for regular monitoring of quality of equipment by the licensees.**
- v. **Study the adherence to prescribed safety measures in the execution of work and suggest improvements.**

The committee will submit its report to the Commission within 2 months from the date of its constitution.

Dated : 1st October,2007

Appendix-B

Minutes of the 'Equipment Quality Control Committee' Meeting held on 23.2.2008 in the Office of the UPERC

The following were present:

1. Dr S C Srivastava, Professor, IIT, Kanpur and Chairman, Equipment Quality Control Committee
2. Shri Arun Kumar Srivastava, Secretary, UPERC and Convener, Equipment Quality Control Committee
3. Shri Vijai Pal Singh, Director, Electrical Safety, UP and Member, Equipment Quality Control Committee
4. Shri Avadhesh Kumar Verma, Chairman, U P Rajya Vidyut Upbhokta Parishad and Member, Equipment Quality Control Committee

Shri Arun, Director (Commercial & Distribution), UPPCL and Vice Chairman of the Committee was not present on account of his personal visit to Delhi.

The following points were discussed during the meeting:

1. The term of the Committee was extended upto 29.2.2008. Being the last meeting before the expiry of the term, the Committee felt that the submission of report at this stage would be improper on account of the following difficulties:
 - a) The reports have not been received from any of the Discoms in response to the letter No. 28C-PSDD/2007 dated 28.12.2007 sent by Shri Arun, Director (Distribution), as decided by the Committee in its meeting held on 22.12.2007.
 - b) No report has been received yet from Madhyanchal Vidyut Vitran Nigam Ltd in response to the letter No. UPERC/Dir (AKS)/EC/2007-1339 dated 22.10.2007 from Convener of the Committee, Shri Arun Kumar Srivastava. Other Discoms have not provided all the desired informations in their report.
 - c) None of the Discoms have provided any information about the procedure being followed to ensure quality of the material being procured including stages of their inspection process.
 - d) The site visits planned by the Committee could not be made because of non-submission of the reports and response from the Discoms except the visits to NPCL and KESCO.
 - e) The Committee felt that the site visits should be undertaken even in absence of these reports from the Discoms to carry out necessary investigations.
2. In view of the above, it was agreed by the Committee Members to pass the following resolution:

"The Committee would seek further extension of three months from the Chairman, UPERC, so as to submit its report at the end of the Committee's

- term i.e. 31st May, 2008 to the Commission. The Committee also decided, in terms of section 128(1, first proviso), wherein it has been stated that the investigating authority “..... employ any auditor or any other person for investigation under this section”, and in view of non-co-operation of Discoms in making available the required documents to the Committee, to hire the services of an external independent agency for this purpose.”
3. The Committee directed Shri Arun Kumar Srivastava, Convener of the Committee, to put up necessary request to the Chairman, UPERC, for seeking extension of the term of the Committee and also for hiring of the services of the external agency, as per the above resolution.

Minutes of the 'Equipment Quality Control Committee' Meeting held on 25.4.2008 in the Office of the UPERC

The following were present:

1. Dr. S C Srivastava, Professor, IIT, Kanpur and Chairman, Equipment Quality Control Committee
2. Shri Arun Kumar Srivastava, Secretary, UPERC and Convener, Equipment Quality Control Committee
3. Shri Vijai Pal Singh, Director, Electrical Safety, UP and Member, Equipment Quality Control Committee
4. Shri Avadhesh Kumar Verma, Chairman, U.P. Rajya Vidyut Upbhokta Parishad and Member, Equipment Quality Control Committee

The 7th meeting of the State Advisory Committee was held on 25th April, 2008. The action taken report in respect of the work done by the Equipment Quality Control Committee was presented before the State Advisory Committee (SAC) by the Secretary, UPERC who is also the Secretary and Convener of the Equipment Quality Control Committee (EQCC). The difficulties experienced by the Committee due to non co-operation of Discoms in making available the required documents to the Committee were presented before SAC. The State Advisory Committee advised the Commission that in accordance with Section 128(3) of the Electricity Act., the information asked for has to be mandatorily given to the Investigation Authority, failing which, the Committee may issue notice to the defaulting licensee under Section-142, of Electricity Act, 2003 asking them to give reasons as to why the action provided under Section 142 be not taken. The Committee decided to place the matter before the Commission for approval and authorized the Secretary & Convener of EQCC to prepare the draft of the notice and take proper approval of the Commission before its dispatch.

