

Plant 1.0 MTPA ALUMINA REFINERY STREAM-5	Client NALCO	Contract Code NAL	Document ID 6695-ELT-G00-EC-0003	Contract No. 66-6695
	Guidelines for Electrical Equipment Numbering System			 नेशनल एल्युमिनियम कम्पनी लिमिटेड National Aluminium Company Ltd.
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<p>tkIS India / Vendor</p> <p>Category Codes (Submission Purpose)</p> <ul style="list-style-type: none"> <input type="checkbox"/> 1 For Approval <input type="checkbox"/> 2 For Review / Comments <input type="checkbox"/> 3 For Information <input type="checkbox"/> 4 For Engineering <input type="checkbox"/> 5 For Enquiry <input type="checkbox"/> 6 For Order Placement <input type="checkbox"/> 7 Final & Approved <input type="checkbox"/> 8 Released for Construction <hr/> <p>Acceptance Codes (Approval Codes)</p> <ul style="list-style-type: none"> <input type="checkbox"/> 1 Approved <input type="checkbox"/> 2 Approved for Manufacturing / Fabrication with Comments as marked <input type="checkbox"/> 3 Not Approved / Resubmit <input type="checkbox"/> 4 Retained for Information / Records <input type="checkbox"/> 5 Reviewed <input type="checkbox"/> 6 Reviewed as Noted / Resubmit <p>Remarks for AC2 : This marked-up drawings is hereby approved for fabrication / manufacturing and shall be re-submitted after revision. This drawing should be revised only to the extent of tkIS India / Owner / Client comments. Any other changes made by you will not be considered unless clearly highlighted in covering letter asking for approval.</p> <p>This approval / review does not absolve the supplier from the full responsibility for design and fabrication.</p> <p>Date : ___/___/___ Name : _____</p>	<p>tkIS India / Owner / Client</p> <p>Category Codes (Submission Purpose)</p> <ul style="list-style-type: none"> <input type="checkbox"/> 1 For Approval <input type="checkbox"/> 2 For Review / Comments <input type="checkbox"/> 3 For Information <input checked="" type="checkbox"/> 4 For Engineering <input type="checkbox"/> 5 For Enquiry <input type="checkbox"/> 6 For Order Placement <input type="checkbox"/> 7 Final & Approved <input type="checkbox"/> 8 Released for Construction <hr/> <p>Acceptance Codes (Approval Codes)</p> <ul style="list-style-type: none"> <input type="checkbox"/> 1 Approved <input type="checkbox"/> 2 Approved for Manufacturing / Fabrication with Comments as marked <input type="checkbox"/> 3 Not Approved / Resubmit <input type="checkbox"/> 4 Retained for Information / Records <input type="checkbox"/> 5 Reviewed <input type="checkbox"/> 6 Reviewed as Noted / Resubmit <p>Date : ___/___/___ Name : _____</p>
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INDEX SHEET

The document cover sheet indicates revisions made in this document along with the purpose of issue of the revised document. The details of revisions made in the enclosures of this document are listed in the table of contents below and the enclosures listed therein are an integral part of this document.

Reference Sheets:

Sht. No.	Size	Description	QAD Code	No. of Pages	Latest Rev.
1	A4	Summary of Ref. Sheets and Status of Revision	PIN-LEP-ELT-8002	1	00
2	A4	Guidelines for Electrical Equipment Numbering system	PIN-LEP-ELT-8002	1	02
3	A4	Table-1: Code of Electrical Equipment Based on Voltage Classification	PIN-LEP-ELT-8002	3	02
4	A4	Table-2: Numbering of Other Electrical Items	PIN-LEP-ELT-8002	3	02
5	A4	Annexure-I	-	4	00

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1.0 GENERAL

All Electrical equipment connected with electrical system shall be numbered based on guidelines given in this guide.



2.0 NUMBERING SYSTEM

2.1 Electrical equipment identification number shall have two parts, equipment code and equipment serial number. Each electrical equipment shall have equipment code and serial number as assigned under Table-1 & 2.

Equipment numbering for transformer, NGR, Busduct and switchgear shall be as per table 1 and Annexure-I. For all other equipments, numbering shall start with a prefix of substation identification no. as indicated in Annexure-I.

Following substation numbering shall be followed for the Unit Substation (US).

