Figure 1
Vertical stepping
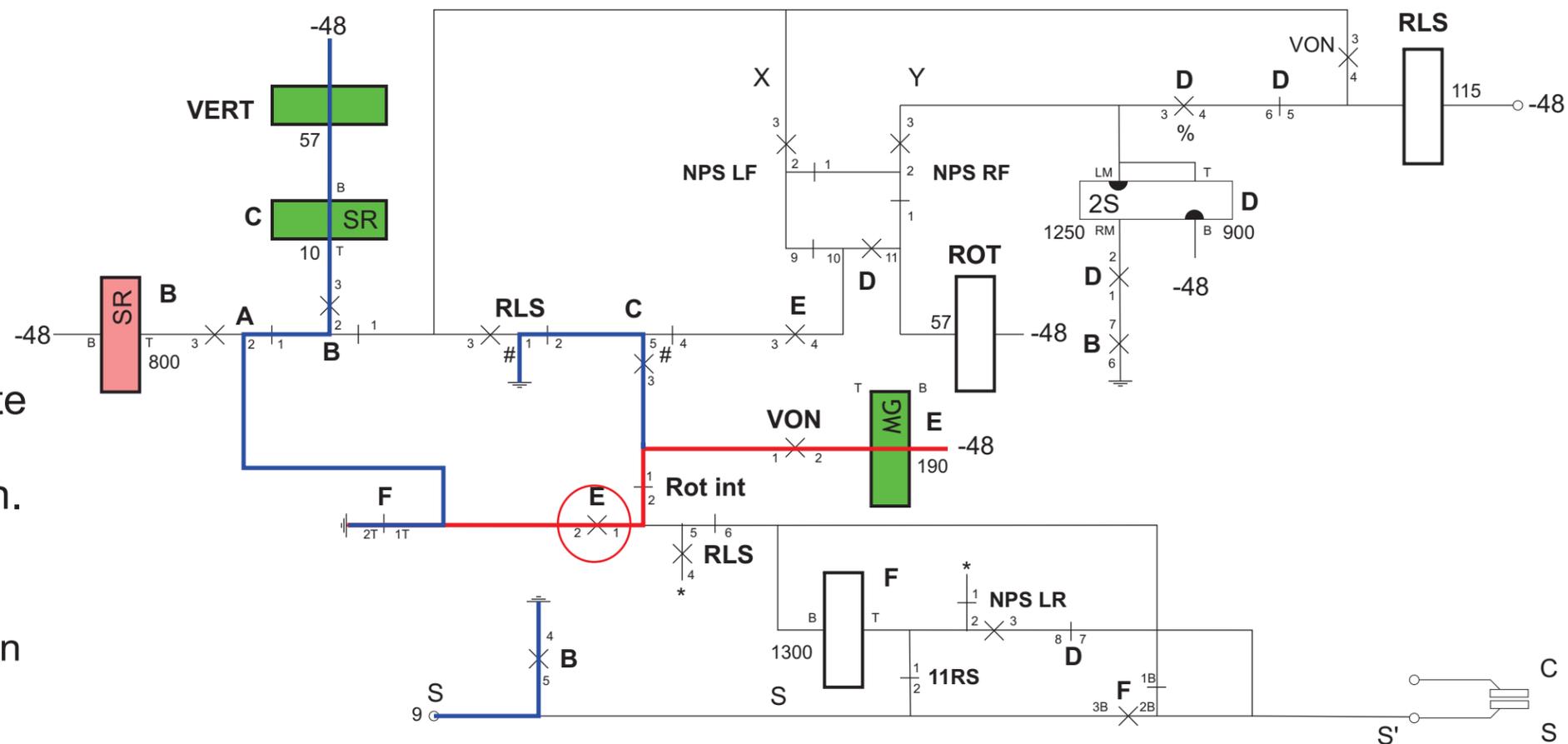