



Republic of the Philippines  
**National Electrification Administration**

September 28, 2004

NEA-MEMORANDUM No. 2004-026

**TO : ALL ELECTRIC COOPERATIVES**

**SUBJECT : STANDARD CODING FOR DISTRIBUTION SYSTEM ANALYSIS AND MANAGEMENT**

**I. OBJECTIVES:**

- a. To establish a uniform coding or identification of electrical equipment and their connection points to be utilized by all Electric Cooperatives;
- b. To simplify the assigned unique ID for easy understanding and facilitate the determination of the type, number, and location of the equipment;
- c. To help the ECs maintain proper control, and accurate account of the equipment and structures being utilized in the ECs distribution systems; and
- d. To help NEA create a systematic DSM databank in connection with overall development of National Strategic Plan.

**II. POLICY**

Each EC shall prepare, maintain, and provide NEA the output of their activities for systems loss segregation and distribution system analysis. The EC shall ensure that the integrity of the data is properly observed so that an accurate analysis of the system would be attained. NEA requires the submittal of electronic and hard copies of the supporting documents and worksheets used in these activities so that in case of ambiguities of data submitted, NEA would be able to check them.

The following are the required documents for submission:

- a) Single line diagram per feeder indicating the connection point of electrical equipment and line segment;
- b) Distribution system data in standard forms; and
- c) Comprehensive engineering plan after the system analysis.

### III. RESPONSIBILITY

The Board of Directors and General Manager shall primarily be responsible to implement this guidelines. The required data are very vital inputs to the network modeling of distribution system and tools in reducing and controlling systems loss, basis of identifying high impact projects in strategic planning and to be utilized in accounting, billing, apprehension, and for other purposes, to enable the ECs to achieve the systems loss within the acceptable limit.

### IV. GENERAL PROCEDURE

- a. Create a working group of Technical personnel whose primary responsibility is to gather technical field data. Data input must be in accordance with standard forms provided.
- b. Each feeder must be provided with a single line diagram wherein the assigned component ID is placed, location of segment or node/bus of a section or equipment for easy identification of the exact location of physical component in the system. Also, provide the staking sheets where the structures and assemblies must be placed using our standard construction specification.
- c. All generated data must be kept intact and available to all members of the group to enable each one of them to countercheck the completeness of the output of activities.
- d. Upon completion of field data gathering or engineering analysis, it is recommended that permanent marking with the use of paint or a name tag be placed on all structures and equipment.
- e. Prior to submittal to NEA, ensure that the data have already undergone sanity check and verified correct. Load flow simulation and analysis must be done in NEA.

### V. COMPONENT IDENTIFICATION AND NUMBERING

1. GENERAL ID OF DISTRIBUTION SYSTEM COMPONENTS ( to be used as prefix to equipment coding )
  - a. SS – Substation power transformer
  - b. DX - Primary overhead line
  - c. UX – Primary underground line
  - d. OS - Open secondary overhead line
  - e. UB - Underbuilt secondary overhead line
  - f. US - Underground secondary line
  - g. KP - Primary service drop
  - h. KS - Secondary service drop
  - i. KU - Underground service lateral
  - j. DT - Distribution Transformer

- k. VR - Voltage Regulator
- l. XC - Shunt Capacitor
- m. XL - Shunt Inductor
- n. XS - Series Inductor

## 2. SUBSTATION POWER TRANSFORMER :

Adopt eight (8) alpha numeric characters :

**CODING: SSAAAAXX**

- **SS** = Prefix ID designation for substation power transformer
- **AAAA** = location of substation ( 4 alphanumeric characters)
- **XX** = serialized and unique transformer numbering (2 numeric characters )

## 3. PRIMARY OVERHEAD LINE DATA

Adopt thirteen (13) alpha numeric characters

**CODING: DXAAAAXXBYYYY**

- **DX** = Prefix ID designation for Primary Overhead Line
- **AAAA** = location of substation (3 alphanumeric characters)
- **XX** = serialized and unique continuous feeder number (2 numeric characters )
- **B** = phase config. ( 1 character). [C for three phase, B for Vee phase and A for single phase]
- **YYYY** = serialized numbers ( 4 numeric characters ). Reserving 4 numbers are recommended. (e.g., 0001, 0006, 0011, 0016, etc.)