Substation No.	Area	Substation Identification No.
500	220KV SWITCHYARD AND ASSOCIATED FACILITIES	00
US-501	BAUXITE STORAGE, HANDLING, CRUSHER	01
US-502	BAUXITE GRINDING	02
US-503	DIGESTION	03
US-504	MUD SETTLING, TCA PREPARATION, MUD WASHING, FLOCCULANT PREPARATION, MUD TRANSFER PUMPS	04
US-505	PRECIPITATION	05
US-506	EVAPORATION	06
US-507	CALCINATION	07
US-508	ALUMINA STORAGE AND HANDLING	08

2.2 Other electrical equipment shall be numbered as indicated in Table-2.

2.3 Misc. Items like 220 V light control switches, 5 A & 15 A single phase socket outlets, light fittings, lighting junction box shall be numbered based on circuit numbers.

2.4 Motor no. is allotted by process based on equipment no., e.g. motor driving the pump 'P-700A' will be typically identified by the same as per table 1 'P-700A-'. For numbering of all other equipment/ accessories associated with the motors/ consumers and the associated cables, refer table 2, Sr. No. 20.

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Table - 1

CODE OF ELECTRICAL EQUIPMENT BASED ON VOLTAGE CLASSIFICATION

Sr. No.	Equipment Details	Code for the Eqpt.	Extra High Voltage i.e. 220 kV	High Voltage 11 kV, 6.6 kV	Low Voltage Below 1 kV	Remarks
1.	Switchyard Equipment					
a.	Bay	BAY	BAY-1,2		-	Bay numbering shall be done serially.
b.	Bus	BUS	BUS-A,B	-	-	Bus no. with suffixes A,B.. shall be identified in case of multiple buses.e.g., Bus-A – Supply Bus, Bus-B – Load Bus
			BUS-1A1, 1A2 BUS-2A1, 2A2	-	-	Multiple bus sections shall be identified serially as 1,2,3..
c.	Isolator	ISO	1-ISO-1 A,B		-	Prefix shall denote the applicable Bay no. of the equipment. Digit 1,2 in the suffix shall be assigned as per flow of power from upstream to down stream. The suffix denoting the Bus no. (A, B..) shall be added if the equipment is associated with certain bus (e.g., bus side isolator in case of multiple buses). CB & ISO provided for Bus Coupling shall have alphabetical suffix. Indicating both buses e.g. ISO-AB.
d.	Circuit Breaker	CB	1-CB-1 A,B		-	
e.	Current Transformer	CT	1-CT-1		-	
f.	Potential Transformer	PT	1-PT-1		-	
g.	Lightning Arrester	LA	1-LA-1		-	
h.	Capacitor Bank	CAP	1-CAP-1		-	
i.	Reactor	SR	1-SR-1		-	

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Sr. No.	Equipment Details	Code for the Eqpt.	Extra High Voltage i.e. 220 kV	High Voltage 11 kV, 6.6 kV	Low Voltage Below 1 kV	Remarks
2.	Transformer	TR	For EHV/HV TR-1106	For HV/HV TR-2401	For HV/LV TR-3401	For more details Refer Annexure-I
3.	Neutral Grounding Resistor	NGR	NGR-1106	NGR-2401	-	For more details Refer Annexure-I
4.	Busduct	BD	-	-	BD-3401	For more details Refer Annexure-I
5.	Switchgear	HT	-	11kV: HT-280 6.6kV: HT-260	-	For more details Refer Annexure-I
6.	Power cum Motor Control Center	PCC	-	-	PCC-701	For more details Refer Annexure-I
7.	Motor Control Center	MCC	-	-	MCC-5101	For more details Refer Annexure-I
8.	Emergency Power Control Center	EPCC	-	-	EPCC-702	For more details Refer Annexure-I
9.	Main Lighting Distribution Board	MLDB	-	-	MLDB-5102	For more details Refer Annexure-I
10.	Auxiliary Service Board	ASB	-	-	ASB-5103	For more details Refer Annexure-I
11.	Lighting Transformer	LTR	-	-	For HV/LV TR-3404	For more details Refer Annexure-I
12.	Emergency Lighting Transformer	ELTR	-	-	For LV/LV XX-LTG-TR-01	XX: Substation Identification No. For more details Refer Annexure-I
13.	APFC Panel	APFC	-	HT-261-A HT-261-B	APFC-5116-A APFC-5116-B	For more details Refer Annexure-I

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2	Sr. No.	Equipment Details	Code for the Eqpt.	Extra High Voltage i.e. 220 kV	High Voltage 11 kV, 6.6 kV	Low Voltage Below 1 kV	Remarks
	14.	Capacitor Bank	CAP	-	CAP-261-A CAP-261-B	CAP-5116-A CAP-5116-B	When installed separately & not part of APFC panel
	15.	Series Reactor for Capacitor Bank	SR	-	SR-261-A SR-261-B	SR-5116-A SR-5116-B	When installed separately & not part of APFC panel

