

D					
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B					
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Indice Index	Data Date	Modificare Modification/Revision	Proiectant Designer	Aprobat Consultant Approved Consultant	Aprobat CFR Approved CFR



C.N.C.F. "C.F.R." - S.A.

CLIENT / CLIENT



CONSULTANT / CONSULTANT

		Șef proiect Project manager	R. Liuzza	Data Date	Semnătură Signature
Aprobat Approved					
Aprobat Approved	Coordonator Sectiune 1 Section 1 Coordinator	C. Gambelli			
Verificat Checked	Tunel Expert Tunnel Expert	C. Gambelli			
Intocmit Elaborated	Proiectant Designer	P. Amodio			

SUBCONSULTANT / SUBCONSULTANT

Aprobat Approved	Responsabil Subconsultant Subconsultant Responsible		
Intocmit Elaborated	Proiectant Designer		
Reabilitarea liniei de cale ferata Brașov - Simeria, parte componentă a coridorului IV Pan European, pentru circulația trenurilor cu viteză maximă de 160 km/h. Sectiune 1 Brasov - Sighisoara			<b>Project/Project</b> 2004/RO/16/P/PA/003
Rehabilitation of the railway line Brașov - Simeria, component Part of the IV Pan-European Corridor, for the trains circulation with maximum speed of 160 km/h. Section 1 Brasov - Sighisoara			Faza / Phase: P.Th. / T.D.

Denumire desen / Drawing Title : **TUNNEL/TUNELUL HOMOROD**

RACOS SIDE/INSPRE RACOS

Emergency and fire protection systems/Sisteme de urgență și de incendiu

Electrical diagram services panel central C1 (Q\_SILC1)/Electrice Diagrame cadru servicii centrale C1 (Q\_SILC1)

Codificare / Codification System

Scara / Scale

LOT

Nr. / No

E A 5 1 0 1 C 1 2 L X T S 2 0 7 3 0 0 3 0

CHARACTERISTICS PANEL/CARACTERISTICI CADRU


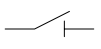
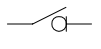














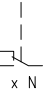







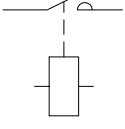
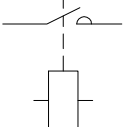
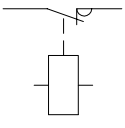
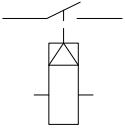



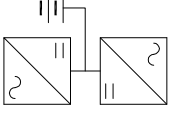
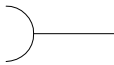
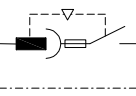

