



NIGERIAN ELECTRICITY REGULATORY COMMISSION

GUIDELINES & PROCEDURES

FOR DISTRIBUTION LICENSEES CUSTOMER ENUMERATION

March, 2016

NIGERIAN ELECTRICITY REGULATORY COMMISSION

**GUIDELINES & PROCEDURES FOR DISTRIBUTION LICENSEES CUSTOMER
ENUMERATION**

In exercise of the powers conferred under Section 32 (2)(g) of the Electric Power Sector Reform Act, 2005 (Act No. 6 of 2005), the Nigerian Electricity Regulatory Commission hereby make the following Guidelines and Procedures for Distribution Licensees Customer Enumeration.

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PART I-OBJECTIVES AND APPLICATION

1. The objective of the Customer Enumeration Guidelines is to provide fundamental technical guidance and to ensure consistency in the implementation of the enumeration exercise by the different Discos. The following guidelines are hereby recommended as the minimum threshold for application by Distribution Companies in implementing the Customer Enumeration exercise in their areas of coverage.
2. These Guidelines and Procedures apply to all Distribution Licensees for purposes of customer enumeration.

PART II -Data Gathering

3. Methods of Data Gathering

Data during the enumeration can be collated using one or both of the following methods

- a) Automated data capture with web-based application and
- b) Manual data capture with paper-based collection.

3.1 Standard Coding of Customer Service Address & Asset Mapping

The Customer Indexation Nomenclature (CIN) recommended enables for cheap and efficient storage (in oracle, excel, or any other identified software) and for easy retrieval for analysis and reporting to NERC for verification. A purely numerical characters based CIN is proposed (similar to VISA CARD, MASTER CARD, BVN and so on). The CIN is coded in a standard format to link assets that feed a customer service address. As such, accurate customer service and transformer - circuit Feeder - line Equipment - substation connectivity, cumulative energy per circuit segment can be determined.

4. Data Validation

For the purpose of maintaining data integrity, data validation should be done at a central processing location, preferably at the Discos central office where the Customer Management System (CMS) database is hosted. In order to come up with a complete and accurate customer database, quality measures and controls should be established on the retrieval of enumerated data, analysis, update, and reporting. These tasks may be manual or automated.

5. Customer Database Management

A customer database process should be designed to facilitate management and storage of enumerated customer data. It can be a web-based or local application that may be accessed either online or offline. Specification of software licensing, warranty, maintenance, and user access should be valid for the entire duration of the project. It is important that each customer database, to whatever extent is possible, accurately reflects the diverse customer

range(s) within the coverage area, according to demography, and current tariff classifications.

6. Pilot Implementation by Discos

Distribution Companies are expected to conduct a pilot enumeration exercise in a manageable Discos area that is under the jurisdiction of the area wherein a project replication is planned for implementation. In practice, it should serve as an actual on-the-job training for all personnel involved to further enhance their knowledge on their respective job functions. Pilot implementation should help to establish performance metrics, measure man-hour utilisation, project additional financial requirements, and have a clear idea on how long it will take to complete the enumeration for the entire Discos area.

7. Replication across Entire Discos Area

Upon the completion of a pilot, Discos should replicate the exercise across the entire Discos area. Each Distribution Company should integrate all databases into existing Customer Management Systems (CMS) when conducting the full blown enumeration.

8. Data Validation, Database and Reporting to NERC

After enumerating a customer, the customer ID as well as address and billing information should be encoded into a QR (Quick Response) sticker that will be printed and stuck visibly to the wall of customer building. QR-coded stickers are preferred to barcode stickers as they are harder to tamper with and can carry more information about the customer that will aid business operations such as revenue collection. The use of stickers is especially useful for return trips to re-register or validate a customer as relevant information captured is immediately visible once the sticker is scanned to the device. Residents are to be advised by Discos not to tamper with the QR sticker. All Discos are required to adhere to formats stated in the annex section as the regulator would warehouse all submitted enumerated data in its relational database system that will establish linkage between customers and asset that they are connected to. The database will be maintained and utilised as the regulator's primary source of information during validation and resolve of customer complaints.

8.1 Data Report Formats & Parameters

All enumerated data are to be sent back to the Regulator for validation. These include asset mapping and customer service information. For a seamless transfer of data and a uniform database, Discos are required to submit their enumerated data in conformity to formats and parameters stated in sections in the annex. The annex section describes coding formats and reporting structures for the four possible types of customer connections to a Discos. It also explains the predefined fields and database types required for reporting and the quick response (QR) stickers for validation by NERC.

9. Handling of Service Irregularities during Enumeration

connected to the distribution facility. These irregularities such as wrong customer classification or billing irregularities should be managed in tandem with NERC related guidelines (See section 6 of Connection and Disconnection for Electricity Service NERC Guidelines).

PART III- MISCELLANEOUS

10. Amendment

The Commission may from time to time amend the provisions of these Guidelines and Procedures, and the schedules thereto in whole or in part as it may determine.

11. Inherent Powers of the Commission

Nothing in these Guidelines and Procedures shall prohibit the Commission from adopting in conformity with the provisions of the Act, any procedure which is at variance with any of the provisions herein, provided that the Commission is of the opinion that in the special circumstances of the matter and for reasons to be recorded in writing, it deems it just or expedient that such procedure is proper for dealing with the matter.

MADE at Abuja this ^{7th} day of ^{April} 2016



Name Dr. Anthony Akah, mni

f. Chairman/Chief Executive Officer

Nigerian Electricity Regulatory Commission.

SCHEDULE

DATA REPORTING DETAILS

1. SUPPLY STRUCTURE

The supply structures below describe how customers fed on 11kV/415V, 33kV/415V, 33 kV /11 kV, 330 kV /132 kV and underground 11kV/415V are coded in developing the required CIN.¹

S/N	TERMINOLOGY DEFINITION	
1	Char	Alphabetic Codes
2.	Description	Nomenclature of Electrical Asset
3.	Value	Numeric Definition
4	Range	Limits of Numeric Value

1.1. CUSTOMERS FED FROM 11KV/415V STRUCTURE

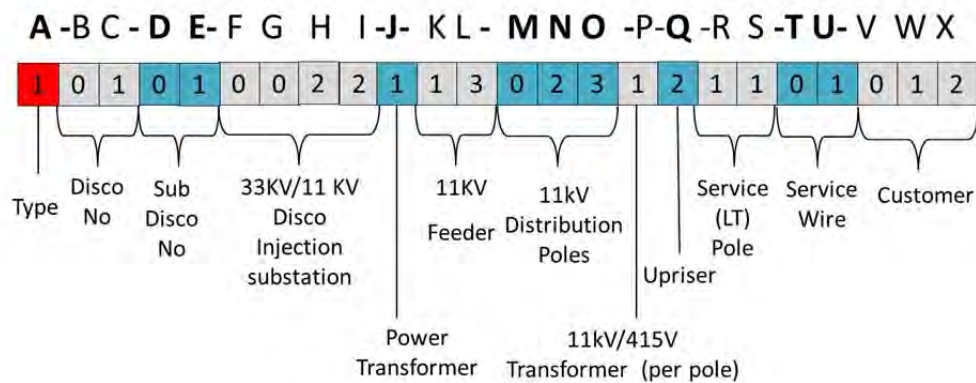
The following parameters shown in Figure 1 are recommended for a customer fed from 11kV/415V structure. The CIN schematic is depicted Figure 2.