## 4. PRIMARY UNDERGROUND LINE DATA

Adopt thirteen (13) alpha numeric characters

**CODING: UXAAAAXXBYYYY**

- **UX** = Prefix ID designation for Underground Primary Line
- **AAAA** = location of substation (3 alphanumeric characters)
- **XX** = serialized and unique continuous feeder number (2 numeric characters )
- **B** = phase config. ( 1 character). [C for three phase, B for Vee phase and A for single phase]
- **YYYY** = serialized numbers ( 4 numeric characters ). Reserving 4 numbers are recommended. (e.g., 0001, 0006, 0011, 0016, etc.)

## 5. DISTRIBUTION TRANSFORMER

Adopt seven (7) alpha numeric characters

CODING : DTXXXXU or DTXXXXV or DTXXXXW

- **DT** = Prefix ID for Distribution Transformer
- **XXXX** = serialized number ( 4 numeric characters )
- **U or V or W** = U for single phase, V for open delta or W for three phase bank (one character)

## 6. OPEN SECONDARY OVERHEAD LINE DATA

Adopt eight (8) alpha numeric characters

CODING : OSAXXXXX

- **OS** = Prefix ID designation for Open Secondary Overhead Line
- **A** = phase configuration ( 1 character ). [A for single phase or C for three phase]
- **XXXXX** = serialized numbers ( 5 numeric characters). Reserving one (1) number is recommended (e.g., 00001, 00003, 00005, etc.)

## 7. UNDERBUILT SECONDARY OVERHEAD LINE DATA

Adopt eight (8) alpha numeric characters

CODING : UBAXXXXX

- **UB** = Prefix ID designation for Underbuilt secondary overhead Line
- **A** = phase configuration ( 1 character ). [A for single phase or C for three phase]
- **XXXXX** = serialized numbers ( 5 numeric characters). Reserving one (1) number is recommended (e.g., 00001, 00003, 00005, etc.)

## 8. UNDERGROUND SECONDARY LINE DATA

Adopt eight (8) alpha numeric characters

CODING : USAXXXXX

- **US** = Prefix ID designation for Underground Secondary Line
- **A** = phase configuration ( 1 character ). [A for single phase or C for three phase]
- **XXXXX** = serialized numbers ( 5 numeric characters). Reserving one (1) number is recommended (e.g., 00001, 00003, 00005, etc.)

## 9. PRIMARY SERVICE DROP LINE DATA

Adopt three (3) alphanumeric characters followed by consumer ID number

CODING : KPAXXXXXXXXXX...X

- **KP** = Prefix ID designation for primary service drop
- **A** = phase configuration ( 1 character ). [A for single phase or C for three phase]
- **XXXXXXXXXX...X** = customer account number ( unlimited characters )

## 10. SECONDARY SERVICE DROP LINE DATA

Adopt three (3) alphanumeric characters followed by consumer ID number

CODING : KSAXXXXXXXXXX...X

- **KS** = Prefix ID designation for secondary service drop
- **A** = phase configuration ( 1 character ). [A for single phase or C for three phase]
- **XXXXXXXXXX...X** = customer account number ( unlimited characters )

## 11. UNDERGROUND SERVICE LATERAL LINE DATA

Adopt three (3) alphanumeric characters followed by consumer ID numbers

CODING : KUAXXXXXXXXXX...X

- **KU** = Prefix ID designation for underground service drop
- **A** = phase configuration ( 1 character ). [A for single phase or C for three phase]
- **XXXXXXXXXX...X** = customer account numbers ( unlimited characters )

## 12. VOLTAGE REGULATOR DATA

Adopt six (6) alpha numeric characters

CODING : VRXXXA or VRXXXC

- **VR** = Prefix ID for Voltage Regulator
- **XXX** = serialized number ( 3 numeric characters )
- **A or C** = A for single phase or C for three phase (1 character)

## 13. SHUNT CAPACITOR DATA

Adopt five (5) alphanumeric characters

CODING : XCXXX

- **XC** = Prefix ID for Shunt Capacitor
- **XXX** = serialized numbers ( 3 numeric characters )

#### 14. SHUNT INDUCTOR DATA

Adopt five (5) alpha numeric characters

CODING : XLXXX

- **XL** = Prefix ID for Shunt Inductor
- **XXX** = serialized number ( 3 numeric characters )

#### 15. SERIES INDUCTOR DATA

Adopt five (5) alpha numeric characters

CODING : XSXXX

- **XS** = Prefix ID for Series Inductor
- **XXX** = serialized number ( 3 numeric characters )

#### 16. CUSTOMER TYPE

Adopt customer account number as unique ID

CUSTOMER TYPE AND DESCRIPTION:

1. RES1 - below 50 KWH consumption
2. RES2 - 50 to 100 KWH consumption
3. RES3 - 100 to 175 KWH consumption
4. RES4 - above 175 KWH consumption
5. COM1 - small commercial building
6. COM2 - medium commercial building
7. COM 3 - large commercial building
8. INDL1 - small industrial building
9. INDL2 - medium industrial building
10. INDL3 - large industrial building
11. PB - public building
12. IRR - irrigation
13. ST - street lights
14. OT - others

#### 17. BILLING CYCLE DATA

Adopt year and month billing period

CODING : YYYYMM

- > YYYY = year
- > MM = month

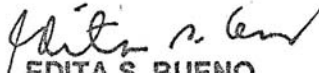
## 18.LOAD CURVE DATA

Adopt customer account number as unique ID

### CUSTOMER TYPE AND DESCRIPTION:

- 14. LCRES1 - below 50 KWH consumption
- 15. LCRES2 - 50 to 100 KWH consumption
- 16. LCRES3 - 100 to 175 KWH consumption
- 17. LCRES4 - above 175 KWH consumption
- 18. LCCOM1 - small commercial building
- 19. LCCOM2 - medium commercial building
- 20. LCCOM 3 - large commercial building
- 21. LCINDL1 - small industrial building
- 22. LCINDL2 - medium industrial building
- 23. LCINDL3 - large industrial building
- 24. LCPB - public building
- 25. LCIRR - irrigation
- 26. LCST - street lights
- 14. LCOT - others

For your guidance and compliance.

  
**EDITA S. BUENO**  
Administrator

NATIONAL ELECTRIFICATION  
ADMINISTRATION  
IN REPLYING, P.C. #ITE: H0R005968

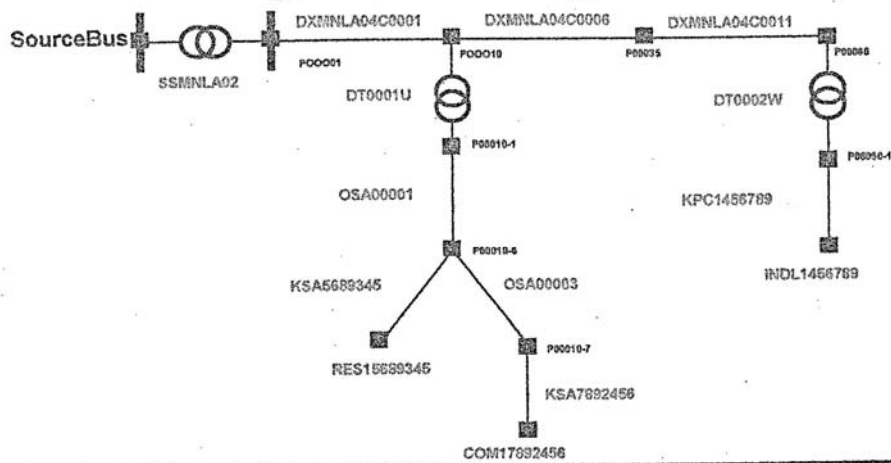


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# Sample Coding for Distribution System Analysis

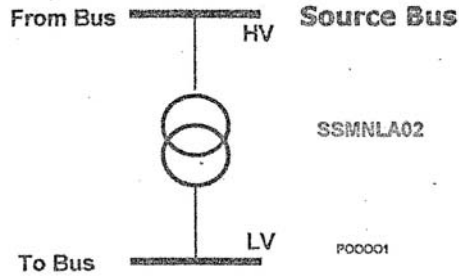
## Distribution System Single Line Diagram





## Power Transformer Data

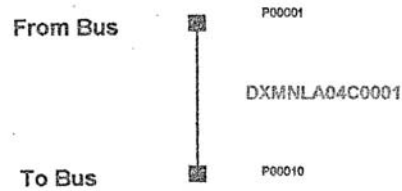
Connection Point to the  
Transmission System



EquipmentID	From Bus	To Bus
SSMNLA02	Source Bus	P00001

## Primary Line

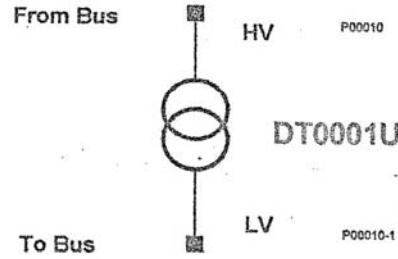
Connection Point to a  
Power Transformer  
Secondary or Another  
Primary Line Segment