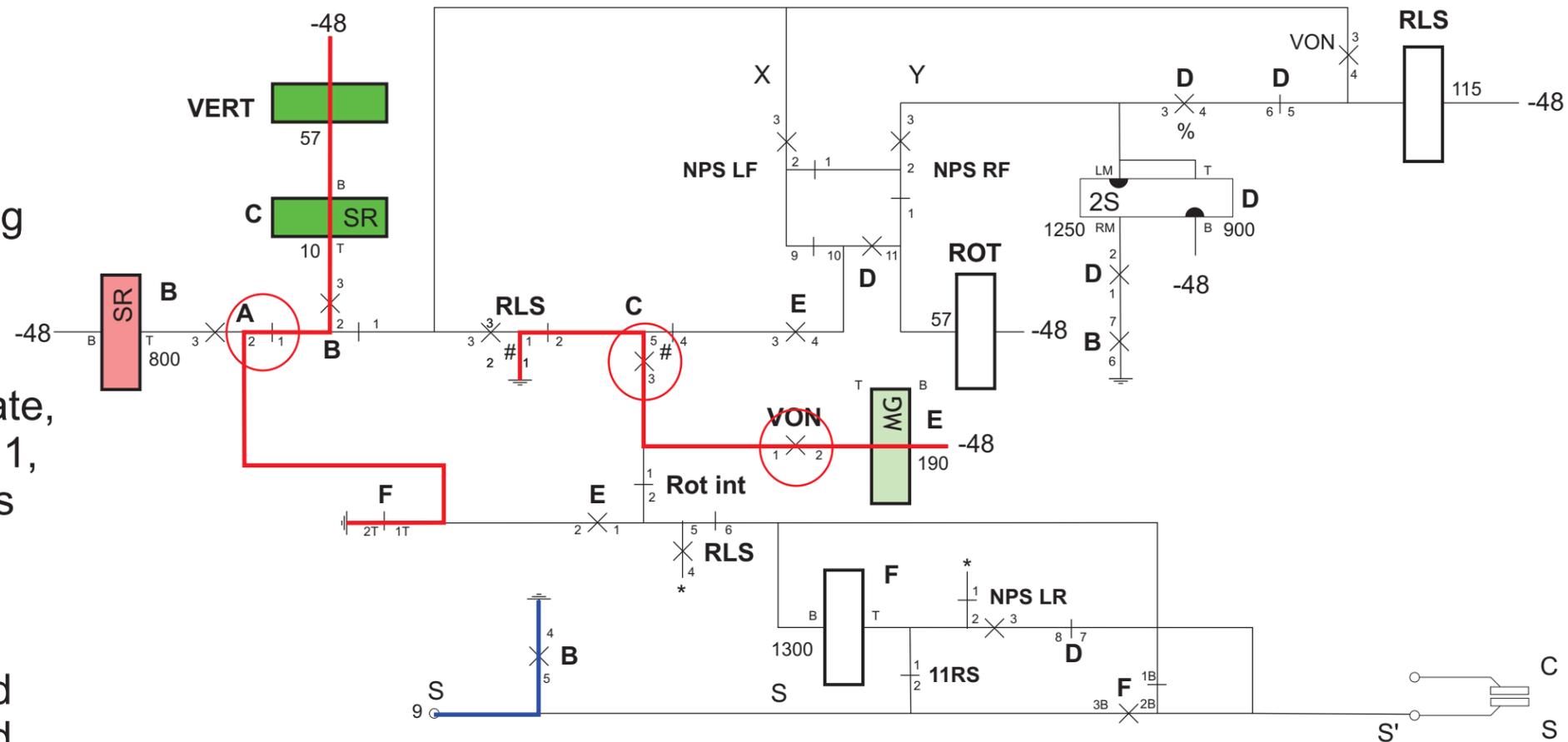
a. A releases during each pulse.

