

AC AREA

NOTE-10

NOTE-11,13

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MAIN EARTHING SYSTEMS CABLES			
POS.	QUANT.	NAME	OBSERVATIONS
TI-0	18750	120 mm² SOFT STRANDED COPPER BARE CABLE	-
TI-1	192	50 mm² SOFT STRANDED COPPER BARE CABLE	-
TI-2	32015	120 mm² SOFT STRANDED COPPER BARE CABLE FOR DOWNLEAD COND.	-
TI-3	1075	300 mm² SOFT STRANDED COPPER BARE CABLE	-
THERMOWELDS			
TS-1	490	CROSS THERMOWELD 120 mm² SOFT COPPER BARE CABLES	-
TS-2	243	"T" THERMOWELD 120mm² SOFT COPPER BARE CABLES	-
TS-3	4499	"T" THERMOWELD 120mm² SOFT COPPER BARE CABLES	-
TS-4	805	CROSS THERMOWELD 120 mm² SOFT COPPER BARE CABLES	-
TS-5	235	"T" THERMOWELD 50 mm² SOFT COPPER BARE CABLES AND RAIL	-
TS-6	119	"T" THERMOWELD 120 mm² SOFT COPPER BARE CABLES & ROD	-
TS-7	109	"T" THERMOWELD 300 mm² SOFT COPPER BARE CABLES & ROD	-
TS-8	54	"T" THERMOWELD 120 mm² & 50 mm² SOFT COPPER BARE CABLES	-
TS-9	10	STRAIGHT THERMOWELD 120mm² SOFT COPPER BARE CABLES	-
OTHERS			
GR-1	226	GROUNDING ROD Ø20 mm 3m LENGHT, COPPER-CLAD STEEL	-
TJ	2	AI-TEST JOINT	-
EP	34	ELECTRICAL PIT FOR GROUNDING ROD	-
FB	162	FLAT BAR Cu (50x5)	-

LEGEND

1x120 mm² SOFT STRANDED COPPER BARE CABLE (TI-0)

1x50 mm² SOFT STRANDED COPPER BARE CABLE (TI-1)

2x120 mm² SOFT STRANDED COPPER BARE CABLE FOR DOWNLEAD CONDUCTOR (TI-2)

2x120 mm² SOFT STRANDED COPPER BARE CABLE FOR DOWNLEAD CONDUCTOR FOR GROUND CONNECTION FOR NEUTRAL OF CT (TI-2)

2x300 mm² SOFT STRANDED COPPER BARE CABLE FOR SA (TI-3)

GROUNDING ROD Ø20 mm 3m LENGTH, COPPER CLAD STEEL (GR-1)

THIS SYMBOL INCLUDED "T" THERMOWELD FOR 120 mm² AND ROD (TS-6) OR 300mm² AND ROD (TS-7) (SEE DETAIL AF IN DOCUMENT N-000063_E_C5_9771_S)

1xCROSS THERMOWELDED FOR 120 mm² SOFT COPPER BARE CABLES (TS-1) (SEE DETAIL AC IN DOCUMENT N-000063_E_C5_9771_S)

2xCROSS THERMOWELDED FOR 120 mm² SOFT COPPER BARE CABLES FOR DOWNLEAD CONDUCTOR (TS-4) (SEE DETAIL AC IN DOCUMENT N-000063_E_C5_9771_S)

2x"T" THERMOWELD FOR 120 mm² SOFT COPPER BARE CABLES FOR DOWNLEAD CONDUCTOR (TS-3) (SEE DETAIL AB IN DOCUMENT N-000063_E_C5_9771_S)

1x"T" THERMOWELD FOR 120 mm² SOFT COPPER BARE CABLES (TS-2) (SEE DETAIL AB IN DOCUMENT N-000063_E_C5_9771_S)

1x"T" THERMOWELD FOR 120 mm² AND 50 mm² SOFT COPPER BARE CABLES (TS-8) (SEE DETAIL AB IN DOCUMENT N-000063_E_C5_9771_S)

2x"T" THERMOWELD FOR GROUND CONNECTION OF NEUTRAL CT (SEE DETAIL AB IN DOCUMENT N-000063_E_C5_9771_S)

2xA LENGHT OF 8.00 m SHOULD BE PROVIDED FROM THE PLATFORM LEVEL (IN BOTH CABLES)

2x"T" THERMOWELD FOR 50 mm² SOFT COPPER BARE CABLES AND RAIL (TS-5) (SEE DETAIL HD IN DOCUMENT N-000063_E_C5_9771_S)