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Table – 2

Numbering of Other Electrical Items

Sr. No.	Equipment Description	Code for the Eqpt.	Basis for Numbering	Remark
1. 	Local Control Panels Local Control Station Load Break Switch	LCP LCS LBS	Numbering suffix shall be same as the tag no. of equipment associated with the local control panel	e.g. LCP associated with Heater H24201 will be identified as H24201-LCP LCS associated with motor AG-7501A will be identified as AG-7501A-LCS LBS associated with motor AG-7501A will be identified as AG-7501A-LBS
2. 	Sub Lighting Distribution Boards	SLDB	Number suffix shall be assigned serially	e.g. XX-SLDB-01, 02
3. 	Power Distribution Boards	PDB	Number suffix shall be assigned serially	e.g. Indoor (i.e Substation US-503) 03-PDB-01, 02 Outdoor (i.e Process Area) 503-PDB-01, 02
4.	Battery Charger	BC	Number suffix shall be assigned serially for one system	e.g. BC-01, BC-02. The dual redundant system shall be identified with single number; redundant chargers may be suffixed A,B e.g. 01-BC-1A & 01-BC-1B
5.	DC Distribution Board	DCDB	Number suffix shall be assigned serially	e.g. 01-DCDB-01
6.	UPS System	UPS	Number suffix shall be assigned serially for one system	e.g. 01-UPS-01, 01-UPS-02. The dual redundant system shall be identified with single number; redundant UPS units may be suffixed A,B e.g. 01-UPS-1A & 01-UPS-1B.
7.	UPS AC Distribution Board	ACDB	Number suffix shall be assigned serially	e.g. 01-ACDB-01. Shall be applicable for UPS Power distribution.

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Sr. No.	Equipment Description	Code for the Eqpt.	Basis for Numbering	Remark
8.	Battery Bank of DC System	DCB	Number suffix shall be assigned serially	e.g. Battery bank connected to charger BC-01 will be identified as DCB-1. In case of multiple battery banks connected to one system, same shall be numbered as DCB-1A,1B etc.
9.	Battery Bank of UPS System	UPSB	Number suffix shall be assigned serially	e.g. Battery bank connected to 01-UPS-01 will be identified as UPSB-1. In case of multiple battery banks connected to one system, same shall be numbered as UPSB-1A,1B etc.
10.	Power / Welding Receptacles- 3 phase	WS	Code shall be prefixed by unit number. Code shall be WS1 for industrial and WS2 for flameproof receptacles. Suffix with serial number shall be added.	e.g. 01-WS1-01, 12-WS2-02
11.	Convenience Receptacles- 1 phase	SO	The standard symbol and legend for lighting layout shall be referred.	Switch socket Outlet: S01
12.	Diesel Generator sets	DG	Number suffix shall be assigned serially	e.g. 03-DG-01, 05-DG-01 etc.
13.	Variable Frequency Drive Panels	VFD	Associated motor tag no. shall be suffixed by code "VFD"	e.g 09FL-5006C-VFD
14.	Earthing Pits	EEP, IEP, LEP, NEP	Number suffix shall be assigned serially	e.g. EEP-01,02
15.	Fire Alarm System		The numbering shall be in accordance with "Standard Symbols & Legend for Communication & Fire Alarm Layout"	Shall be furnished during detail engineering.
16.	PA System		The numbering shall be in accordance with "Standard Symbols & Legend for Communication & Fire Alarm Layout"	Shall be furnished during detail engineering.

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Sr. No.	Equipment Description	Code for the Eqpt.	Basis for Numbering	Remark
17. 	Telephone System		The numbering shall be in accordance with "Standard Symbols & Legend for Communication & Fire Alarm Layout"	Shall be furnished during detail engineering.
18. 	Lighting Luminaire and Junction boxes		<u>SLDBXX-LWGC1-XXX-XX-XXX</u> <u>SLDBXX</u> : SLDB NO. <u>LWGC1</u> : Installation type <u>XXX</u> : Type Designation (For tube: TL1 Wellglass: WG1 Medium bay luminaire: MB1 High bay luminaire: HB1 Flood light Luminaire: FD1 Street light Luminaire: ST1 Aviation light: AV1 <u>XX</u> : Circuit No. <u>XXX</u> : Serial No. of fitting/ Switch No.(If Appl.) Junction Box for light fixture: LJB Control Gear Box: CG1.	
19. 	Junction boxes (Other than for lighting, FA, PA, Telephone, receptacles)	JB	Prefix shall be the associated equipment tag no. as applicable. Number suffix shall be assigned serially if required.	e.g., AG-7501A-JB-1
20. 	Cables	-	EL. Eqpt. No.-X Cable Sr. No. here: X; P= Power, C= Control, M= Misc. , S=Space heater, V= VFD, T=Thermistor.	e.g., AG-7501A-P01 For Two runs of cable ; AG-7501A-P01- 1 st Run AG-7501A-P02- 2 nd Run