¹ Some supply structures may exist in some Discos that have not been defined in this guideline i.e. clustered customers managed through a single transformer metering system, Disco locations that do not require service points etc. such cases should still maintain the defined structures for corresponding voltage level and fill fields that don't apply to them as zero, hence, maintaining the 24-digits CIN structure.

Figure 1: CIN structure for 11kV/415V Supply Structure

11kV/415V Supply System				
Char	Description	Explanation	Value	Range
1				
A	Supply Structure	The number 1 denotes that it is 11kV/415V supply structure	Numeric	1
BC	Disco	Number identifying 11 distinct Discos	Numeric	0 to 99
DE	Sub Disco	Business clusters within distinct Discos	Numeric	0 to 99
FGHI	33kV/11kV Disco Injection Substation	The substation where 33kV source is stepped down to 11kV	Numeric	0 to 9999
J	Power Transformer (33kV/11kV)	Source for outgoing feeders	Numeric	0 to 9
KL	11kV Feeder		Numeric	0 to 99
MNO	11kV Distribution Tower	11kV distribution poles	Numeric	0 to 999
P	11kV/415V Distribution Transformer (per pole)	Distribution transformers connected to Distribution poles	Numeric	0 to 9
Q	Upriser no	The 415V cable coming out of the 11kV/415V transformer for final delivery to customers	Numeric	0 to 9
RS	LT pole		Numeric	0 to 99
TU	Service point	Point of connection to the LT pole where customer is fed from	Numeric	0 to 99
VWX	Customer number on service point	The unique number of a customer sharing the same physical infrastructure A-BC-DE-FGHI-J-KL-MNO-P-Q(defined in previous rows) with other customers. <i>Note they are all connected to the same upriser but necessarily the same LT pole and Service Point</i>	Numeric	0 to 999

Figure 2: CIN schematic for 11kV/415V Supply Structure



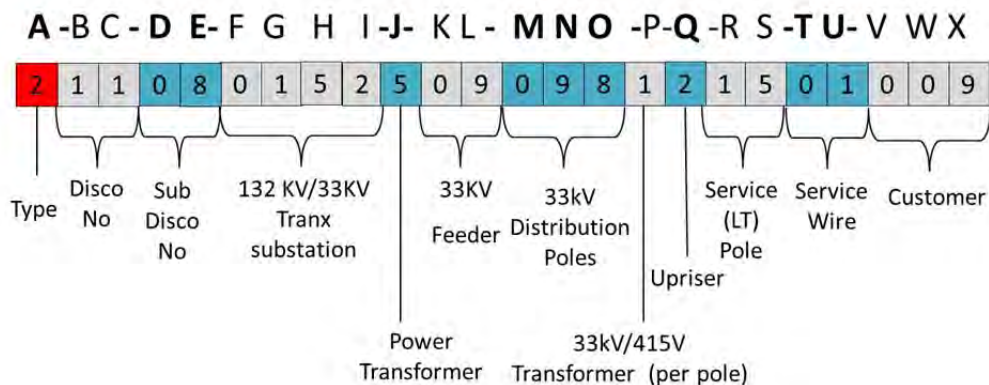
1.2. CUSTOMERS FED FROM 33KV/415V STRUCTURE

The following parameters shown in Figure 3 are recommended for customers fed from 33kV/415V structure. The CIN schematic is depicted in Figure 4.

Figure 3: CIN structure for 33kV/415V Supply Structure

33kV/415V Supply System				
Char	Description	Explanation	Value	Range
2				
A	Supply Structure	The number 2 denotes that it is 33kV/415V supply structure	Numeric	2
BC	Disco	Number identifying 11 distinct Discos	Numeric	0 to 99
DE	Sub Disco	Business clusters within distinct Discos	Numeric	0 to 99
FGHI	132kV Transmission Substation	The tranx substation where 33kV comes from	Numeric	0 to 9999
J	Power Transformer (33kV/11kV)	Source for outgoing feeders	Numeric	0 to 9
KL	33kV Feeder		Numeric	0 to 99
MNO	33kV Distribution Tower	33kV distribution pole/tower	Numeric	0 to 999
P	33kV/415V Distribution Transformer (per pole)	Distribution transformers connected to Distribution poles	Numeric	0 to 9
Q	Upriser no	The 415V cable coming out of the 33kV/415V transformer for final delivery to customers	Numeric	0 to 9
RS	LT pole		Numeric	0 to 99
TU	Service point	Point of connection to the LT pole where customer is fed from	Numeric	0 to 99
VWX	Customer number on service point	The unique number of a customer sharing the same physical infrastructure A-BC-DE-FGHI-J-KL-MNO-P-Q(defined in previous rows) with other customers. <i>Note they are all connected to the same upriser but necessarily the same LT pole and Service Point</i>	Numeric	0 to 999

Figure 4: CIN Schematic for 33kV/415V Supply Structure



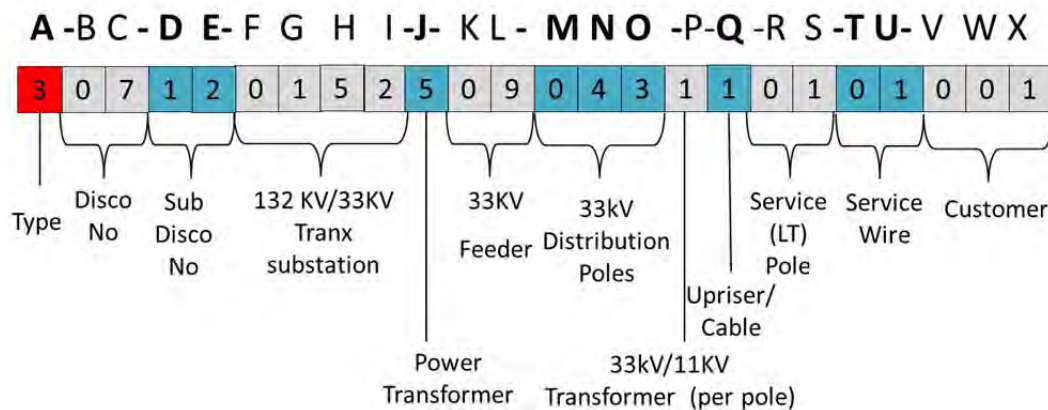
1.3. CUSTOMERS FED FROM 33KV/11KV STRUCTURE

The following parameters shown in Figure 5 is recommended for customer fed from 33kv/11kv structure. The CIN schematic is depicted Figure 6.