BEFORE THE UTTAR PRADESH ELECTRICITY REGULATORY COMMISSION

In the matter of:

Suo-moto hearing on notice issued under Sec.142 for seeking explanation for failure to provide information to the Equipment Quality Control Committee.

In the matter of:

Managing Director, Madhyanchal Vidyut Vitran Nigam Ltd., 4-A, Gokhale Marg, Lucknow – 226 001.

**ORDER
(Hearing dt. 15th May, 2008)**

The Equipment Quality Control Committee was constituted under Sec.128 of Electricity Act, 2003 to investigate into the quality of equipment being procured by the Discoms, and advise improvements on the same.

As such the Committee had issued letter Nos. EQ-2007/1339 dated 22nd October, 2008, 283-PSDD/2007 dated 28th December, 2007 from Director, Dist., UPPCL, UPERC/Secy/F-22/2008-2351 dated 12th May, 2008 and UPERC.Secy/EQCC/08-2317 dated 1st May, 2008 in respect of seeking information's/reports. The reports were not sent to the Committee.

The Committee had also visited Stores and transformer workshop in Lucknow under MVVNL on 22.10.07 after informing MD, MVVNL. No records were shown to the Committee Members. The Committee also visited MVVNL office of MD and 132 KV Sub-Station, Gomti Nagar on 27.2.08, and certain information related to the Sub-Station was sought, but were not sent to the Committee subsequently.

The matter was put up before the State Advisory Committee in its meeting held in UPERC on 25.4.08, that the Committee was unable to submit its report and was repeatedly seeking extension for the same. SAC advised the Commission to issue notice under Sec. 142. Consequently a notice to MD, MVVNL was issued on 1st May, 2008 to appear in person to explain as to why the information sought was not given to the Committee and therefore, as to why provisions contained in Sec. 142 be not enforced.

On 15th May, 2008 the scheduled date of hearing, the MD appeared before the Commission along with some documents and on being queried, informed the Commission that the remaining documents shall be made available within three days to the Committee. The Commission therefore granted further time to the MD, MVVNL for submitting rest of the documents asked for.

(R D GUPTA)
Member

Lucknow: Dt. 22.05.08

(P N PATHAK)
Member

(VIJOY KUMAR)
Chairman

Appendix-C

Suggestions Received from Cable Manufacturers sent through a Letter to the Investigation Authority through the Secretary, UPERC

“It is being observed that quality of important items including Conductors, used in rural electrification is often not upto the mark. This is in spite of elaborate purchase organization & with processes including pre-dispatch inspection of each lot in place. The quality has not improved even with third party inspection system nor after the RE were works outsourced to large EPCs on turnkey basis. If anything it deteriorated further.

This state of affairs according to us can be tackled with a new discerning approach whereby good & bad, honest and dishonest suppliers are differentiated.

One of the major reasons of good suppliers withdrawing gradually from the scene or relegating to the back ground is that they have to either accept orders on the unworkable prices quoted by unscrupulous suppliers, who are able to manage the system with the help of erring/vulnerable officials and yet make a killing and lose money or stay out of the race and keep their works closed.

A suggestion has been made below for your perusal to help separate good from bad, based on the insight in the entire working.