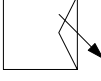

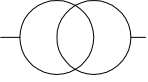

SYSTEM/SYSTEM

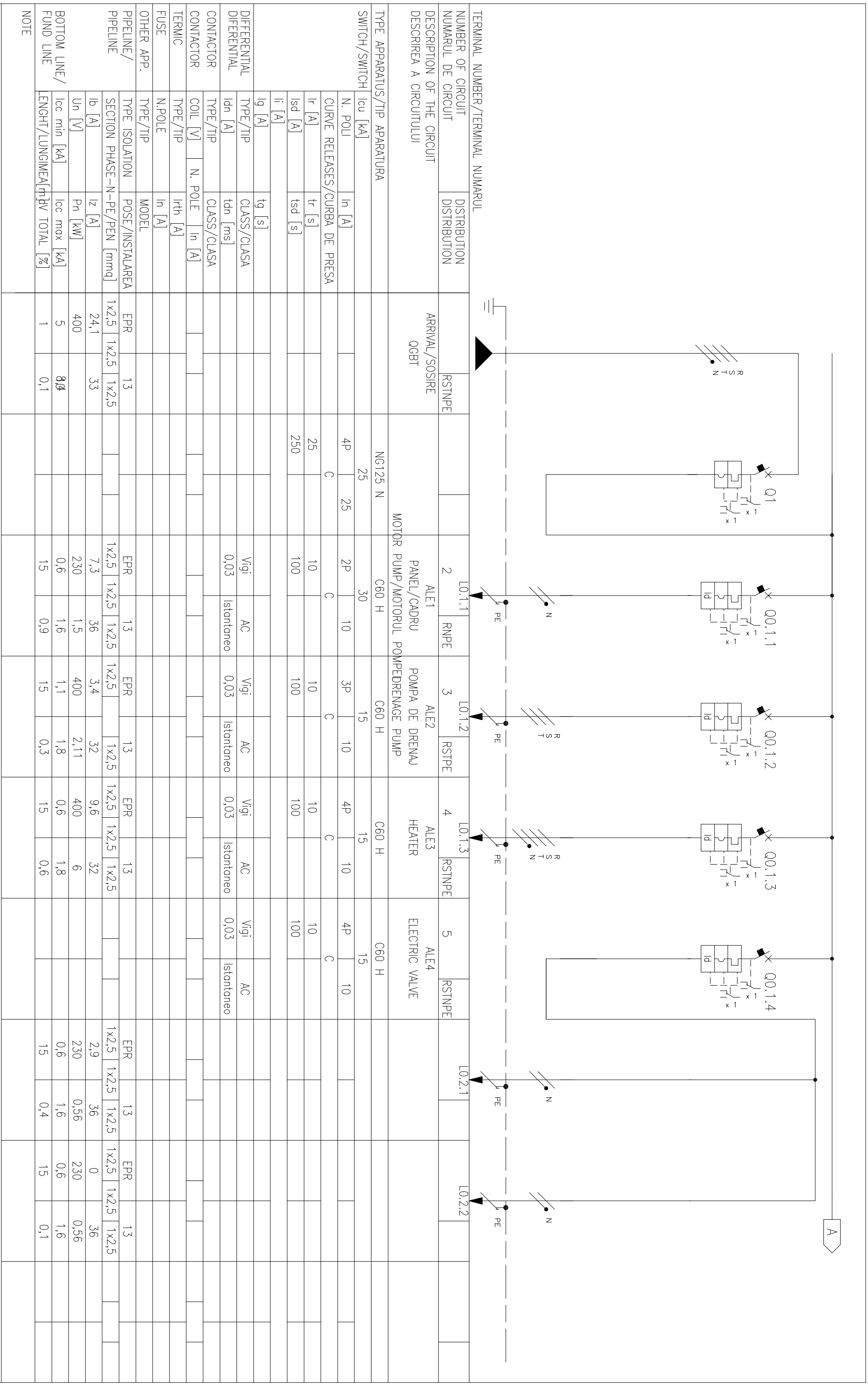
VOLTAGE/TENSIUNE [V] 400 | FREQUENCY/FRECVENTA [Hz] 50  
 RETED CURRENT PANEL/CURRENT NOMINAL CADRU [A] \_\_\_\_\_  
 SHORT CIRCUIT CURRENT ON PANEL [kA] \_\_\_\_\_ 16  
 DISTRIBUTION SYSTEM/SISTEMUL DE DISTRIBUTIE \_\_\_\_\_ TNS  
 SIZE BARS/DIMENSIUNEA BARS \_\_\_\_\_  
 In [A] \_\_\_\_\_ Scc [kA] \_\_\_\_\_  
 CARPENTRY/TAMPLARIE \_\_\_\_\_ METALLIC  
 INSULATION CLASS/CLASA DE IZOLARE \_\_\_\_\_ IP \_\_\_\_\_

REFERENCE STANDARDS/STANDARDDELE DE REFERINTA

BREAKERS SWITCHES/CIRCUITUL CONCASOARE  — EN 60947-2  
 MODULAR SWITCHES/CIRCUITUL MODULAR  — EN 60947-2  
 — EN 60898  
 CARPENTRY/TAMPLARIE  — EN 60439-1