Figure 5: CIN structure for 33KV/11kv Supply Structure

33kv/11kv Supply System					
Char	Description	Explanation	Value	Range	Comments
3					
A	Supply Structure	The number 3 denotes that it is 33kv/11KV supply structure	Numeric	3	
BC	Disco	Number identifying 11 distinct Discos	Numeric	0 to 99	
DE	Sub Disco	Business clusters within distinct Discos	Numeric	0 to 99	
FGHI	132kv Transmission Substation	The tranx substation where 33kv comes from	Numeric	0 to 9999	
J	Power Transformer (33kv/11kv)	Source for outgoing feeders	Numeric	0 to 9	
KL	33kv Feeder		Numeric	0 to 99	
MNO	33kv Distribution Tower	33kv distribution pole/tower	Numeric	0 to 999	
P	33kv/11kv Distribution Transformer (per pole)	Distribution transformers connected to Distribution poles	Numeric	0 to 9	
Q	Upriser no	The 11kv cable coming out of the 33kv/11kv transformer for final delivery to customers	Numeric	0 to 9	
RS	LT pole		Numeric	0 to 99	These can be made all zeros if the 11kv is directly feeding to customers
TU	Service point	Point of connection to the pole/tower where customer is fed from	Numeric	0 to 99	
VWX	Customer number on service point	The unique number of a customer sharing the same physical infrastructure A-BC-DE-FGHI-J-KL-MNO-P-Q(defined in previous rows) with other customers. <i>Note they are all connected to the same upriser but necessarily the same LT pole and Service Point</i>	Numeric	0 to 999	

Figure 6: CIN structure for 33KV/11kv Supply Structure



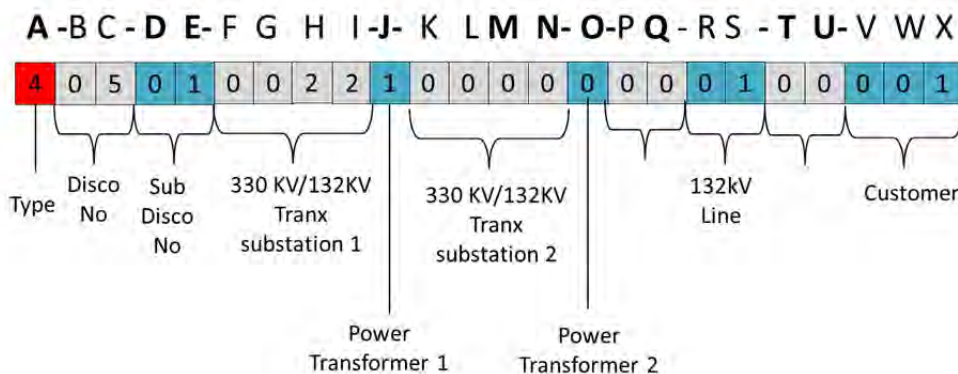
1.4. CUSTOMERS FED FROM 132KV LINE

The following CIN, in Figure 7, is recommended for customers fed from a 132kV Line. A 132kV line can be supplied from two 330 kV /132kV substations, so spaces are available for two 330kV/132kV substations. If there is only one, the second substation will be coded 000; this is will be the case most of the time. The CIN schematic is depicted Figure 8.

Figure 7: CIN structure for 132kV Supply Structure

132kV Supply System					
Char	Description	Explanation	Value	Range	Comments
4		The number 4 denotes that it is 33kV/11KV supply strcutre	Numeric	4	
A	Supply Structure				
BC	Disco	Number identifying 11 distinct Discos	Numeric	0 to 99	
DE	Sub Disco	Business clusters within distinct Discos	Numeric	0 to 99	
FGHI	330kV/132kV Substation 1	The first 330kV/132kV Substation where the 132kV line is sourced from	Numeric	0 to 999	
J	330kV/132kV Substation Transformer 1	The transformer from the first 330kV/132kV Substation where the 132kV line is sourced from	Numeric	0 to 9	
KLMN	330kV/132kV Substation 2	The second 330kV/132kV Substation where the 132kV line is sourced from	Numeric	0 to 999	
O	330kV/132kV Substation Transformer 2	The transformer from the second 330kV/132kV Substation where the 132kV line is sourced from	Numeric	0 to 9	
PQ			Numeric	0 to 99	
RS	132kV Line	The 132kV Line	Numeric	0 to 99	
TU			Numeric	0 to 99	
VWX	Customer number on service point	The unique number of a customer sharing the same physical infrastrucutre A-BC-DE-FGHI-J-KLMN-O-PQ-RS-TU	Numeric	0 to 999	

Figure 8: CIN schematic for 132kV Supply Structure



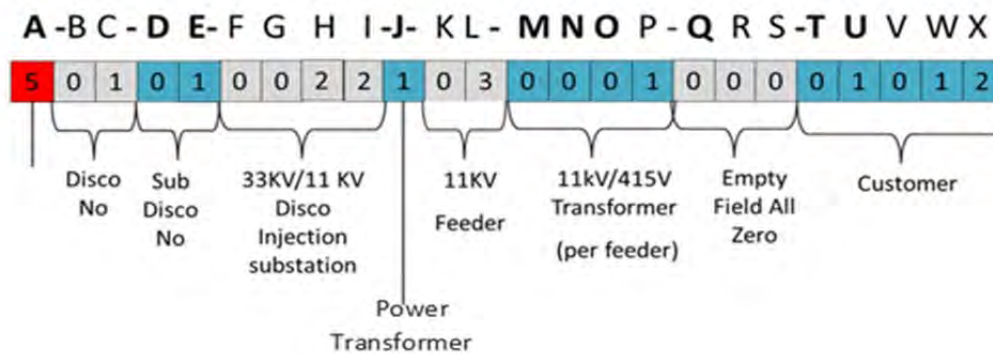
1.5. CUSTOMERS FED FROM 11KV/415V URBAN UNDERGROUND STRUCTURE

The following parameters shown in Figure 9 are recommended for a customer fed from underground 11kV/415V structure. The CIN schematic is depicted Figure 10.