ANNEXURE-I
Electrical Equipment Numbering in Unit

Substation No.	Area's	Description	VOLTAGE LEVEL	Numbering Philosophy	Remarks
500	CDS	Trafo	220/11.5 kV	TR-1106	
		Trafo	220/11.5 kV	TR-1107	
		NGR for Trafo TR-1106	11 kV	NGR-1106	
		NGR for Trafo TR-1107	11 kV	NGR-1107	
		Trafo	11/34.5 kV	TR 2104M	
		Trafo	11/34.5 kV	TR 2105M	
		11 kV Switchgear	11 kV	HT-212	
		33 kV Switchgear	33 kV	HT-213	
		33 kV Switchgear	33 kV	HT-214	
		ASB	0.415 kV	ASB-5100	
		UPS	0.230 kV	00-UPS-01	
		ACDB	0.230 kV	00-ACDB-01	
		BC	0.110 kV	00-BC-01	
		DCDB	0.110 kV	00-DCDB-01	
SLDB	0.220 kV	00-SLDB-01			
ELDB	0.220 kV	00-ELDB-01			
US-501	Bauxite Storage, Handling , Crusher	Trafo	11/6.9 kV	TR-2401	
		Trafo	11/6.9 kV	TR-2402	
		NGR for Trafo TR-2401	6.6 kV	NGR-2401	
		NGR for Trafo TR-2402	6.6 kV	NGR-2402	
		Trafo	11/0.433 kV	TR-3401	Range of 3401 to 3410 (10 nos.) is reserved for US-501
		Trafo	11/0.433 kV	TR-3402	
		Normal Lighting Trafo	11/0.38 kV	TR-3403	
		Normal Lighting Trafo	11/0.38 kV	TR-3404	
		Emergency Lighting Trafo	0.415/0.38 kV	01-LTG-TR-01	
		Busduct for Trafo TR-3401	0.415 kV	BD-3401	
		Busduct for Trafo TR-3402	0.415 kV	BD-3402	
		11 kV Switchgear	11 kV	HT-280	
		6.6 kV Switchgear	6.6 kV	HT-260	
		6.6 kV APFC Panel	6.6 kV	HT-261-A	
		6.6 kV APFC Panel	6.6 kV	HT-261-B	
		415 V Switchgear-PCC	0.415 kV	PCC-701	Range of 701 to 710 (10 nos.) is reserved for US-501
		690 V Switchgear-VFD	0.720 kV	PCC-702	
		415 V Switchgear-MCC	0.415 kV	MCC-5101	Range of 5101 to 5110 (10 nos.) is reserved for US-501
		415 V Switchgear-MCC	0.415 kV	MCC-5102	
		Distribution Boards	0.415 kV	ASB-5103	
		Distribution Boards	0.38 kV	MLDB-5104	
		Distribution Boards	0.38 kV	EMLDB-5105	
		415V APFC Panel	0.415 kV	APFC-5106-A	
		415V APFC Panel	0.415 kV	APFC-5106-B	
AC UPS	0.415 kV	01-UPS-01			
AC UPS	0.415 kV	01-UPS-02			
BC	0.415 kV	01-BC-01			
DCDB	0.415 kV	01-DCDB-01			
ACDB	0.415 kV	01-ACDB-01			
ACDB	0.415 kV	01-ACDB-02			
US-502	Bauxite Grinding	Trafo	11/6.9 kV	TR-2403	
		Trafo	11/6.9 kV	TR-2404	
		NGR for Trafo TR-2403	6.6 kV	NGR-2403	
		NGR for Trafo TR-2404	6.6 kV	NGR-2404	
		Trafo	11/0.433 kV	TR-3411	Range of 3411 to 3420 (10 nos.) is reserved for US-502
		Trafo	11/0.433 kV	TR-3412	
		Normal Lighting Trafo	11/0.38 kV	TR-3413	
		Normal Lighting Trafo	11/0.38 kV	TR-3414	
		Emergency Lighting Trafo	0.415/0.38 kV	02-LTG-TR-01	
		Busduct for Trafo TR-3411	0.415 kV	BD-3411	
		Busduct for Trafo TR-3412	0.415 kV	BD-3412	
		11 kV Switchgear	11 kV	HT-281	
		6.6 kV Switchgear	6.6 kV	HT-262	
		6.6 kV APFC Panel	6.6 kV	HT-263-A	
		6.6 kV APFC Panel	6.6 kV	HT-263-B	
		415 V Switchgear-PCC	0.415 kV	PCC-711	Range of 711 to 720 (10 nos.) is reserved for US-502
		690 V Switchgear-VFD	0.720 kV	PCC-712	
		415 V Switchgear-MCC	0.415 kV	MCC-5111	Range of 5111 to 5120 (10 nos.) is reserved for US-502
		415 V Switchgear-MCC	0.415 kV	MCC-5112	
		Distribution Boards	0.415 kV	ASB-5113	
		Distribution Boards	0.38 kV	MLDB-5114	
		Distribution Boards	0.38 kV	EMLDB-5115	
		415V APFC Panel	0.415 kV	APFC-5116-A	
		415V APFC Panel	0.415 kV	APFC-5116-B	
AC UPS	0.415 kV	02-UPS-01			
AC UPS	0.415 kV	02-UPS-02			
BC	0.415 kV	02-BC-01			
DCDB	0.415 kV	02-DCDB-01			
ACDB	0.415 kV	02-ACDB-01			