During first pulse C and VERT operate, shaft rises to level 1, VON operates, E is energized.

B is slow release and stays operated when de-energized during each pulse.

b. E operates and holds

Further intermediate details of vertical stepping not shown.

(Continued on next sheet)

VERT 57

C **SR** 10

SR 800

-48

A **B**

RLS **C**

E **D**

X **Y** **NPS LF** **NPS RF**

ROT 57 -48

VON **RLS** 115 -48

% **D** **D**

2S **D** 1250 900

D -48

B

VON **MG** **E** 190 -48

F **E** **Rot int** **RLS**

F **NPS LR** 1300 **D**

B **11RS** **F**

S 9 **S** **S'** **C** **S**

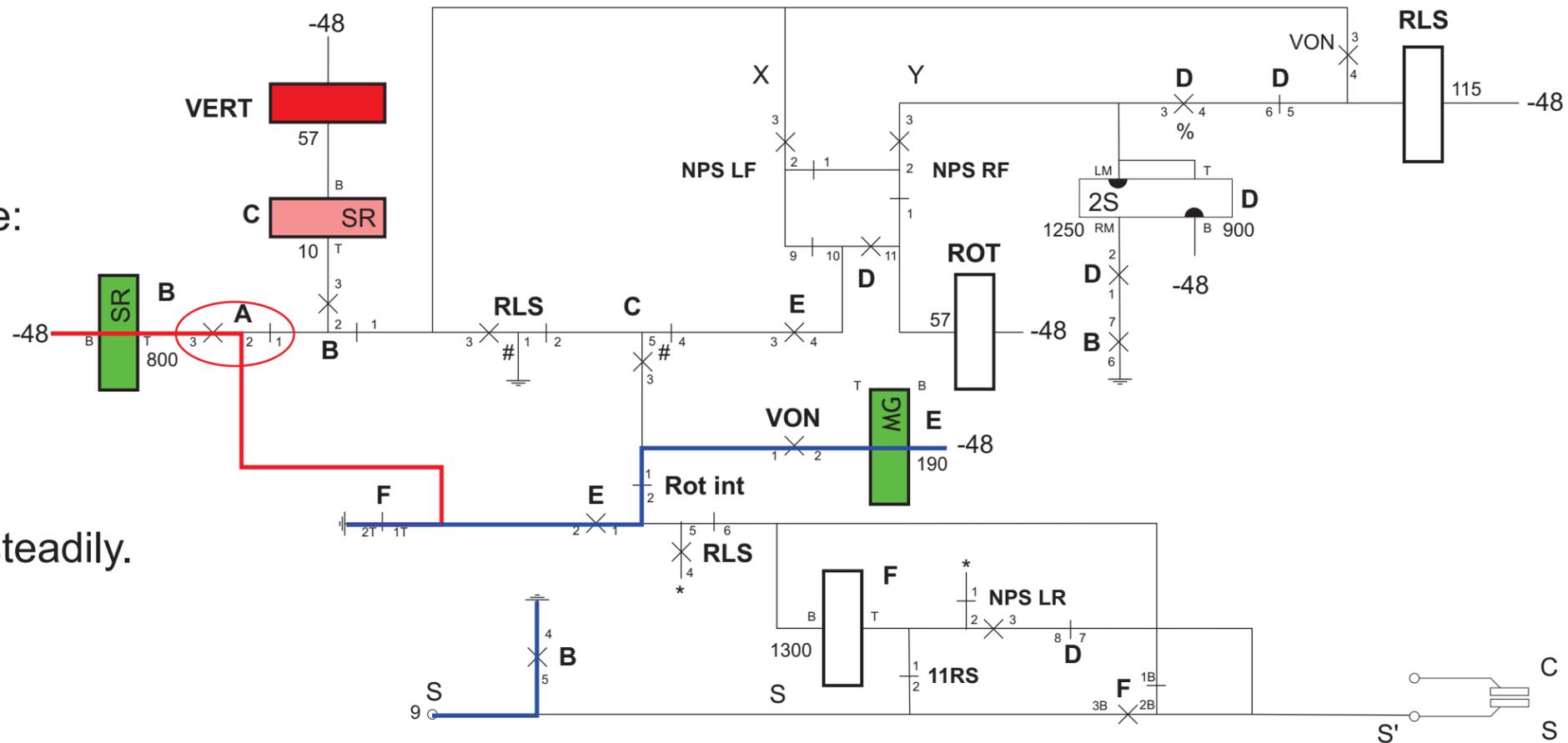Key to symbols and relay index on last sheet

Path development for trunk hunting, digit absorption, and level blocking.