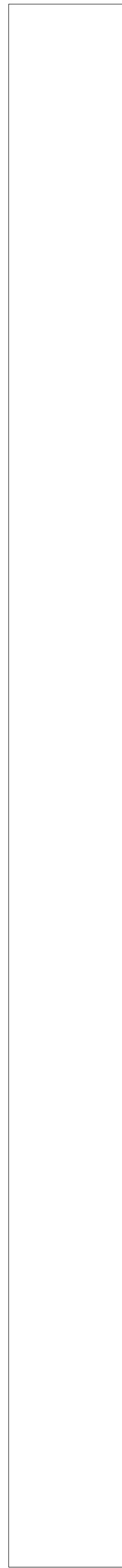
# LEGEND SYMBOLS CHEIA SIMBOLURI

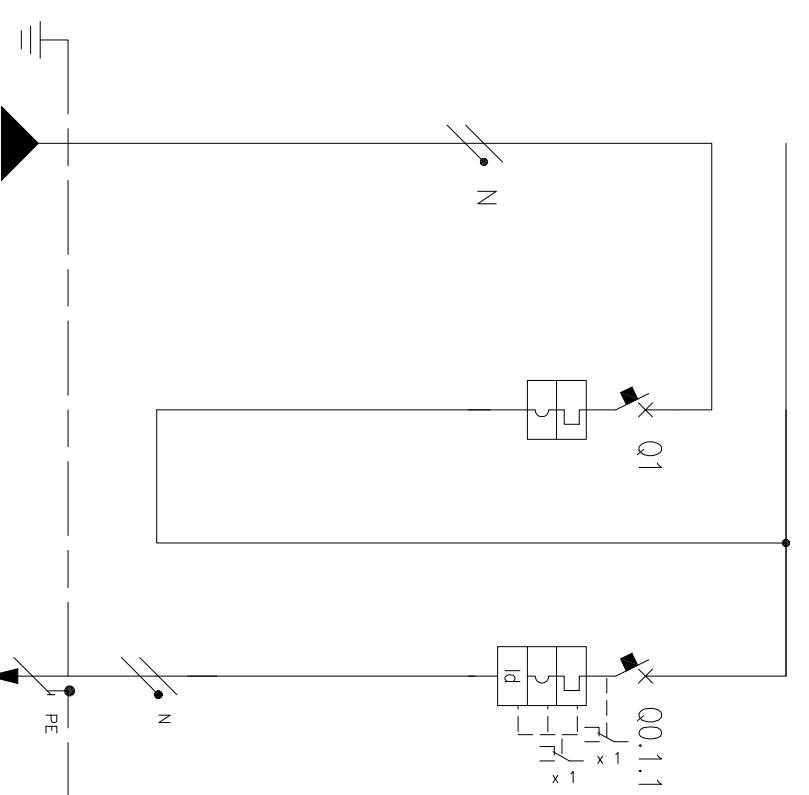
	CIRCUIT BREAKER INTERRUPTOR		SWITCH SWITCH		SWITCH OPERATION SWITCH OPERATIUNEA		THERMAL PROTECTION PROTECTIE TERMICA		MAGNETIC PROTECTION PROTECTIE MAGNETICA		DIFFERENTIAL PROTECTION PROTECTIE DIFERENTIALA		MOTOR MOTOR		FUSE ELEMENT FUZE ELEMENT		TOROID TOROID		MANUAL DRIVE MANUAL
	MOTORIZED CONTROL DE REGLA MOTORIZATE		FREE TRIP CALATORIE GRATUIA		ROTARY HANDLE INTERLOCKING MANER ROTATIV CENTRALIZARE		INTERLOCK INTERBLOCARE		REMOVABLE EQUIPMENT AMOVIBIL ECHIPAMENTE		LOCK KEY (LOCKED WITH APPLIANCE IN PLACE OF REST) LOCK (BLOCAT CU APARATULUI IN POZITIA DE ODHINA)		LOCK KEY (FREE WITH APPLIANCE IN PLACE OF REST) LOCK (GRATUIT CU APARATULUI IN POZITIA DE ODHINA)		AUX CONTACT (N=NUMBER OF INSTALLED CONTACTS,THE HATCH INDICATES WHICH EQUIPMENT PART ACT ON THE CONTACT) DATE DE CONTACT AUX (N=NUMARUL DE DATE INSTALATE. ACT HATCH CU PRIVIRE LA ECHIPAMENTUL INDICA FAPTUL CA DATE)		COIL A MINIMUM VOLTAGE COIL UN VOLTAJ MINIM		COIL A LAUNCH OF CORRENT COIL UN CAUSAREA DE CURENT
	CHANGEOVER SWITCH FOR INSTRUMENT (VOLTMETRIC/AMPERMETRIC) SWITCH PENTRU INSTRUMENT (VOLTMETRIC/AMPERMETRIC)		AMPERMETER AMPERMETRU		VOLTMETER VOLTMETRU		FREQUENCYMETER FRECVENTA		INSTRUMENT INTEGRATOR (CONTACTOR) INSTRUMENT INTEGRATOR (CONTACTOR)		CONTACTOR WITH NO CONTACT CONTACTOR CU DATE DE NO		CONTACTOR WITH POSSIBILITY OF MANUAL CONTACT WITH NO CONTACT CONTACTOR CU POSIBILITATEA DE DATE MANUAL CU DE CONTACT NO		CONTACTOR NORMALLY CLOSED CONTACT CONTACTOR CU DATE IN MOD NORMAL INCHIS		CONTACTOR (RELAY 'STEP / STEP) CONTACTOR (RELEU PAS CU PAS)		CLOCK CEASUL
	TWILIGHT CREPUSCULAR		ASTRONOMIC CLOCK CEASUL ASTRONOMIC		UPS UPS		SOCKET (GENERAL SYMBOL) SOCKET (GENERAL SIMBOLURI)		PLUG AND SWITCH FUSE BLOCK SOCKET CU INTERBLOCATA EA SIGURANTI		SOFT STARTER STARTER		INVERTER INVERTOR		STAR STARTER STAR STARTER		TRASFORMER TRASFORMER		SPD VAL