Figure 9: CIN structure for 11kV/415V Underground Supply Structure

11kV/415V Supply System				
Char	Description	Explanation	Value	Range
5				
A	Supply Structure	The number 1 denotes that it is 11kV/415V supply structure	Numeric	5
BC	Disco	Number identifying 11 distinct Discos	Numeric	0 to 99
DE	Sub Disco	Business clusters within distinct Discos	Numeric	0 to 99
FGHI	33kV/11kV Disco Injection Substation	The substation where 33kV source is stepped down to 11kV	Numeric	0 to 9999
J	Power Transformer (33kV/11kV)	Source for outgoing feeders	Numeric	0 to 9
KL	11kV Feeder		Numeric	0 to 99
MNOP	11kV/415V Distribution Transformer (per feeder)	Distribution transformers connected to 11kV Feeder	Numeric	0 to 9999
QRS	Space Holder	All Zeros		000
TUVWX	Customer number on 11kV/415V distribution transformer	The unique number of a customer sharing the same physical infrastructure A-BC-DE-FGHI-J-KL-MNO-P-Q(defined in previous rows) with other customers.	Numeric	0 to 99999

Figure 10: CIN schematic for 11kV/415V Underground Supply Structure



2. PREDEFINED FIELDS

The fields **ABC** in the *CIN* are predefined to assume certain values. The parameter **A** takes on the following values:

Type	Code
11kV/415V supply structure	1
33kV/415V supply structure	2
33kV/11kV supply structure	3
Direct feed from a 132kV line	4

The parameter **BC** takes on the following values:

Disco Name	Code
Abuja Electricity Distribution PLC	01
Benin Electricity Distribution PLC	02
Eko Electricity Distribution PLC	03
Enugu Electricity Distribution PLC	04
Ibadan Electricity Distribution PLC	05
Ikeja Electricity Distribution PLC	06
Jos Electricity Distribution PLC	07
Kaduna Electricity Distribution PLC	08
Kano Electricity Distribution PLC	09
Port Harcourt Electricity Distribution PLC	10
Yola Electricity Distribution PLC	11

2.1. CUSTOMER DATA FIELD

The following table shows the recommended data fields for the Customer service information:

No	Field	Type	Max No of Characters	Compulsory
1	Customer Number	Numeric	24	Yes
2	Name	Alphanumeric	40	Yes
3	Address	Alphanumeric	50	Yes
4	Address Description	Alphanumeric	50	No
5	Closet Landmark	Alphanumeric	40	No
6	Village/Town/City	Alphanumeric	15	Yes
7	LGA	Alphanumeric	20	Yes
8	State	Alphabetical	10	Yes
9	Phone No 1	Numeric	11	Yes
10	Phone No 2	Numeric	11	No
11	Email 1	Alphanumeric	30	No
12	Email 2	Alphanumeric	30	No
13	Customer Type	Select from Database	NA	Yes
14	Customer Class	Select from Database	NA	Yes
15	Latitude Degrees	Numeric	3	Yes
16	Latitude Minutes	Numeric	3	Yes
17	Latitude Seconds	Numeric	3	Yes
18	Latitude Decimal	Numeric	4	Yes
19	Longitude Degrees	Numeric	3	Yes
20	Longitude Minutes	Numeric	3	Yes
21	Longitude Seconds	Numeric	3	Yes
22	Longitude Decimal	Numeric	4	Yes
23	Altitude(m)	Numeric	3	No
24	Accuracy(m)	Numeric	3	No
25	Bearing	Numeric	3	No
26	Meter Type	Select from Database	NA	Yes
27	Meter Brand	Select from Database	NA	Yes
28	Meter Model	Select from Database	NA	Yes
29	Meter No	Numeric	Max 40	Yes
30	Meter Certification No	Numeric	Max 40	No
31	Meter Seal No	Numeric	Max 40	No
32	Meter Manufacture Date	dd-mm-yyy		No
33	Meter Location (x)	Select from Database	NA	Yes(if x is No)
34	Meter Location 2 (y)	Alphanumeric	Max 40	Yes(if y is No)
35	Meter Accessibility	Boolean	Yes or No	Yes
36	Meter Functioning	Boolean	Yes or No	Yes
37	Meter Sealed Properly	Boolean	Yes or No	Yes
38	Meter Seal Location	Alphanumeric	Max 40	Yes

3. SAMPLE DATA REPORT

Two examples of data reports are presented for customers connected to an 11kV/415V and 33kV/415V infrastructures.

The development of the CIN number of a customer being served by a 11kV/415V infrastructure is presented below:

Field	Description	Code
Type	11kV/415V supply structure	1
Discos	ABC Electricity Distribution PLC	03
Sub Discos	XY	09
33kV/11kV Inj. S/S	RAB Local	0011
Power Transformer (33kV/11kV)	Power transformer 7	7
11kV Feeder Name	Weski Drive	01
11kV Distribution Pole	Pole no 86	086
11kV/415V Distribution Transformer (per pole along feeder route)	Transformer 5	5
Upriser no	2	2
LT pole	LT pole 4	04
Service Point	Service Wire 2	02
Customer number on the Upriser	The 72th customer on the upriser. <i>Customer number is based on upriser and not on LT pole and Service Point</i>	072

Then Customer Index Number is **103090011701086520402072**, with the following database properties:

Field	Value
Customer Number	103090011701086520402072
Name	Chike Balogun
Address	4 Oladipupo Way, King Estate
Address Description	King Estate
Closest Landmark	Oboro General Hospital
Village/Town/City	Isiala Oboro
LGA	Ikuwano
State	Abia
Phone No 1	8136783456
Email 1	chikebalogun@gahoo.com
Email 2	
Customer Type	Residential
Customer Class	R3
Latitude Degrees	6
Latitude Minutes	28
Latitude Seconds	29
Latitude Decimal	762
Longitude Degrees	3
Longitude Minutes	25
Longitude Seconds	54
Longitude Decimal	497
Altitude(m)	
Accuracy(m)	
Bearing	
Meter Type	Prepaid-Basic
Meter Brand	Conlog
Meter Model	BDF 45k
Meter No	8201045125
Meter Seal No	
Meter Manufacture Date	
Meter Location	Inside the Property
Meter Location 2	
Meter Accessibility	No
Meter Functioning	Yes
Meter Sealed Properly	Yes
Meter Seal Location	Opening of Meter

The development of the CIN number of a customer being served by a 33kV/415V infrastructure is presented below:

Field	Description	Code
Type	33kV/415V supply structure	2
Discos	Kaduna Electricity Distribution PLC	08
Sub Discos	Rigasa	11
132kV/33kV inj S/S	Kakwa	0034
Power Transformer	T2- 60MVA Kaduna Town	7
33kV Feeder Name	Asikolaye	01
33kV Distribution Pole	Pole no 86	086
33kV/415V (Distribution mTransformer (per pole along feeder route)	Transformer 5	5
Upriser no	2	2
LT pole	LT pole 4	04
Service point	service point 2	02
Customer number on service point	No 589	058

Then Customer Index Number is **208110034701086520402058**, with the following database properties:

Field	Value
Customer Number	208110034701086520402058
Name	Integral Investment Limited
Address	Km 34, Enugu Way
Address Description	After Market Square and Town Center
Closest Landmark	Town Center
Village/Town/City	Isiala Oboro
LGA	Ikuwano
State	Abia
Phone No 1	8064561987
Phone No 1	
Email 1	-
Email 2	
Customer Type	Commercial
Customer Class	C2
Latitude Degrees	6
Latitude Minutes	26
Latitude Seconds	13
Latitude Decimal	272
Longitude Degrees	3
Longitude Minutes	30

Longitude Seconds	33
Longitude Decimal	66
Altitude(m)	
Accuracy(m)	
Bearing	
Meter Type	Analog-Basic
Meter Brand	EMT
Meter Model	EMT 400
Meter No	984784830
Meter Certification No	
Meter Seal No	
Meter Manufacture Date	
Meter Location	Inside the Property
Meter Location 2	
Meter Accessibility	Yes
Meter Functioning	Yes
Meter Sealed Properly	Yes
Meter Seal Location	Opening of Meter

4. SUPPORTING DATABASES

The CIN is constructed from a database of 330kV/132kV substations, 132kV/33kV substations and 33kV/11kV Injection stations, 11kV and 33kV feeders, High Tension Poles and Uprisers. The following databases are defined.

4.1. TYPE DATABASE

The **Type database** is where the parameter **A** comes from. All Discos must conform to this database and its content in forming the CINs. The database is shown in Table below.

Type	Code
11kV/415V supply structure	1
33kV/415V supply structure	2
33kV/11kV supply structure	3
Direct feed from a 132kV line	4

4.2. DISCOS DATABASE

The **Discos database** is where the parameter **BC** comes from. All Discos must conform to this database and its content in forming the CINs. The database is shown in table below.

Disco Name	Code
Abuja Electricity Distribution PLC	01
Benin Electricity Distribution PLC	02
Eko Electricity Distribution PLC	03
Enugu Electricity Distribution PLC	04
Ibadan Electricity Distribution PLC	05
Ikeja Electricity Distribution PLC	06
Jos Electricity Distribution PLC	07
Kaduna Electricity Distribution PLC	08
Kano Electricity Distribution PLC	09
Port Harcourt Electricity Distribution P	10
Yola Electricity Distribution PLC	11

4.3. 330kV STATION DATABASE

The **330kV transmission station database** is needed in some CINs and is the parent database of the **132kV transmission substation database**. The database contents shall be like in the table below and are fully defined in **Section 6**. And it must be adopted by all Discos in their CIN convention.

330kV/132kV Tranx Substation	Code
Name 1	001
Name 2	002
Name 3	003
Name 4	004
Name 5	005
Name 6	006
Name 7	007
Name 8	008
Name 9	009
Name 10	010
.	.
.	.
.	.
Name 999	999

4.4. 132kV STATION DATABASE

The **132kV station** database is needed in some CINs and will be associated with the **330kV station** database and parent code of the **33kV/11kV station database**. The database contents shall be like in the table below and its content are fully defined in **Section 7**. And it must be adopted by all Discos in their CIN convention.

Parent Code		Code	
Source 330kV/132kV Tranx Substation	Code of Source 330kV/132kV Tranx Substation	132kV/33kV Tranx Substation	132kV/33kV Tranx Substation Code
Name 1	001	Name AA	0001
Name 1	001	Name AB	0002
Name 1	001	Name AC	0003
Name 1	001	Name AD	0004
Name 2	002	Name AE	0005
Name 3	003	Name AF	0006
Name 3	003	Name AG	0007
Name 3	003	Name AH	0008
Name 10	010	Name AI	0009
Name 10	010	Name AJ	0010
.	.	.	.
.	.	.	.
.	.	.	.
Name 999	999	Name ZZ	9999

4.5. 33kV/11kV INJECTION SUBSTATION DATABASE

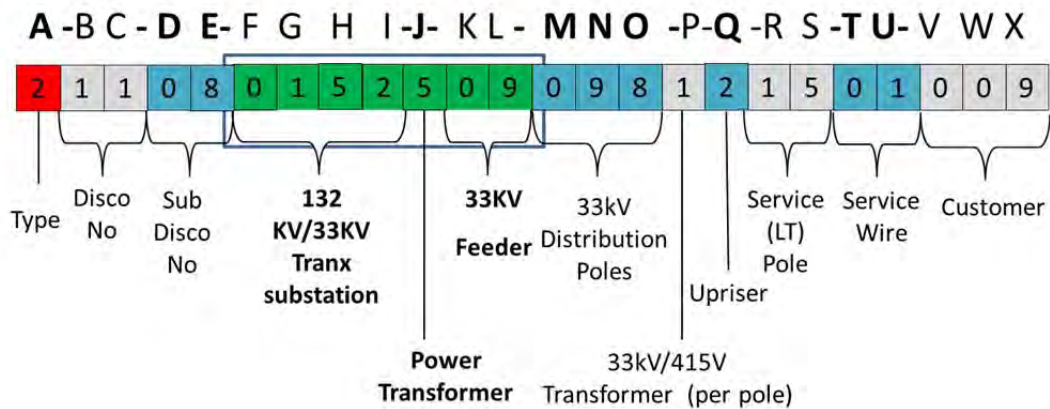
A **33kV/11kV station database** is needed by the Discos to develop most CINs and will be associated with the **132kV station database**. It will be developed by Discos based on the 33kV/11kV injection substations in their network. The database contents shall be like in the table below.

Parent Code		Code	
Source 132kV/33kV Tranx Substation	Code of Source 132kV/33kV Tranx Substation	33/11kV Injection Substation	33/11kV Injection Substation Code
Name AA	0001	Name I	0001
Name AA	0001	Name II	0002
Name AA	0001	Name III	0003
Name AA	0001	Name IV	0004
Name AB	0002	Name V	0005
Name AB	0002	Name VI	0006
Name AB	0002	Name VII	0007
Name AC	0003	Name VIII	0008
Name AC	0003	Name IX	0009
Name AC	0003	Name X	0010
.	.	.	.
.	.	.	.
.	.	.	.
Name ZZ	9999	Name CMXCIX	9999

4.6. 33kV FEEDER DATABASE

The **33kV feeder database** is needed by the Discos to develop some CINs. It will be developed by Discos based on the 33kV feeders in their network. It shall be the two-digit code linked with 1-digit power transformer code and the four-digit code of the associated 132kV transmission substation as described in the table and figure below.