EquipmentID	From Bus	To Bus
DXMNLA04C0001	P00001	P00010
DXMNLA04C0006	P00010	P00035
DXMNLA04C0011	P00035	P00060

## ***Distribution Transformer Data***

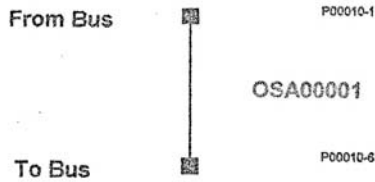
Connection Point to a  
Primary Line Segment



EquipmentID	From Bus	To Bus
DT0001U	P00010	P00010-1
DT0002W	P00060	P00060-1

## ***Secondary Line***

Connection Point to a  
Distribution Transformer  
Secondary or Another  
Secondary Line Segment



EquipmentID	From Bus	To Bus
OSA00001	P00010-1	P00010-6
OSA00003	P00010-6	P00010-7

## Service Drop Line

Connection Point to a  
Secondary Line  
Segment

From Bus

P00010-6

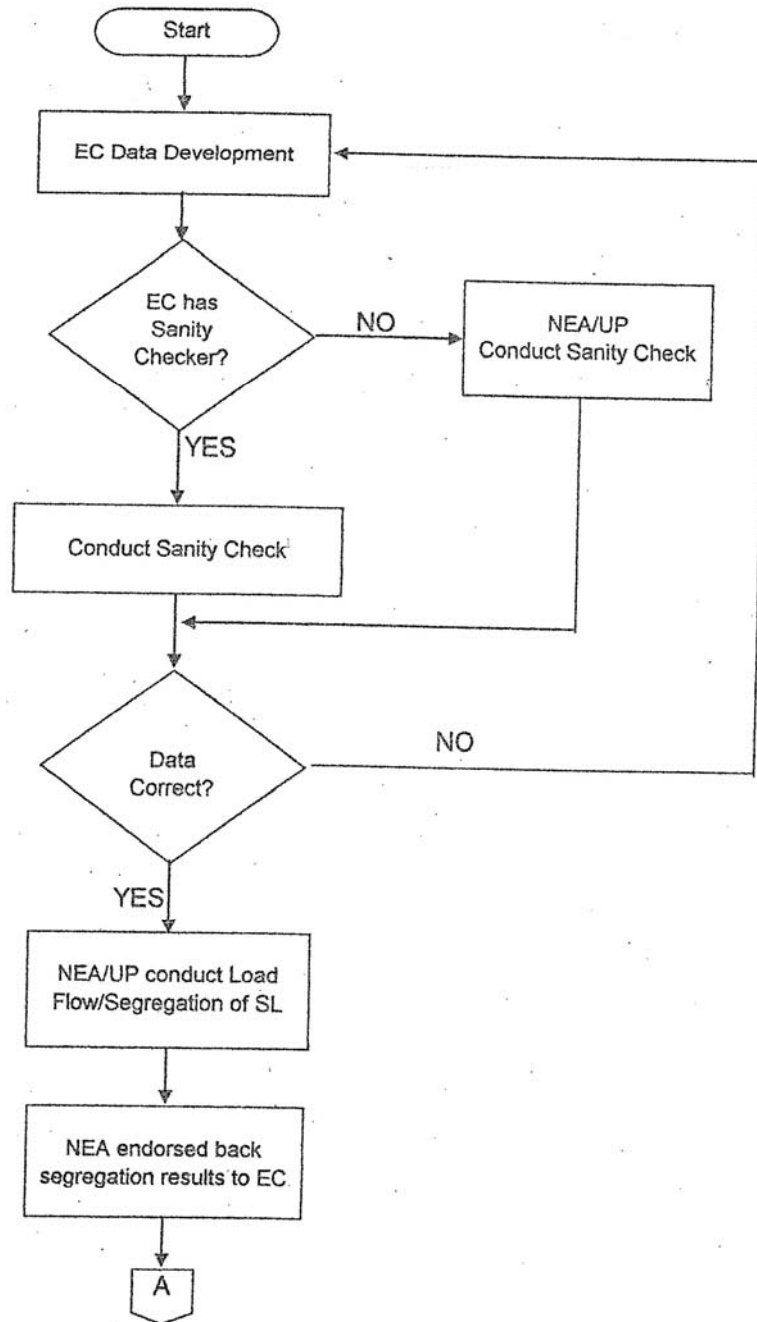
KSA5689345

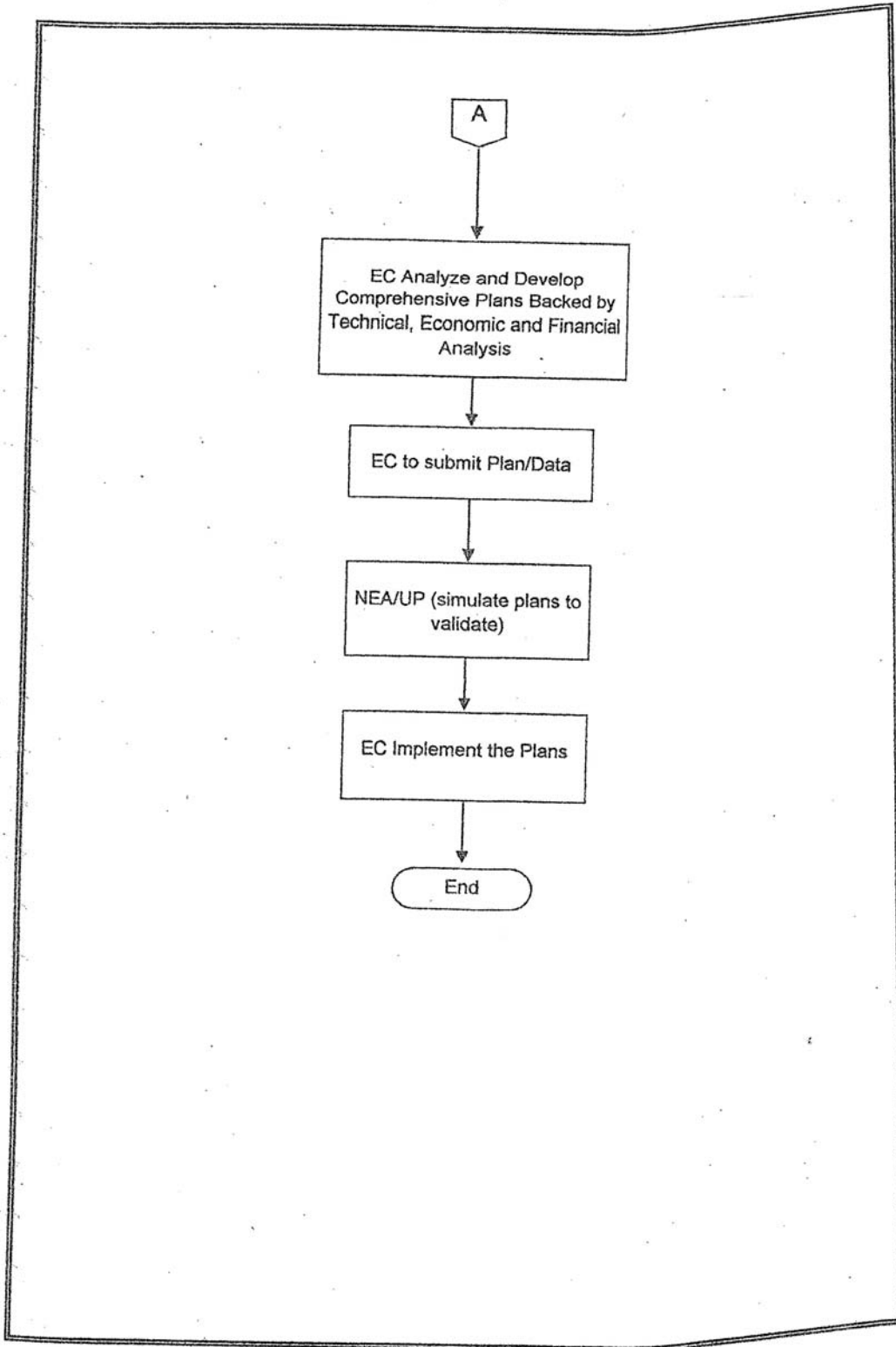
To Bus

RES156893457

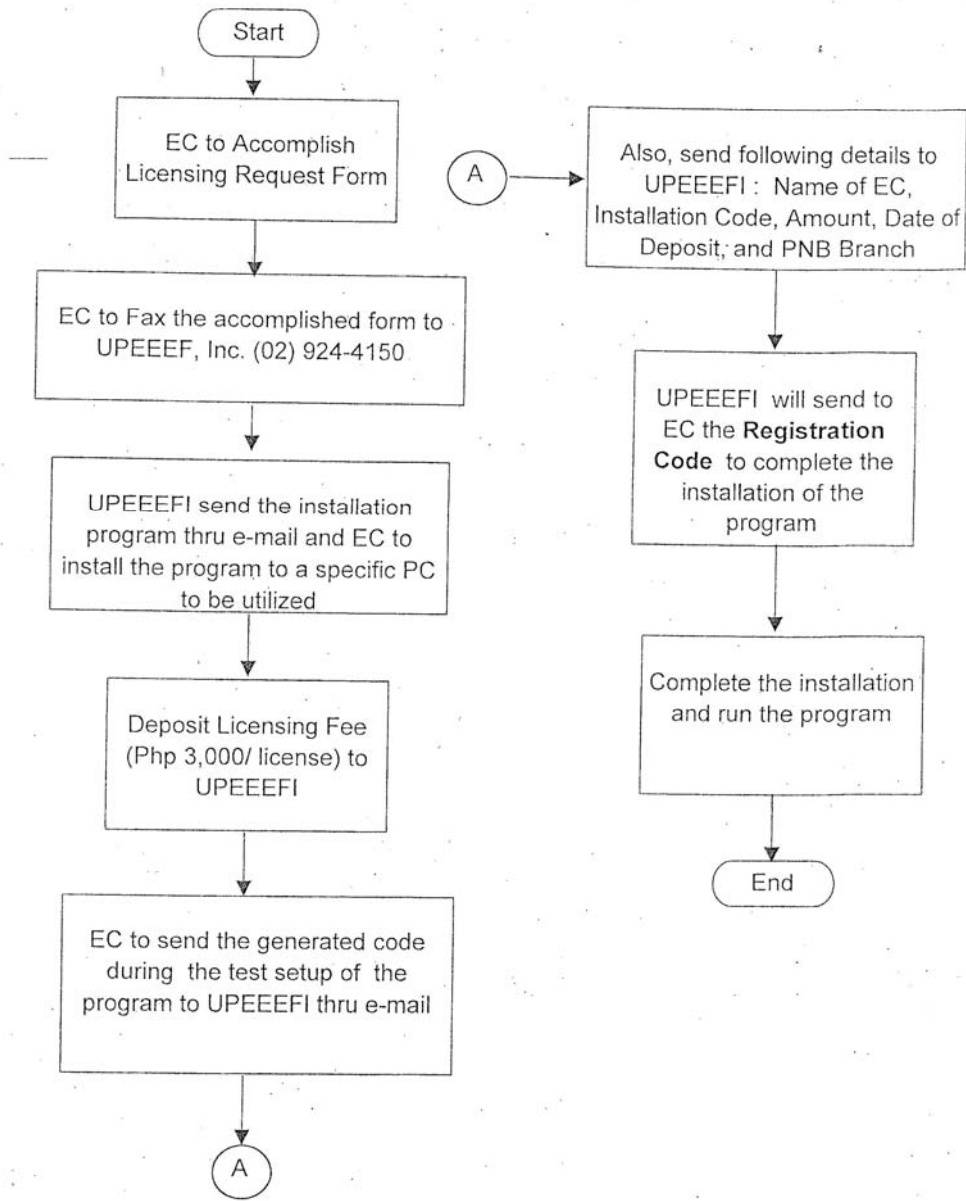
EquipmentID	From Bus	To Bus
KSA5689345	P00010-6	RES15689345
KSA7892456	P00010-7	COM17892456
KPC1456789	P00060-1	INDL1456789

# FLOW CHART OF PROCEDURE OF DISTRIBUTION SYSTEM LOSS REDUCTION PROGRAM





# DISTRIBUTION SYSTEM DATA SANITY CHECK PROGRAM LICENSING PROCEDURE



Note : Only one (1) licensing for every one (1) computer

**U.P. Electrical and Electronics Engineering Foundation, Inc.**  
**c/o National Engineering Center**  
**University of the Philippines**  
**Diliman, Quezon City**

Fax to: **UPEEEFI**  
Attention: **Prof. Rowaldo R. del Mundo**/Ms. Florence Trinidad  
Fax No.: **(02) 924-4150**

**Distribution System Data Sanity Check Program**  
**Licensing Request Form**

Name of EC : \_\_\_\_\_  
Address : \_\_\_\_\_  
Telephone Number: \_\_\_\_\_  
Fax Number : \_\_\_\_\_  
Email Address : \_\_\_\_\_  
Number of License: \_\_\_\_\_ (*Note: One computer-one license*)  
Authorized Person: \_\_\_\_\_  
Position : \_\_\_\_\_  
Signature : \_\_\_\_\_  
Date : \_\_\_\_\_