Step-by-step system
ED-55242-32 G11 switch
Auxiliary intertoll selector (D/A)

| num SXS-SK1052 | iss 02 | date 2020.01.27 | sht 01 |
| proj SXS study | type CDR | dwn DAK | of 01 |

laboratories dak
scientific and technical undertakings
Alamogordo, New Mexico

Figure 1
Vertical stepping

c. End of last pulse:
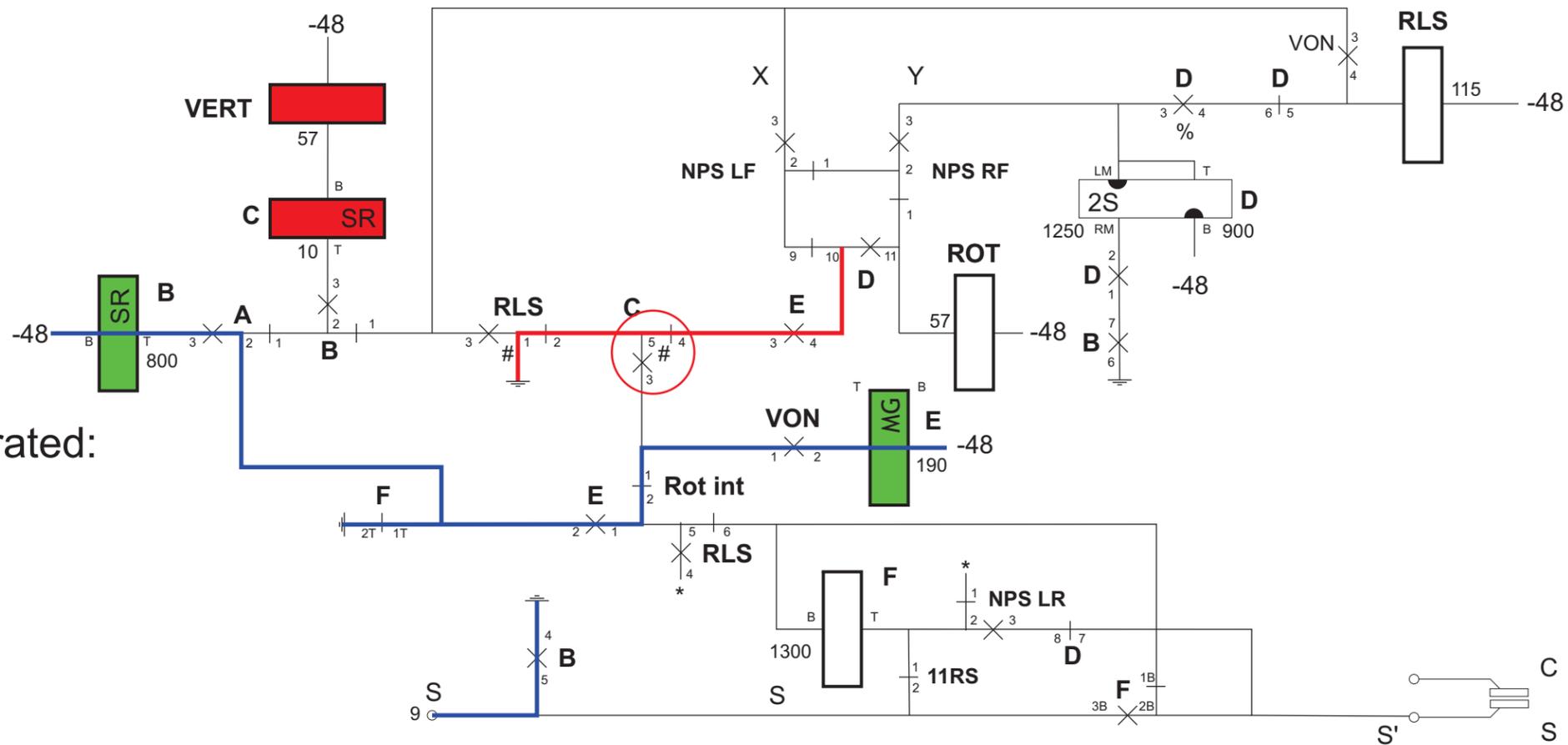VERT releases,
C is de-energized
but does not
release
immediately.

B now energized steadily.

d. C releases,
path closed to
spring 10 of D.