2xEARTHING TO FENCE AND SUBSTATION PRINCIPAL DOOR (SEE DETAIL DE IN DOCUMENT N-000063_E_C5_9771_S)

1xSTRAIGHT THERMOWELD 120 mm² SOFT COPPER BARE CABLES (TS-9) (SEE DETAIL AA IN DOCUMENT N-000063_E_C5_9771_S)

AI-TEST JOINT (TJ) (SEE DETAIL AI IN DOCUMENT N-000063_E_C5_9771_S)

ELECTRICAL PIT FOR GROUNDING ROD (SEE DETAIL AG IN DOCUMENT N-000063_E_C5_9771_S)

1x50 mm² COPPER BARE CABLE CONNECTION FOR MANHOLE COVER IN TRANSFER WAY (SEEDETAIL HE IN DOCUMENT N-000063_E_C5_9771_S)

1x50 mm² COPPER BARE CABLE CONNECTION FOR STEEL GRATING AND PULLING HOOK (SEE DETAIL HC IN DOCUMENT N-000063_E_C5_9771_S)

1x50 mm² CONNECTION BETWEEN RAILS (SEEDETAIL HD IN DOCUMENT N-000063_E_C5_9771_S)

1x50 mm² CONNECTION STEEL GRATING TO FLAT BAR (SEE DETAIL CD IN DOCUMENT N-000063_E_C5_9771_S)

FLAT BAR Cu 50x5 (FB)

GENERAL NOTES

PROJECT ELEVATION ±0.000 CORRESPONDS TO ELEVATION 1593.90 m.a.s.l.

PROJECT COORDINATE SYSTEM ORIGIN (HORIZONTAL GRID=1000000 ; VERTICAL GRID=1000000) IS AT UTM COORDINATES (206252959 ; 9882744361). UTM ZONE 37N DATUM ARC 1960.

VERTICAL GRID

HORIZONTAL GRID

CONVERTER HALLS & CONTROL BUILDING FINISHED FLOOR IS AT ELEVATION ±0.000

THE LOCATION OF THE PANELS IS PRELIMINARY.

ALL DIMENSIONS AND COORDINATES ARE IN MILLIMETERS, UNLESS NOTED OTHERWISE.

ALL ELEVATIONS AND TOPOGRAPHIC LEVELS ARE IN METERS, UNLESS NOTED OTHERWISE.

±0.00 = 1593.90 MASL

IFC

IFA = Issued for approval
IFI = Issued for information
IFC = Issued for construction

IFIM = Issued for implementation (Design Input)
IFM = Issued for manufacture
AB = As built (Documentation)

04	2018-03-22	ACCORDING TO COMMENTS	FJF	ACC
03	2018-01-29	ACCORDING TO COMMENTS	FJF	ACC
02	2017-11-21	ACCORDING TO COMMENTS	FJF	ACC
Rev.	Rev. Date	Modification	Created By	Approved By
File Name (Prefix)			HVDC 500kV BIPOLE	
N-000063_E_C1_9771_S_002_04			2000 MW	
Customer			KETRACO Kenya	
Project			Ethiopia - Kenya Power Systems Interconnection Project	
Location(s)			Location Designation(s)	
Suswa Converter Station				
Scale	Paper Size	Customer Document Number	Technical Classification:	
1:750	A1	EKPSP_K1_L_D_00011_04	ECCN: N	AL: N
Responsible Dept.	Techn. Reference	Document Type	Document Designation	
ING	JPH	Layout And Major Equipment Drawings	C1_9771_S_002	-
Created By	Title, Supplementary Title		Drawing Number	
FJF	GROUNDING			
Siemens AG	Approved By	AC YARD LAYOUT DETAIL		
ACC		Rev.	Date of Issue	Language
		04	2018-03-22	en
				Sheet
				1 / 2

DEPTH GROUND GRID IN THIS PARTICULAR ZONE IS -1.9 m.