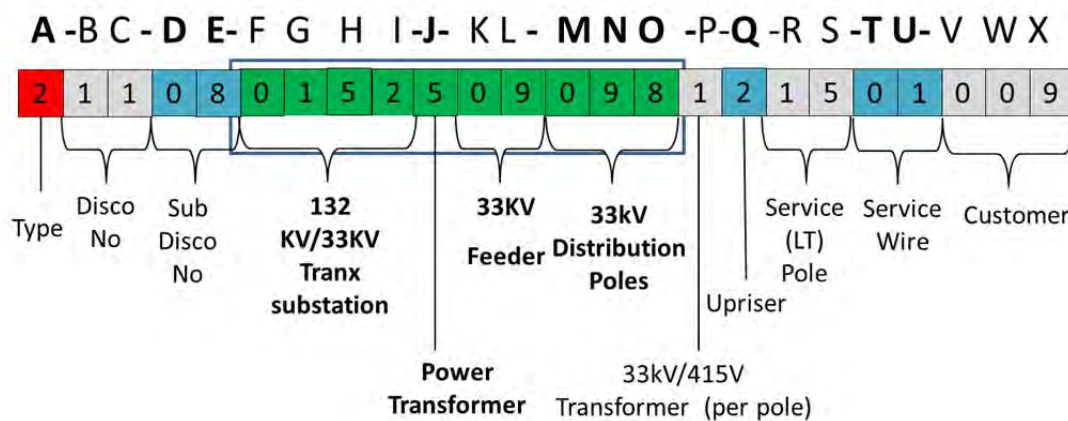
Parent Code				Code		Amalgated Code
Source 132kV/33kV Tranx Substation	Code of Source 132kV/33kV Tranx Substation	Power Transformer Name	Code of Power Transformer	33kV Feeder	33kV Feeder Code	33kV Feeder Full Code
Name AA	0001	1	1	Name AA 1 1	01	0001101
Name AA	0001	1	1	Name AA 1 2	02	0001102
Name AA	0001	1	1	Name AA 1 3	03	0001103
Name AB	0001	1	1	Name AB 1 1	01	0001101
Name AB	0002	1	1	Name AB 1 2	02	0002102
Name AB	0002	1	1	Name AB 1 3	03	0002103
Name AB	0002	1	1	Name AB 1 4	04	0002104
Name AC	0003	2	2	Name AC 2 1	01	0003201
Name AC	0003	2	2	Name AC 2 2	02	0003202
Name AC	0003	2	2	Name AC 2 3	03	0003203



4.7. 33kV TOWER/POLE DATABASE

The **33kV tower/pole database** is needed by the Discos to develop some CINs. It will be developed by Discos based on the 33kV towers/poles in their network. The database contents shall be like in the table below. It shall be the three digits' code linked with the full seven-digits code of the associated 33kV feeder as described in the table and figure below.

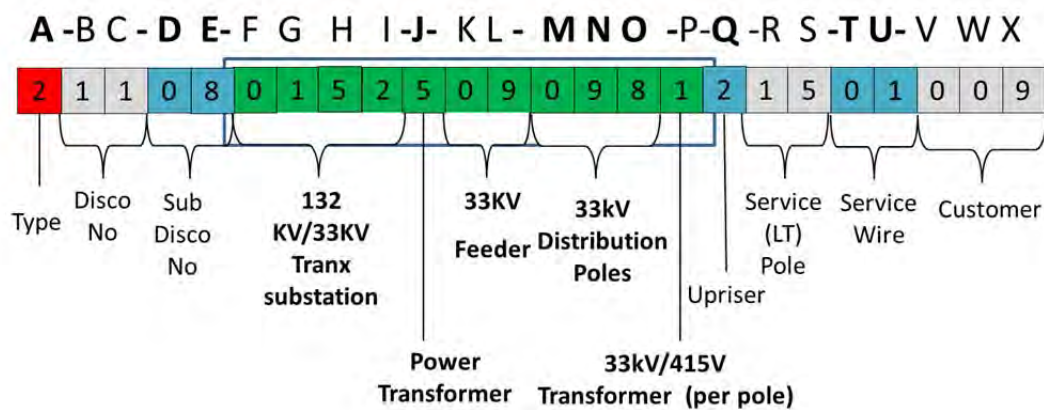
Parent code		Code		Amalgamated Code
33kV Feeder	33kV Feeder Full Code	33kV High Pole/Tower Name	33kV High Pole/Tower Code	33kV High Pole/Tower Full Code
Name AA 1 1	0001101	Name AA 1 1 01 1	001	0001101001
Name AA 1 1	0001101	Name AA 1 1 02	002	0001101002
Name AA 1 1	0001101	Name AA 1 1 03	003	0001101003
Name AA 1 1	0001101	Name AA 1 1 04	004	0001101004
Name AA 1 1	0001101	Name AA 1 1 05	005	0001101005
Name AA 1 1	0001101	Name AA 1 1 06	006	0001101006
Name AA 1 1	0001101	Name AA 1 1 07	007	0001101007
Name AC 2 2	0003202	Name AC 2 2 01	001	0003202001
Name AC 2 2	0003202	Name AC 2 2 02	002	0003202002



4.8. 33kV/415V TRANSFORMERS DATABASE

The **33kV/415V transformers database** is needed by the Discos to develop some CINs. It will be developed by Discos based on the 33kV/415V transformers in their network. It shall be the one-digit code linked with the full ten-digit code of the associated 33kV tower/pole as described in the table and figure below.

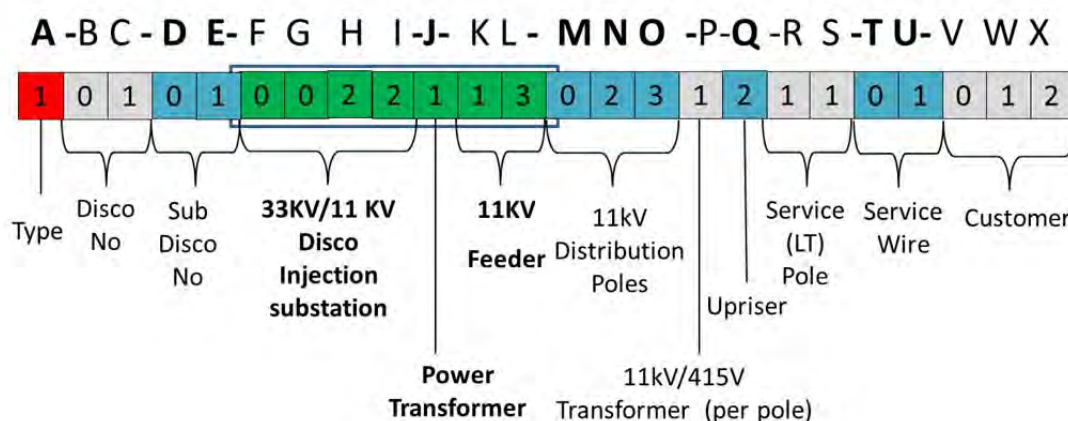
Parent code		Code		Amalgamated Code
33kV High Pole/Tower Name	33kV High Pole/Tower Full Code	33kV/415V Transformer Name	33kV/415V Transformer Code	33kV/415V Transformer Full Code
Name AA 1 1 01	0001101001	Name AA 1 1 01 1	1	00011010011
Name AA 1 1 02	0001101002	Name AA 1 1 021	1	00011010021
Name AA 1 1 03	0001101003	Name AA 1 1 031	1	00011010031
Name AA 1 1 04	0001101004	Name AA 1 1 042	2	00011010042
Name AA 1 1 05	0001101005	Name AA 1 1 051	1	00011010051
Name AA 1 1 06	0001101006	Name AA 1 1 062	2	00011010062
Name AA 1 1 07	0001101007	Name AA 1 1 073	3	00011010073
Name AC 2 2 01	0003202001	Name AC 2 2 014	4	00032020014
Name AC 2 2 02	0003202002	Name AC 2 2 025	5	00032020025
Name AC 2 2 03	0003202003	Name AC 2 2 036	6	00032020036



4.9. 11kV FEEDER DATABASE

The **11kV feeder database** is needed by the Discos to develop most CINs. It will be developed by Discos based on the 11kV feeders in their network. It shall be the two-digit code linked with the 1-digit power transformer code and the four-digit code of the associated 33kV/11kV injection substation as described in the table below.