It is proposed that the UPPCL/Discoms should be very strict with the recalcitrant firms. As of now the defaulting firms if caught are allowed to let go after levy of deductions/rejection of the subject lot. Cases in which there is clear evidence of ill intention, should be severely dealt with. The firms in question should be black listed and the action given wide publicity with other purchasers informed. Actions of this nature on a sustained basis are likely to instill fear in the mind of such suppliers and deter others from following such a course. In due time quality of stores will improve and good suppliers will be able to come forward and supply stores at reasonable margins.

It is pertinent to point out that **utilities which have taken stern action against defaulting suppliers are receiving quality material.** MPSEB, TNEB, Karnataka and BEST – a govt. undertaking are some of the notable examples of good governance in the matter of purchases & systems. **UPPCL should be advised to follow suit including hosting names of such suppliers on their website.** However, there is a caveat to it which is as under:

Under the present system the stores offered for inspection, either pass or fail. There is no categorization in between; **our suggestion is to create a system of rating of the stores.**

For doing so, **the lowest technical parameters upto which the stores can be accepted, albeit with deductions, has to be specified in advance.**

A stores falling into a category between 'pass' & 'lowest acceptable level' should be accepted at lower prices which should be so determined that the supplier is discouraged to supply goods of below par quality i.e. price deduction may be at a higher rate than the advantage gained by the supplier by supplying those goods.

Such a practice will embolden honest suppliers from feeling threatened by the strong arm tactics of the inspecting staff which in the present system can simply render the goods unacceptable even for a minor deviation and on the other hand can let the supplier clear goods even with major deviations.

In the proposed system the honest suppliers will not be cowed down by the unbridled power of an inspector and instead will be able to take a stand, knowing that his material will not be held back for minor deviations and would be cleared at a cost.

Once this system of differentiation is set up, the Board can take harsh steps like drawing samples from fields, from goods in use-like conductors from lines for checking and then taking severest action against dishonest suppliers.”

Appendix-D

BUREAU OF ENERGY EFFICIENCY (Government of India, Ministry of Power)

Ref.No.18/02/02/DLH
13th June, 2007

Chairman
Uttar Pradesh Electricity Regulatory Commission
Kisan Mandi, 2nd Floor
Gomti Nagar,
Lucknow 226010

Subject: Standards & Labeling Programme for Distribution Transformer.

Dear Sir,

The Hon'ble Minister for Power announced the launch of the Voluntary BEE Energy Labeling Program for distribution transformers (of upto 200 KVA) on 27th May, 2007. The labels classify transformers in five categories from 1-star to 5-star, with 5-star being the most energy efficient. The technical specifications of the BEE labeling program for distribution transformers is attached.

We recommend that future procurements of distribution transformers should specify that the supplied transformers should be labeled as 3, 4 or 5 star products in the BEE Energy Labeling Scheme. This will enable reduction in transformer losses, and the incremental cost, if any, of these 3-5 Star transformers will be paid back through the lower losses in less than 3 years.

This scheme has been launched under the provisions of Section 14 of the Energy Conservation Act, 2001 which provides powers to the Central Government, by notification in consultation with the Bureau of Energy Efficiency, to

- (a) Specify the norms for processes and energy consumption standards for any equipment , appliance which consumes, generates, transmits or supplies energy;
- (b) Specify equipment or appliance or class of equipment or appliances, as the case may be, for the purposes of this Act:
- (c) prohibit manufacture or sale or purchase or import of equipment or appliance specified under clause (b) unless such equipment or appliances conforms to energy consumption standards;
- (d) Direct display of such particulars on label on equipment or on appliance specified under clause (b) and in such manner as may be specified by regulations.

The National Energy Labeling Program was launched by Hon'ble Union Minister of Power on 18th May, 2006 on voluntary basis for Frost Free Refrigerators, Tubular Fluorescent Lamps, and later extended to direct cool refrigerators and Air conditioners, and now to distribution Transformers.