Go to, depending
on normal post
springs (NPS) operated:
None: Fig 2
LF: Fig. 3
RF: Fig 4
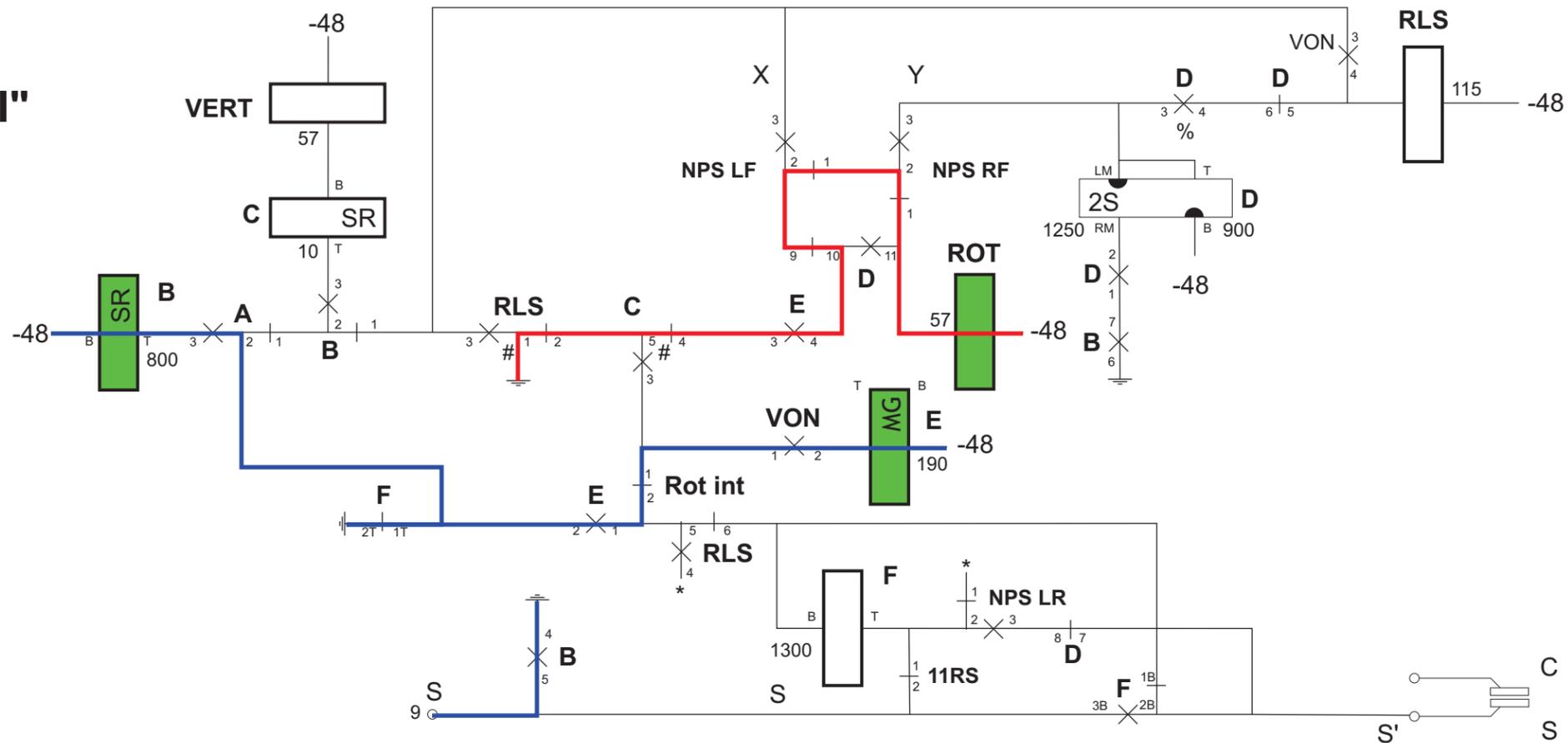LR: Fig 5.

Key to symbols and
relay index on last sheet

Path development for
trunk hunting,
digit absorption, and
level blocking.