TERMINAL NUMBER/TERMINAL NUMARUL	DISTRIBUTION DISTRIBUTION	ARRIVAL/SOSIRE RSTNPE	2 L0.1.1 RNPPE	3 L0.1.12 RSTNPE	4 L0.1.3 RSTNPE	5 ALE4 RSTNPE	L0.2.1	L0.2.2
NUMBER OF CIRCUIT NUMARUL DE CIRCUIT								
DESCRIPTION OF THE CIRCUIT DESCRIEREA A CIRCUITULUI		ARRIVAL/SOSIRE QGBT	ALE1 PANEL/CADRU MOTOR PUMP/MOTORUL POMPEDRENAJE PUMP	ALE2 POMPA DE DRENAJ POMPEDRENAJE PUMP	ALE3 HEATER	ALE4 ELECTRIC VALVE		
TYPE APPARATUS/TIP APARATURA			C60 H	C60 H	C60 H	C60 H		
SWITCH/SWITCH	icu [kA]		25	15	15	15		
N. POLI	In [A]		4P	3P	4P	4P		
CURVE RELEASES/CURBA DE PRESA			C	C	C	C		
I <sub>r</sub> [A]	tr [s]		25	10	10	10		
I <sub>sd</sub> [A]	t <sub>sd</sub> [s]		250	100	100	100		
i <sub>i</sub> [A]								
I <sub>g</sub> [A]	t <sub>g</sub> [s]							
DIFFERENTIAL DIFFERENTIAL	TYPE/TIP CLASS/CLASA							
I <sub>dn</sub> [A]	t <sub>dn</sub> [ms]							
CONTACTOR CONTACTOR	TYPE/TIP CLASS/CLASA							
COIL [V]	N. POLE In [A]							
TERMIC	TYPE/TIP I <sub>rth</sub> [A]							
FUSE	N. POLE In [A]							
OTHER APP. OTHER APP.	TYPE/TIP MODEL							
PIPELINE/PIPELINE	TYPE ISOLATION POSE/INSTALAREA							
SECTION PHASE-N-PE/PEN [mmq]	EPR							
I <sub>b</sub> [A]	I <sub>z</sub> [A]		1x2,5	1x2,5	1x2,5	1x2,5		
U <sub>n</sub> [V]	P <sub>n</sub> [kW]		24,1	7,3	3,4	3,4		
I <sub>cc min</sub> [kA]	I <sub>cc max</sub> [kA]		400	230	400	400		
BOTTOM LINE/FUND LINE	LENGTH/LUNGIME[m] I <sub>pv</sub> TOTAL [%]		5	0,6	1,1	1,8		
NOTE			1	0,1	0,3	0,6		