REFERENCE DRAWINGS

N-000063_E_C1_9771_S_001 GROUNDING - GENERAL LAYOUT

N-000063_E_C1_9771_S_002 GROUNDING - GENERAL DETAIL

N-000063_E_C1_9771_S_003 GROUNDING - DC YARD LAYOUT DETAIL

N-000063_E_C5_9807_S_001 CONVERTER TRANSFORMER AREA-TRANSFER WAY FOR 400 kV TRANSFORMERS

N-000063_E_C5_9808_S_TR_002 AC SWITCHYARD-TRANSFER WAY FOR 220-400kV TRANSFORMER

N-000063_E_C5_9808_S_TR_BD_001 AC SWITCHYARD-FOUNDATION FOR 220-400kV TRANSFORMER

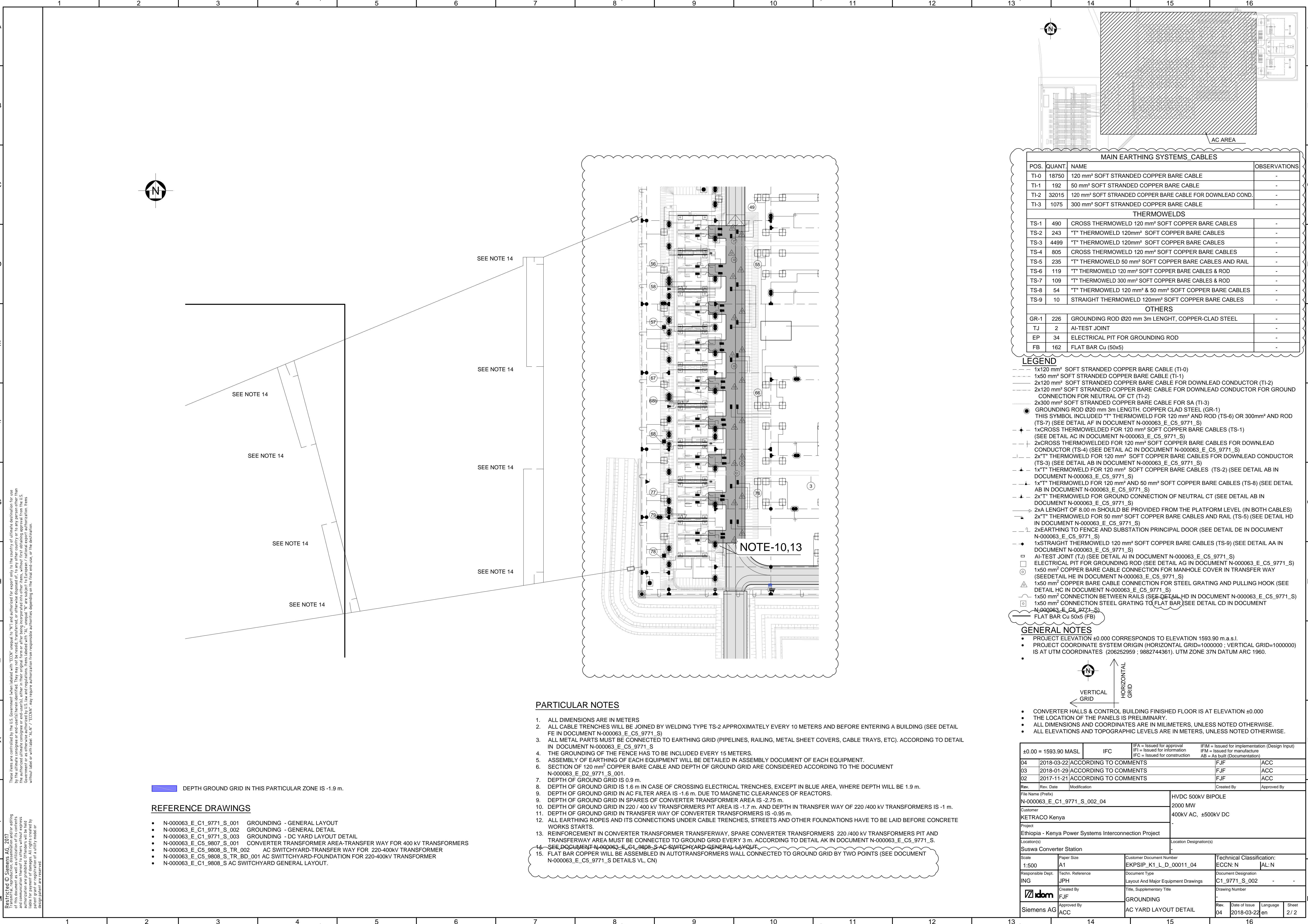
N-000063_E_C1_9808_S AC SWITCHYARD GENERAL LAYOUT.

WORKS STARTS

REINFORCEMENT IN CONVERTER TRANSFORMER TRANSFERWAY, SPARE CONVERTER TRANSFORMERS 220 /400 kV TRANSFORMERS PIT AND TRANSFERWAY AREA MUST BE CONNECTED TO GROUND GRID EVERY 3 m. ACCORDING TO DETAIL AK IN DOCUMENT N-000063_E_C5_9771_S.

SEE DOCUMENT N-000063_E_C1_9808_S AC SWITCHYARD GENERAL LAYOUT.