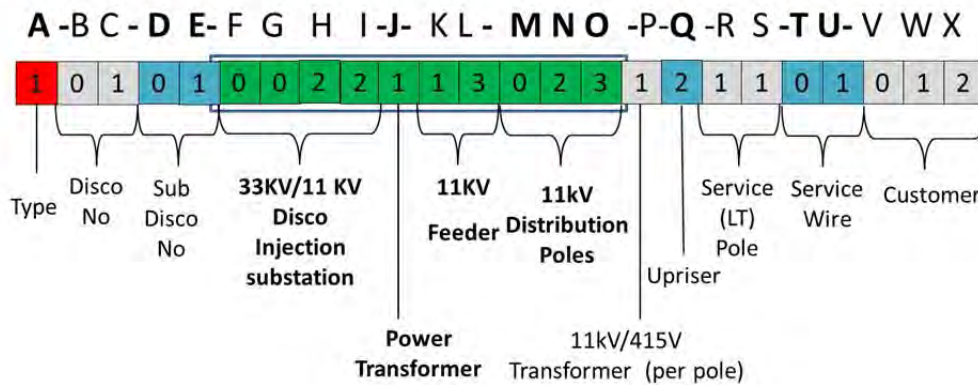
Parent Code				Code		Amalgamated Code
Source 33kV/11kV Injection Substation	Code of Source 33kV/11kV Injection Substation	Power Transformer Name	Code of Power Transformer	11kV Feeder	11kV Feeder Code	11kV Feeder Full Code
Name I	0001	1	1	Name I 1 1	01	0001101
Name I	0001	1	1	Name I 1 2	02	0001102
Name I	0001	2	2	Name I 2 2	02	0001202
Name I	0001	2	2	Name I 2 5	05	0001205
Name III	0003	1	1	Name III 1 2	02	0003102
Name III	0003	1	1	Name III 1 3	03	0003103
Name III	0003	1	1	Name III 1 4	04	0003104
Name III	0003	2	2	Name III 2 7	07	0003207
Name X	0010	1	1	Name X 1 2	02	0010102
Name X	0010	1	1	Name X 1 3	03	0010103



4.10. 11kV TOWER/POLE DATABASE

The **11kV tower/pole database** is needed by the Discos to develop some CINs. It will be developed by Discos based on the 11kV towers/poles in their network. The database contents shall be like in the table below. It shall be the three-digit code linked with the full seven-digit code of the associated 11kV feeder as described in the table below.

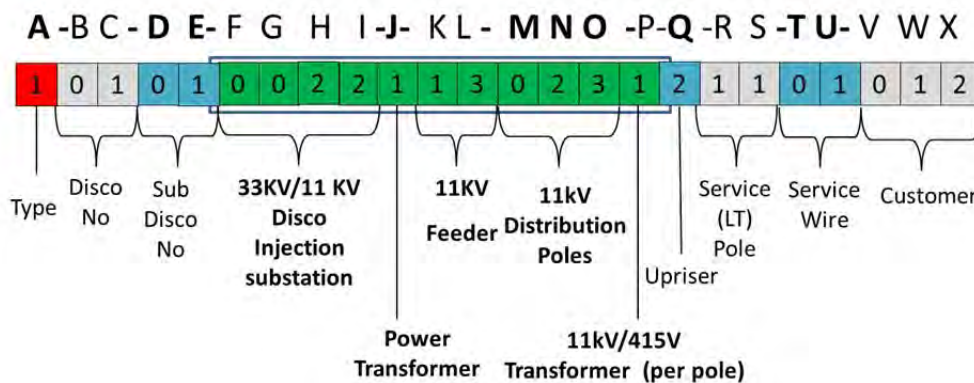
Parent code		Code		Amalgamated Code
11kV Feeder	11kV Feeder Full Code	11kV Pole/Tower Name	11kV Pole/Tower Code	11kV Pole/Tower Full Code
Name I 1 1	0001101	Name I 1 1 1	001	0001101001
Name I 1 1	0001101	Name I 1 1 2	002	0001101002
Name I 1 1	0001101	Name I 1 1 3	003	0001101003
Name X 1 2	0010102	Name X 1 2 1	001	0010102001
Name X 1 2	0010102	Name X 1 2 2	002	0010102002
Name X 1 2	0010102	Name X 1 2 3	003	0010102003
Name X 1 2	0010102	Name X 1 2 4	004	0010102004
Name X 1 2	0010102	Name X 1 2 5	005	0010102005
Name X 1 3	0010103	Name X 1 3 1	001	0010103001
Name X 1 3	0010103	Name X 1 3 2	002	0010103002



4.11 11kV/415V TRANSFORMERS DATABASE

The **11kV/415V transformers database** is needed by the Discos to develop some CINs. It will be developed by Discos based on the 11kV/415V transformers in their network. It shall be the one-digit code linked with the full ten-digit code of the associated 11kV tower/pole as described in the table and figure below.

Parent code		Code		Amalgamated Code
11kV Pole/Tower Name	11kV Pole/Tower Full Code	33kV/415V Transformer Name	33kV/415V Transformer Code	33kV/415V Transformer Full Code
Name I 1 1 1	0001101001	Name I 1 1 11	1	00011010011
Name I 1 1 2	0001101002	Name I 1 1 21	1	00011010021
Name I 1 1 3	0001101003	Name I 1 1 31	1	00011010031
Name X 1 2 1	0010102001	Name X 1 2 11	1	00101020011
Name X 1 2 2	0010102002	Name X 1 2 21	1	00101020021
Name X 1 2 3	0010102003	Name X 1 2 31	1	00101020031
Name X 1 2 4	0010102004	Name X 1 2 41	1	00101020041
Name X 1 2 5	0010102005	Name X 1 2 51	1	00101020051
Name X 1 3 1	0010103001	Name X 1 3 11	1	00101030011
Name X 1 3 2	0010103002	Name X 1 3 21	1	00101030021



4.12. UPRISER DATABASE

The **Upriser database** is made in similar way the distribution transformer databases (33kV/11kV/415V) are made by appending the one-digit code to the eleven-digit full distribution transformer codes.