The technical recommendations for the star rating levels for Distribution Transformers were formulated through stakeholders' technical committee. The BEE technical committee visited 8 utilities and distribution companies to discuss the technical committee recommendations. BEE had also sent the technical committee report to 30 utilities and Electricity Regulatory Commissions to obtain their views. Based on the interactions with the stakeholders, the recommendations were further optimized.

If you need any clarification or interaction on the subject, myself and my colleagues would be happy to interact with you.

Thanking You.

Yours faithfully

(Ajay Mathur)
Director General

DO No/018/Chairman/UPERC/2007
20th June 2007

Sub: **Standards & Labeling Programme for Distribution Transformers.**

Dear Mr. Mathur,

I am in receipt of your letter No. 18/02/02/DLH dated 13th June 2007. While appreciating the efforts being made by the Bureau of Energy Efficiency in promoting efficiency in various appliances like refrigerators, air conditioners etc. and now the distribution transformers, I wish to offer following comments/suggestions on the subject:-

1. In Star rating Plan- 1 star, 2 star, 3 star and 5 star have been prescribed. This gives freedom to a Utility to buy Transformers of any rating. Since we are concerned with the efficiency of the transformers by reducing losses, only single star rating should have been prescribed. Alternatively, we could prescribe 4 star or 5 star rating transformers only. **The minimum that could be done in this case is to totally disallow 1 star rating and 2 star rating. Unless, these restrictions are imposed business as usual will continue.**
2. You are already aware that Section 6 of Electricity Act 2003 has been amended by the Parliament and Notified on May 29, 2007. As per this, it would be the joint responsibility of State Government and the Central Government in, so far as, rural electrification as well as house hold electrification is concerned. Earlier, only the State Government had the responsibility in this area. This amendment gives the Central Government power to enforce efficiency standards in transformers which are being purchased under APDRP Programme and Rajeev Gandhi Vidyutikaran Programme substantially funded by the Central Government.
3. I may suggest that the Central Government may like **to impose efficiency standards in transformers and making it mandatory to procure only the most efficient transformers. I believe, suggestions and recommendations are not mandatory and, therefore, not implemented by the State Utilities for various reasons. In other words, the suggestion is that it is not enough to make recommendation which may not be followed by the Utilities.**

Let me hope you will like to bestow your kind attention on the suggestions and comments given by us.

With Kind regards.

Yours sincerely,

(Vijoy Kumar)

Sri Ajay Mathur
Director General
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Appendix-E

SUGGESTIVE SYSTEM OF VENDOR ENLISTMENT AND EVALUATION (Being followed by the Noida Power Company Limited)

The vendors for critical items of regular consumption, like transformer, cable and meters etc., are evaluated continually at three stages as noted below:

- a) Prior to Enlistment
- b) At the time of order placement
- c) Periodic surveillance audit.

Broadly, the objective of the evaluation is to assess the capability of the vendor to supply item at right quality, in the right quantity, at the right time and at the right price.

Vendor Enlistment:

Against requests for enlistment potential vendors are solicited to forward a profile of the organization in a standard format as enclosed in Annexure –I.

Once the profile is scanned and vendor is short-listed for enlistment, plant visits are undertaken to verify the capability of the vendor against the following parameters:

- a) Company Profile
 - i) Organizational Stability
 - ii) Demonstrated expertise
 - iii) Professional attitude
- b) Quality Systems
 - i) Process control metrics
 - ii) Total quality commitment
 - iii) Functional / reliability indices
- c) Management Capability
 - i) Mission & Vision
 - ii) Customer orientation
 - iii) Change initiatives
- d) Financial stability
 - i) Key ratios
 - ii) Demonstrated productivity
 - iii) Investment for future
- e) Cost consciousness

- i) Pricing norms
 - ii) Cost of quality study
 - iii) Cost benchmarking initiatives
- f) Delivery assurance
 - i) Capability to meet stretch schedule
 - ii) Performance history
 - iii) Logistics preparedness
- g) Human resource development
 - i) Focus on capacity building
 - ii) Promotion on teamwork, empowerment
 - iii) Talent retention index
- h) Technological ability
 - i) Overall equipment effectiveness
 - ii) E-commerce capability
 - iii) Production facilities

Upon due diligence of the vendor's capability enlistment is done for supply of the critical items.