FLAT BAR COPPER WILL BE ASSEMBLED IN AUTOTRANSFORMERS WALL CONNECTED TO GROUND GRID BY TWO POINTS (SEE DOCUMENT N-000063_E_C5_9771_S DETAILS VL, CN)



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- N-000063_E_C1_9808_S AC SWITCHYARD GENERAL LAYOUT.

PARTICULAR NOTES

- ALL DIMENSIONS ARE IN METERS
- ALL CABLE TRENCHES WILL BE JOINED BY WELDING TYPE TS-2 APPROXIMATELY EVERY 10 METERS AND BEFORE ENTERING A BUILDING (SEE DETAIL FE IN DOCUMENT N-000063_E_C5_9771_S)
- ALL METAL PARTS MUST BE CONNECTED TO EARTHING GRID (PIPELINES, RAILING, METAL SHEET COVERS, CABLE TRAYS, ETC). ACCORDING TO DETAIL IN DOCUMENT N-000063_E_C5_9771_S
- THE GROUNDING OF THE FENCE HAS TO BE INCLUDED EVERY 15 METERS.
- ASSEMBLY OF EARTHING OF EACH EQUIPMENT WILL BE DETAILED IN ASSEMBLY DOCUMENT OF EACH EQUIPMENT.
- SECTION OF 120 mm² COPPER BARE CABLE AND DEPTH OF GROUND GRID ARE CONSIDERED ACCORDING TO THE DOCUMENT N-000063_E_D2_9771_S_001.
- DEPTH OF GROUND GRID IS 0.9 m.
- DEPTH OF GROUND GRID IS 1.6 m IN CASE OF CROSSING ELECTRICAL TRENCHES, EXCEPT IN BLUE AREA, WHERE DEPTH WILL BE 1.9 m.
- DEPTH OF GROUND GRID IN AC FILTER AREA IS -1.6 m. DUE TO MAGNETIC CLEARANCES OF REACTORS.
- DEPTH OF GROUND GRID IN SPARES OF CONVERTER TRANSFORMER AREA IS -2.75 m.
- DEPTH OF GROUND GRID IN 220 / 400 kV TRANSFORMERS PIT AREA IS -1.7 m. AND DEPTH IN TRANSFER WAY OF 220 /400 kV TRANSFORMERS IS -1 m.
- DEPTH OF GROUND GRID IN TRANSFER WAY OF CONVERTER TRANSFORMERS IS -0.95 m.
- ALL EARTHING ROPES AND ITS CONNECTIONS UNDER CABLE TRENCHES, STREETS AND OTHER FOUNDATIONS HAVE TO BE LAID BEFORE CONCRETE WORKS STARTS.
- REINFORCEMENT IN CONVERTER TRANSFORMER TRANSFERWAY, SPARE CONVERTER TRANSFORMERS 220 /400 kV TRANSFORMERS PIT AND TRANSFERWAY AREA MUST BE CONNECTED TO GROUND GRID EVERY 3 m. ACCORDING TO DETAIL AK IN DOCUMENT N-000063_E_C5_9771_S.
- SEE DOCUMENT N-000063_E_C1_9808_S AC SWITCHYARD GENERAL LAYOUT.
- FLAT BAR COPPER WILL BE ASSEMBLED IN AUTOTRANSFORMERS WALL CONNECTED TO GROUND GRID BY TWO POINTS (SEE DOCUMENT N-000063_E_C5_9771_S DETAILS VL, CN)

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2	2017-11-21	ACCORDING TO COMMENTS				FJF	ACC
Rev.	Rev. Date	Modification				Created By	Approved By
File Name (Prefix)						HVDC 500kV BIPOLE	
N-000063_E_C1_9771_S_002_04						2000 MW	
Customer						400kV AC, ±500kV DC	
Project						-	
Ethiopia - Kenya Power Systems Interconnection Project						-	
Location(s)						Location Designation(s)	
Suswa Converter Station						-	
Scale		Paper Size		Customer Document Number		Technical Classification:	
1:500		A1		EKPSIP_K1_L_D_00011_04		ECCN: N AL: N	
Responsible Dept.		Techn. Reference		Document Type		Document Designation	
ING		JPH		Layout And Major Equipment Drawings		C1_9771_S_002 - -	
		Created By		Title, Supplementary Title		Drawing Number	
FJF		GROUNDING		-		-	
Siemens AG		Approved By		AC YARD LAYOUT DETAIL		-	
ACC		Rev.		Date of Issue		Language	
		04		2018-03-22		en	
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