TERMINAL NUMBER/TERMINAL NUMARUL	DISTRIBUTION DISTRIBUTION	8	9	10	11	12	13	14
NUMBER OF CIRCUIT NUMARUL DE CIRCUIT		8	9	10	11	12	13	14
DESCRIPTION OF THE CIRCUIT DESCRIEREA A CIRCUITULUI		ALE7 ELECTRIC VALVE 2	ALE8 OPEN	ALE9 CLOSE	ALE10 ELECTRIC VALVE 3	ALE11 OPEN	ALE12 CLOSE	ALE13 ELECTRIC VALVE MOTOR PUMP
TYPE APPARATUS/TIP APARATURA		C60 H			C60 H			C60 H
SWITCH/SWITCH		15			15			15
N. POLI		4P			4P			4P
CURVE RELEASES/CURBA DE PRESA		C			C			C
I <sub>r</sub> [A]		10			10			10
I <sub>sd</sub> [A]		100			100			100
i <sub>i</sub> [A]								
I <sub>g</sub> [A]								
TYPE/TIP		tg [s]						
DIFFERENTIAL DIFFERENTIAL		CLASS/CLASA			Vigi			Vigi
I <sub>dn</sub> [A]		tdn [ms]			0,03			0,03
CONTACTOR		CLASS/CLASA			Istantaneo			Istantaneo
CONTACTOR		TYPE/TIP			LC1D09			LC1D09
TERMIC		COIL [V]			230			230
FUSE		N. POLE			3 poli			3 poli
OTHER APP.		Irth [A]			25			25
PIPELINE/PIPELINE		N. POLE						
PIPELINE/PIPELINE		TYPE/TIP						
PIPELINE/PIPELINE		MODEL						
PIPELINE/PIPELINE		TYPE ISOLATION			EPR			EPR
PIPELINE/PIPELINE		SECTION PHASE-N-PE/PEN [mmq]			1x2,5			1x2,5
PIPELINE/PIPELINE		I <sub>b</sub> [A]			1x2,5			1x2,5
PIPELINE/PIPELINE		I <sub>z</sub> [A]			2,9			2,9
PIPELINE/PIPELINE		U <sub>n</sub> [V]			36			36
PIPELINE/PIPELINE		P <sub>n</sub> [kW]			0,56			0,56
PIPELINE/PIPELINE		I <sub>cc min</sub> [kA]			230			230
PIPELINE/PIPELINE		I <sub>cc max</sub> [kA]			0,6			0,6
PIPELINE/PIPELINE		I <sub>mv</sub> TOTAL [%]			15			15
NOTE								





TERMINAL NUMBER/TERMINAL NUMARUL	DISTRIBUTION DISTRIBUTION	ARRIVAL/SOSIRE DA Q_CA	RSTNPE	1	2	L0.1.1	RSTNPE
NUMBER OF CIRCUIT NUMARUL DE CIRCUIT				1	2		
DESCRIPTION OF THE CIRCUIT DESCRIRIA A CIRCUITULUI					ALC1 AUX. PLC Q_SI LINEA DA Q_CA		
TYPE APPARATUS/TIP APARATURA				C60 L	C60 H		
SWITCH/SWITCH	lcu [kA]			15	15		
	N. POLI	In [A]		2P	2P		10
	CURVE RELEASES/CURBA DE PRESA			C	C		
	Ir [A]	tr [s]		10	10		
	I <sub>sd</sub> [A]	t <sub>sd</sub> [s]		100	100		
	Ii [A]						
	Ig [A]	tg [s]					
DIFFERENTIAL DIFFERENTIAL	TYPE/TIP	CLASS/CLASA			Vigi	AC	
	I <sub>dn</sub> [A]	t <sub>dn</sub> [ms]			0,03	Istantaneo	
CONTACTOR	TYPE/TIP	CLASS/CLASA					
	COIL [V]	N. POLE	In [A]				
TERMIC	TYPE/TIP	I <sub>rth</sub> [A]					
FUSE	N. POLE	In [A]					
OTHER APP.	TYPE/TIP	MODEL					
PIPELINE/ PIPELINE	TYPE ISOLATION	POSE/INSTALAREA			EPR	13	
	SECTION PHASE-N-PE/PEN [mmq]				1x2,5	1x2,5	
	I <sub>b</sub> [A]	I <sub>z</sub> [A]			0,4	32	
	U <sub>n</sub> [V]	P <sub>n</sub> [kW]			230	0,3	
BOTTOM LINE/ FUND LINE	I <sub>cc</sub> min [kA]	I <sub>cc</sub> max [kA]		10	0,6	1,9	
NOTE	LENGHT/LUNGIMEA [m]	dv TOTAL [%]			15	0,1	