Substation No.	Area's	Description	VOLTAGE LEVEL	Numbering Philosophy	Remarks		
US-503	Digestion	ACDB	0.415 kV	02-ACDB-02			
		DG set	0.415 kV	03-DG-01			
		DG set	0.415 kV	03-DG-02			
		Trafo	11/6.9 kV	TR-2405			
		Trafo	11/6.9 kV	TR-2406			
		NGR for Trafo TR-2405	6.6 kV	NGR-2405			
		NGR for Trafo TR-2406	6.6 kV	NGR-2406			
		Trafo	11/0.433 kV	TR-3421	Range of 3421 to 3430 (10 nos.) is reserved for US-503		
		Trafo	11/0.433 kV	TR-3422			
		Normal Lighting Trafo	11/0.38 kV	TR-3423			
		Normal Lighting Trafo	11/0.38 kV	TR-3424			
		Trafo	11/0.72 kV	TR-3426			
		Trafo	11/0.72 kV	TR-3427			
		Emergency Lighting Trafo	0.415/0.38 kV	03-LTG-TR-01			
		Busduct for Trafo TR-3421	0.415 kV	BD-3421			
		Busduct for Trafo TR-3422	0.415 kV	BD-3422			
		11 kV Switchgear	11 kV	HT-282			
		6.6 kV Switchgear	6.6 kV	HT-264			
		6.6 kV APFC Panel	6.6 kV	HT-265-A			
		6.6 kV APFC Panel	6.6 kV	HT-265-B			
		415 V Switchgear-PCC	0.415 kV	PCC-721	Range of 721 to 730 (10 nos.) is reserved for US-503		
		690 V Switchgear-VFD	0.720 kV	PCC-722			
		415 V Switchgear-EMCC	0.415 kV	EPCC-723			
		415 V Switchgear-MCC	0.415 kV	MCC-5121	Range of 5121 to 5130 (10 nos.) is reserved for US-503		
		415 V Switchgear-MCC	0.415 kV	MCC-5122			
		Distribution Boards	0.415 kV	ASB-5123			
		Distribution Boards	0.38 kV	MLDB-5124			
		Distribution Boards	0.38 kV	EMLDB-5125			
		415V APFC Panel	0.415 kV	APFC-5126-A			
		415V APFC Panel	0.415 kV	APFC-5126-B			
		AC UPS	0.415 kV	03-UPS-01			
		AC UPS	0.415 kV	03-UPS-02			
		BC	0.415 kV	03-BC-01			
DCDB	0.415 kV	03-DCDB-01					
ACDB	0.415 kV	03-ACDB-01					
ACDB	0.415 kV	03-ACDB-02					
US-504	Mud Washing, Settling, TCA, Flocculent Preparation & causticization	Trafo	11/6.9 kV	TR-2407			
		Trafo	11/6.9 kV	TR-2408			
		NGR for Trafo TR-2407	6.6 kV	NGR-2405			
		NGR for Trafo TR-2408	6.6 kV	NGR-2406			