Order Placement:

Upon receipts of quotations from enlisted vendors, evaluation is undertaken on the basis of most economical pricing and delivery schedule commitments matching with field workflow.

Vendor Surveillance:

Periodic audit of enlisted vendors are conducted for ensuring checks on the following:

- a) Design management
- b) Procurement management
- c) Manufacturing control
- d) Quality management
- e) Calibration procedures
- f) Inspection procedures
- g) Acceptance certification procedures
- h) Human resource development

A standard format for surveillance audit is as below:

VENDOR SURVEILLANCE AUDIT

Design Information

1. Is there a formal deviation procedure and how well is it followed? (Y / N)
2. Does your company have a written system for incorporating customer changes into shop drawings? (Y / N)
3. Does your company have a reliability department? (Y / N)
4. Are reliability data used in developing new designs? (Y / N)
5. Is quality history fed back to engineering for improvements in current or future designs? Does quality management review new designs? (Y / N)
6. Does your company have a sample or prototype department? (Y / N)
7. Does Q.A review sample prototypes? (Y / N)
8. Is this information used in developing shop inspection instructions? (Y / N)
9. Are customer specifications interpreted into shop specifications? (Y / N)
10. Do drawings and specifications accompany purchase orders to suppliers? (Y / N)
11. Does quality management review these? (Y / N)
12. Are characteristics classified on the engineering documents as to importance? (Y / N)
13. Does QA review new drawings with the intent of designing gauging fixtures? (Y / N)

Procurement / Control of Purchased Material

1. Are purchase orders made available to incoming inspection? (Y / N)
2. Is there a system for keeping shop drawings up to date? (Y / N)
3. Are written inspection instructions available? (Y / N)
4. Is sample inspection used? (Y / N)
5. Is gauging equipment calibrated periodically? (Y / N)
6. Is gauging equipment correlated with suppliers' equipment? (Y / N)
7. Are suppliers' test records used for acceptance? (Y / N)
8. Are commercial test records used for acceptance? (Y / N)
9. Is material identified to physical and chemical test reports? (Y / N)
10. Are records kept to show acceptance and rejection of incoming material? (Y / N)
11. Does your company have a supplier rating system? (Y / N)
12. Is it made available to the supply management department? (Y / N)
13. Is the supplier notified of nonconforming material? (Y / N)
14. Does your company have an approved supplier list? (Y / N)
15. Does your company survey supplier facilities? (Y / N)
16. Does the incoming inspection department have adequate storage space to hold material until it is inspected? (Y / N)
17. Is nonconforming material identified as such? (Y / N)

Manufacturing Control

1. Are inspection stations located in the production area? (Y / N)
2. Are shop drawings and specifications available to inspection? (Y / N)

3. Is there a system for keeping the documents up to date? (Y / N)
4. Are written inspection instructions available? (Y / N)
5. Is there a system for reviewing and updating inspection instructions? (Y / N)
6. Is sample inspection used? (Y / N)
7. Do production workers inspect their own work? (Y / N)
8. Are inspection records kept on file? (Y / N)
9. Is inspection equipment calibrated periodically? (Y / N)
10. Is all material identified (route tags, etc.)? (Y / N)
11. Is defective material identified as such? (Y / N)
12. Is defective material segregated from good material until disposition is made? (Y / N)
13. Are first production part inspected before a job can be run? (Y / N)
14. Is corrective action taken to prevent the recurrence of defective material? (Y / N)
15. Who is responsible for making disposition of nonconforming material? (Y / N)
16. Does your company use x-bar and R charts? (Y / N)
17. Does your company use process capability studies? (Y / N)
18. Are packaged goods checked for proper packaging? (Y / N)

Quality Management

Does the quality department have?