4.13. SERVICE POLE DATABASE

The **Service pole database** is made in similar way the upriser databases are made by appending the two-digit code to the twelve-digit full upriser codes.

4.14 SERVICE POINT/WIRE DATABASE

The **Service point database** is made in similar way the service pole databases are made by appending the two-digit code to the fourteen-digit full service pole codes.

4.15 CUSTOMER DATABASE

The **Customer database** is made in similar way the uprisher database is made by appending the three-digit code to the twelve-digit full distribution uprisher codes.

5. VISUAL REPRESENTATION OF CODE

A Quick Response (QR) code representing the customer number should be placed at a location in the customer premises. It is best that the sticker is placed on the customer meter where available or in a location that limits weather conditions from affecting it. QR codes are efficient way to store and retrieve information through cheaply available readers. Cell phone apps provide freely or cheaply available resources for reading QR. For example, the CIN number 106307011010860452072 is represented by²:



QR Code representing 10307011010860452072.

² Go to the app store of a smart phone Operating System (OS) and download a QR scanner and you will be able read the QR code. DisCos are required to use Model 1 weatherproof QR codes that can stand the rains. in a case where stickers can't be placed on rough wall surfaces, Discos can write codes on customer wall using a marker or chalk.

6. PREDEFINED DATABASE FIELDS FOR 330KV CIRCUITS

Region Name	Bus Name ³	Region No	Sub-station No
Benin	Ajaokuta	1	001
Benin	Aladja	1	002
Benin	Benin	1	003
Benin	Delta	1	004
Benin	Geregu	1	005
Benin	Lokoja	1	006
Benin	Obajana	1	007
Benin	Sapele	1	008
Benin		1	009
Benin		1	010
Benin		1	011
Benin		1	012
Benin		1	013
Benin		1	014
Benin		1	015
Benin		1	016
Benin		1	017
Benin		1	018
Benin		1	019
Benin		1	020
Benin		1	021
Benin		1	022
Benin		1	023
Benin		1	024
Benin		1	025
Benin		1	026
Benin		1	027
Benin		1	028
Benin		1	029
Benin		1	030
Benin		1	031
Benin		1	032
Benin		1	033
Benin		1	034
Benin		1	035
Benin		1	036
Benin		1	037
Benin		1	038
Benin		1	039

³ Empty fields have been left for coding of more circuits in the case of future network expansion

Benin		1	040
Benin		1	041
Benin		1	042
Benin		1	043
Benin		1	044
Benin		1	045
Benin		1	046
Benin		1	047
Benin		1	048
Benin		1	049
Benin		1	050
PH ⁴	Afam	2	051
PH	Alaoji	2	052
PH		2	053
PH		2	054
PH		2	055
PH		2	056
PH		2	057
PH		2	058
PH		2	059
PH		2	060
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PH		2	080
PH		2	081
PH		2	082
PH		2	083
PH		2	084

⁴ PH - Port Harcourt

PH		2	085
PH		2	086
PH		2	087
PH		2	088
PH		2	089
PH		2	090
PH		2	091
PH		2	092
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PH		2	100
Enugu	Apir	3	101
Enugu	Asaba	3	102
Enugu	New Haven	3	103
Enugu	Nsukka	3	104
Enugu	Okpai 3	3	105
Enugu	Onitsha	3	106
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Enugu		3	149
Enugu		3	150
Bauchi	Damaturu	4	151
Bauchi	Gombe	4	152
Bauchi	Gombe 3	4	153
Bauchi	Jalingo 3	4	154
Bauchi	Jos	4	155
Bauchi	Maiduguri 3	4	156
Bauchi	Yola	4	157
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Bauchi		4	196
Bauchi		4	197
Bauchi		4	198
Bauchi		4	199
Bauchi		4	200
Kaduna	Kaduna	5	201
Kaduna	Kano	5	202
Kaduna	Kumbotso	5	203
Kaduna	Mando	5	204
Kaduna		5	205
Kaduna		5	206
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Kaduna		5	249
Kaduna		5	250
Shiroro	Birni-Kebbi	6	251
Shiroro	Gwagwalada	6	252
Shiroro	Jebba	6	253
Shiroro	Kainji	6	254
Shiroro	Katampe	6	255
Shiroro	Shiroro	6	256
Shiroro		6	257
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Shiroro		6	297
Shiroro		6	298
Shiroro		6	299
Shiroro		6	300
Osogbo	Ayede	7	301
Osogbo	Ayede 3	7	302
Osogbo	Ganmo	7	303
Osogbo	Ganmo 3	7	304
Osogbo	Omotosho3	7	305
Osogbo	Osogbo	7	306
Osogbo	Osogbo 3	7	307
Osogbo		7	308
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Osogbo		7	348
Osogbo		7	349
Osogbo		7	350
Lagos	Aja	8	351
Lagos	Akangba	8	352
Lagos	Egbin	8	353
Lagos	Ikeja West	8	354
Lagos	Oke-Aro	8	355
Lagos	Olorunsogo3	8	356
Lagos	Sakete 3	8	357
Lagos		8	358
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Lagos		8	400

Region Name	Region No	Bus Name	Substation No
Benin	1	Ado Ekiti	0001
Benin	1	Ajaokuta	0002
Benin	1	Akure	0003
Benin	1	Amukpe	0004
Benin	1	Benin	0005
Benin	1	Delta	0006
Benin	1	Effurun	0007
Benin	1	Irrua	0008
Benin	1	Okada	0009
Benin	1	Okene	0010
Benin	1	Ukpilla	0011
Benin	1		0012
Benin	1		0013
Benin	1		0014
Benin	1		0015
Benin	1		0016
Benin	1		0017
Benin	1		0018
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Benin	1		0031
Benin	1		0032
Benin	1		0033
Benin	1		0034
Benin	1		0035
Benin	1		0036
Benin	1		0037
Benin	1		0038
Benin	1		0039
Benin	1		0040
Benin	1		0041
Benin	1		0042

7. PREDEFINED DATABASE FIELDS FOR 132KV CIRCUITS

Benin	1		0043
Benin	1		0044
Benin	1		0045
Benin	1		0046
Benin	1		0047
Benin	1		0048
Benin	1		0049
Benin	1		0050
Benin	1		0051
Benin	1		0052
Benin	1		0053
Benin	1		0054
Benin	1		0055
Benin	1		0056
Benin	1		0057
Benin	1		0058
Benin	1		0059
Benin	1		0060
Benin	1		0061
Benin	1		0062
Benin	1		0063
Benin	1		0064
Benin	1		0065
Benin	1		0066
Benin	1		0067
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