		Trafo	11/0.433 kV	TR-3431	Range of 3431 to 3440 (10 nos.) is reserved for US-504		
		Trafo	11/0.433 kV	TR-3432			
		Normal Lighting Trafo	11/0.38 kV	TR-3433			
		Normal Lighting Trafo	11/0.38 kV	TR-3434			
		Emergency Lighting Trafo	0.415/0.38 kV	04-LTG-TR-01			
		Busduct for Trafo TR-3431	0.415 kV	BD-3431			
		Busduct for Trafo TR-3432	0.415 kV	BD-3432			
		11 kV Switchgear	11 kV	HT-283			
		6.6 kV Switchgear	6.6 kV	HT-266			
		6.6 kV APFC Panel	6.6 kV	HT-267-A			
		6.6 kV APFC Panel	6.6 kV	HT-267-B			
		415 V Switchgear-PCC	0.415 kV	PCC-731	Range of 731 to 740 (10 nos.) is reserved for US-504		
		690 V Switchgear-VFD	0.720 kV	PCC-732			
		415 V Switchgear-MCC	0.415 kV	MCC-5131	Range of 5131 to 5140 (10 nos.) is reserved for US-504		
		415 V Switchgear-MCC	0.415 kV	MCC-5132			
		415 V Switchgear-MCC	0.415 kV	MCC-5133			
		Distribution Boards	0.415 kV	ASB-5134			
		Distribution Boards	0.38 kV	MLDB-5135			
		Distribution Boards	0.38 kV	EMLDB-5136			
		415V APFC Panel	0.415 kV	APFC-5137-A			
		415V APFC Panel	0.415 kV	APFC-5137-B			
		AC UPS	0.415 kV	04-UPS-01			
		AC UPS	0.415 kV	04-UPS-02			
		BC	0.415 kV	04-BC-01			
		DCDB	0.415 kV	04-DCDB-01			
		ACDB	0.415 kV	04-ACDB-01			
		ACDB	0.415 kV	04-ACDB-02			
		US-505	Precipitation	DG set	0.415 kV	05-DG-01	
				DG set	0.415 kV	05-DG-02	
Trafo	11/6.9 kV			TR-2409			
Trafo	11/6.9 kV			TR-2410			
NGR for Trafo TR-2409	6.6 kV			NGR-2409			
NGR for Trafo TR-2410	6.6 kV			NGR-2410			
Trafo	11/0.433 kV			TR-3441	Range of 3441 to 3450 (10 nos.) is reserved for US-505		
Trafo	11/0.433 kV			TR-3442			
Normal Lighting Trafo	11/0.38 kV			TR-3443			
Normal Lighting Trafo	11/0.38 kV			TR-3444			
Trafo	11/0.72 kV			TR-3446			
Trafo	11/0.72 kV			TR-3447			
Emergency Lighting Trafo	0.415/0.38 kV			05-LTG-TR-01			
Busduct for Trafo TR-3441	0.415 kV	BD-3441					