1. Written quality policy and procedures manual? (Y / N)
2. Written inspection instructions? (Y / N)
3. A quality-engineering department? (Y / N)
4. Person or persons who perform supplier surveys? (Y / N)
5. Incoming inspection department? (Y / N)
6. In-process inspection department? (Y / N)
7. Final inspection department? To whom does the inspection department report? (Y / N)
8. Does quality audit function exists formally? (Y / N)
9. A gauge control program? (Y / N)
10. A gauge control laboratory? (Y / N)
11. Other quality laboratories? (If yes, specify type)
12. A quality cost program? (Y / N)
13. A reliability department? (Y / N)

Calibration – Inspection and Testing

1. Does the Company have a gauge control function? (Y / N)
2. Does the Company have written instructions for operating inspection and test instruments? (Y / N)
3. Are all inspection instruments calibrated at periodic intervals? (Y / N)
4. Are records of calibration kept on file? (Y / N)
5. Is there a system to recall inspection instruments when they are due for calibration?(Y / N)
6. Are the inspection instruments used by production calibrated? (Y / N)
7. If so, are these instruments removed from use until they can be repaired or recalibrated? (Y / N)

Inspection of Completed Material

1. Are shop drawings and specifications available to inspection? (Y / N)
2. Is there a system for reviewing and updating inspection instructions? (Y / N)
3. Is sample inspection used? (Y / N)
4. Are inspection records kept on file? (Y / N)
5. Are records of inspection results used for corrective action purpose? (Y / N)
6. Is inspection equipment calibrated periodically? (Y / N)
7. Is all material identified (route tags, etc.)? (Y / N)
8. Is defective material identified as such? (Y / N)
9. Is defective material segregated from good material until disposition is made?
(Y/N)
10. Is reworked material submitted for reinspection? (Y / N)

Final Acceptance

1. How well are specifications used in determining the acceptability of material?
2. How well are certifications and in-process inspection records used in the final acceptance decisions?
3. How adequate are inspection procedures? How well are they followed?
4. How adequate are inspection facilities and equipment?
5. How well are inspection results used for corrective action?
6. How adequate are packing and order-checking procedures?
7. How well are they followed?

Human resource development

1. Number of employees.
2. Staff composition:
 - Managerial
 - Technical
 - Non-technical
3. Has HR policy been made for the employees? (Y / N)
4. Has any training policy been made for the employees? (Y / N)
5. Has any systemic method been made to identify the training needs of the employees? (Y / N)
6. Are all the employees covered under the training calendar? (Y / N)
7. Average training hours per employee:
8. Have a core functional team been formed? (Y / N)
9. How many QFD teams have been formed? (Y / N)
10. Have SGA team been formed? (Y / N)
11. How many SGA teams formed? (Y / N)
12. Have the people been exposed to TQM, KAIZEN etc.? (Y / N)
13. Auditors view on work culture:
14. Has any method been formulated to track attrition rate? (Y / N)
15. Attrition rate for the last 4 years.

SUPPLIER REGISTRATION FORM

1. (A) (i) Name of the Supplier:
 - (ii) Complete address of the registered office:
 - (iii) Phone Number:
 - (iv) Fax Number:
 - (v) Email ID:
- (B) Name of the two responsible officers of the firm with designation (Managing Director / Partner/ Chief Engineer / Works Engineer etc.
- (C) (i) Complete address of the Works:
 - (ii) Name of the Works in charge:
 - (iii) Telephone Number (s):
 - (iv) Email Number:
 - (v) Fax Number:
2. Year of the Establishment:
3. Constitution of the firm
 - (A) Private or Public Limited:
 - (B) Registered under the companies' act or any other act. Give registration number and date.