Substation No.	Area's	Description	VOLTAGE LEVEL	Numbering Philosophy	Remarks
		Busduct for Trafo TR-3442	0.415 kV	BD-3442	
		11 kV Switchgear	11 kV	HT-284	
		6.6 kV Switchgear	6.6 kV	HT-268	
		6.6 kV APFC Panel	6.6 kV	HT-269-A	
		6.6 kV APFC Panel	6.6 kV	HT-269-B	
		415 V Switchgear-PCC	0.415 kV	PCC-741	Range of 741 to 750 (10 nos.) is reserved for US-505
		690 V Switchgear-VFD	0.720 kV	PCC-742	
		415 V Switchgear-EMCC	0.415 kV	EPCC-743	Range of 5141 to 5150 (10 nos.) is reserved for US-505
		415 V Switchgear-MCC	0.415 kV	MCC-5141	
		415 V Switchgear-MCC	0.415 kV	MCC-5142	
		Distribution Boards	0.415 kV	ASB-5143	
		Distribution Boards	0.38 kV	MLDB-5144	
		Distribution Boards	0.38 kV	EMLDB-5146	
		415V APFC Panel	0.415 kV	APFC-5147-A	
		415V APFC Panel	0.415 kV	APFC-5147-B	
		AC UPS	0.415 kV	05-UPS-01	
		AC UPS	0.415 kV	05-UPS-02	
		BC	0.415 kV	05-BC-01	
		DCDB	0.415 kV	05-DCDB-01	
		ACDB	0.415 kV	05-ACDB-01	
ACDB	0.415 kV	05-ACDB-02			
US-506	Evaporation	Trafo	11/6.9 kV	TR-2411	
		Trafo	11/6.9 kV	TR-2412	
		NGR for Trafo TR-2411	6.6 kV	NGR-2411	
		NGR for Trafo TR-2412	6.6 kV	NGR-2411	
		Trafo	11/0.433 kV	TR-3451	Range of 3451 to 3460 (10 nos.) is reserved for US-506
		Trafo	11/0.433 kV	TR-3452	
		Trafo	11/0.433 kV	TR-3453	
		Trafo	11/0.433 kV	TR-3454	
		Trafo	11/0.433 kV	TR-3455	
		Trafo	11/0.433 kV	TR-3456	
		Normal Lighting Trafo	11/0.38 kV	TR-3457	
		Normal Lighting Trafo	11/0.38 kV	TR-3458	
		Emergency Lighting Trafo	0.415/0.38 kV	06-LTG-TR-01	
		Busduct for Trafo TR-3451	0.415 kV	BD-3451	
		Busduct for Trafo TR-3452	0.415 kV	BD-3452	
		Busduct for Trafo TR-3453	0.415 kV	BD-3453	
		Busduct for Trafo TR-3454	0.415 kV	BD-3454	
		Busduct for Trafo TR-3455	0.415 kV	BD-3455	
		Busduct for Trafo TR-3456	0.415 kV	BD-3456	
		11 kV Switchgear	11 kV	HT-285	
		6.6 kV Switchgear	6.6 kV	HT-270	
		6.6 kV APFC Panel	6.6 kV	HT-271-A	
		6.6 kV APFC Panel	6.6 kV	HT-271-B	
		415 V Switchgear-PCC	0.415 kV	PCC-751	Range of 751 to 760 (10 nos.) is reserved for US-506
		415 V Switchgear-PCC	0.415 kV	PCC-752	
		415 V Switchgear-PCC	0.415 kV	PCC-753	
		690 V Switchgear-VFD-01	0.720 kV	PCC-754	
		690 V Switchgear-VFD-02	0.720 kV	PCC-755	
		690 V Switchgear-VFD-03	0.720 kV	PCC-756	
		690 V Switchgear-VFD-04	0.720 kV	PCC-757	
		690 V Switchgear-VFD-05	0.720 kV	PCC-758	
		415 V Switchgear-MCC	0.415 kV	MCC-5151	Range of 5151 to 5160 (10 nos.) is reserved for US-506
		415 V Switchgear-MCC	0.415 kV	MCC-5152	
		415 V Switchgear-MCC	0.415 kV	MCC-5153	
		415 V Switchgear-MCC	0.415 kV	MCC-5154	
		Distribution Boards	0.415 kV	ASB-5155	
		Distribution Boards	0.38 kV	MLDB-5156	
		Distribution Boards	0.38 kV	EMLDB-5157	
		415V APFC Panel	0.415 kV	APFC-5158-A	
		415V APFC Panel	0.415 kV	APFC-5158-B	
415V APFC Panel	0.415 kV	APFC-5159-A			
415V APFC Panel	0.415 kV	APFC-5159-B			
415V APFC Panel	0.415 kV	APFC-5160-A			
415V APFC Panel	0.415 kV	APFC-5160-B			
AC UPS	0.415 kV	06-UPS-01			
AC UPS	0.415 kV	06-UPS-02			
BC	0.415 kV	06-BC-01			
DCDB	0.415 kV	06-DCDB-01			
ACDB	0.415 kV	06-ACDB-01			
ACDB	0.415 kV	06-ACDB-02			
US-507	Calcination	Trafo	11/6.9 kV	TR-2413	
		Trafo	11/6.9 kV	TR-2414	
		NGR for Trafo TR-2413	6.6 kV	NGR-2413	
		NGR for Trafo TR-2414	6.6 kV	NGR-2414	
		Trafo	11/0.433 kV	TR-3461	Range of 3461 to 3470 (10 nos.) is reserved for US-507
		Trafo	11/0.433 kV	TR-3462	
		Trafo	11/0.433 kV	TR-3463	
		Trafo	11/0.433 kV	TR-3464	
Trafo	11/0.433 kV	TR-3465			
Trafo	11/0.433 kV	TR-3466			

Substation No.	Area's	Description	VOLTAGE LEVEL	Numbering Philosophy	Remarks
		Normal Lighting Trafo	11/0.38 kV	TR-3467	
		Normal Lighting Trafo	11/0.38 kV	TR-3468	
		Emergency Lighting Trafo	0.415/0.38 kV	07-LTG-TR-01	
		Busduct for Trafo TR-3461	0.415 kV	BD-3461	
		Busduct for Trafo TR-3462	0.415 kV	BD-3462	
		Busduct for Trafo TR-3463	0.415 kV	BD-3463	
		Busduct for Trafo TR-3464	0.415 kV	BD-3464	
		Busduct for Trafo TR-3465	0.415 kV	BD-3465	
		Busduct for Trafo TR-3466	0.415 kV	BD-3466	
		11 kV Switchgear	11 kV	HT-286	
		6.6 kV Switchgear	6.6 kV	HT-272	
		6.6 kV APFC Panel	6.6 kV	HT-273-A	
		6.6 kV APFC Panel	6.6 kV	HT-273-B	
		415 V Switchgear-PCC	0.415 kV	PCC-761	Range of 761 to 770 (10 nos.) is reserved for US-507
		415 V Switchgear-PCC	0.415 kV	PCC-762	
		415 V Switchgear-PCC	0.415 kV	PCC-763	
		690 V Switchgear-VFD-01	0.720 kV	PCC-764	
		690 V Switchgear-VFD-02	0.720 kV	PCC-765	
		415 V Switchgear-MCC	0.415 kV	MCC-5161	Range of 5161 to 5170 (10 nos.) is reserved for US-507
		415 V Switchgear-MCC	0.415 kV	MCC-5162	
		415 V Switchgear-MCC	0.415 kV	MCC-5163	
		415 V Switchgear-MCC	0.415 kV	MCC-5164	
		Distribution Boards	0.415 kV	ASB-5165	
		Distribution Boards	0.38 kV	MLDB-5166	
		Distribution Boards	0.38 kV	EMLDB-5167	
		415V APFC Panel	0.415 kV	APFC-5168-A	
		415V APFC Panel	0.415 kV	APFC-5168-B	
		415V APFC Panel	0.415 kV	APFC-5169-A	
		415V APFC Panel	0.415 kV	APFC-5169-B	
		415V APFC Panel	0.415 kV	APFC-5170-A	
		415V APFC Panel	0.415 kV	APFC-5170-B	
		AC UPS	0.415 kV	07-UPS-01	
		AC UPS	0.415 kV	07-UPS-02	
		BC	0.415 kV	07-BC-01	
		DCDB	0.415 kV	07-DCDB-01	
		ACDB	0.415 kV	07-ACDB-01	
		ACDB	0.415 kV	07-ACDB-02	
US-508	Alumina Storage & Handling	Trafo	11/6.9 kV	TR-2415	
		Trafo	11/6.9 kV	TR-2416	
		NGR for Trafo TR-2415	6.6 kV	NGR-2415	
		NGR for Trafo TR-2416	6.6 kV	NGR-2416	
		Trafo	11/0.433 kV	TR-3471	Range of 3470 to 3480 (10 nos.) is reserved for US-508
		Trafo	11/0.433 kV	TR-3472	
		Trafo	11/0.433 kV	TR-3473	
		Trafo	11/0.433 kV	TR-3474	
		Trafo	11/0.38 kV	TR-3475	
		Trafo	11/0.38 kV	TR-3476	
		Emergency Lighting Trafo	0.415/0.38 kV	08-LTG-TR-01	
		Busduct for Trafo TR-3471	0.415 kV	BD-3471	
		Busduct for Trafo TR-3472	0.415 kV	BD-3472	
		11 kV Switchgear	11 kV	HT-287	
		6.6 kV Switchgear	6.6 kV	HT-274	
		6.6 kV APFC Panel	6.6 kV	HT-275-A	
		6.6 kV APFC Panel	6.6 kV	HT-275-B	
		415 V Switchgear-PCC	0.415 kV	PCC-771	Range of 771 to 780 (10 nos.) is reserved for US-508
		690 V Switchgear-VFD-01	0.720 kV	PCC-772	
		415 V Switchgear-MCC	0.415 kV	MCC-5171	Range of 5171 to 5180 (10 nos.) is reserved for US-508
		415 V Switchgear-MCC	0.415 kV	MCC-5172	
		415 V Switchgear-MCC	0.415 kV	MCC-5173	
		415 V Switchgear-MCC	0.415 kV	MCC-5174	
		Distribution Boards	0.415 kV	ASB-5174	
		Distribution Boards	0.38 kV	MLDB-5175	
		Distribution Boards	0.38 kV	EMLDB-5176	
		415V APFC Panel	0.415 kV	APFC-5177-A	
		415V APFC Panel	0.415 kV	APFC-5177-B	
		AC UPS	0.415 kV	08-UPS-01	
		AC UPS	0.415 kV	08-UPS-02	
		BC	0.415 kV	08-BC-01	
		DCDB	0.415 kV	08-DCDB-01	
		ACDB	0.415 kV	08-ACDB-01	
		ACDB	0.415 kV	08-ACDB-02	