Step-by-step system
ED-55242-32 G11 switch
Auxiliary intertoll selector (D/A)

| num SXS-SK1052 | iss 02 | date 2020.01.27 | sht 02 |
| proj SXS study | type CDR | dwn DAK | of 01 |

laboratories dak
scientific and technical undertakings
Alamogordo, New Mexico

Figure 2
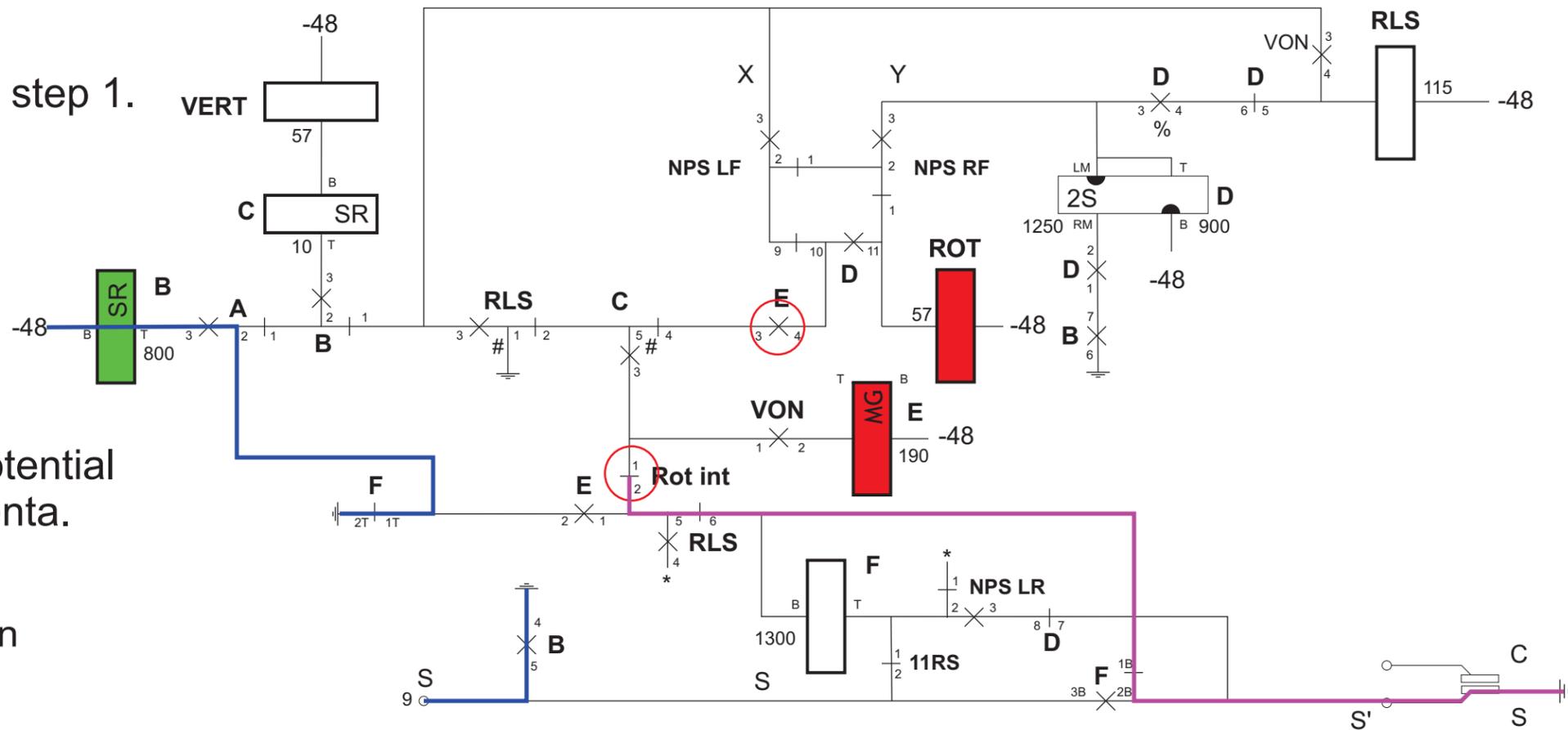## No NPS contact operated ("normal" level).

We arrive here from Fig. 1d

a. C released completes path to operate ROT.

Key to symbols and relay index on last sheet

b. Shaft rotates to step 1. Rot. Int. opens, releasing E, which releases ROT. We assume the trunk at step 1 is busy, with sleeve grounded. That provides a potential path seen in magenta.

(Continued on next sheet)

Path development for trunk hunting, digit absorption, and level blocking.

**Figure 2
No NPS contact
operated ("normal"
level).**

**c. Rot. Int. closes,
E is energized from S**

There is also a path
from E through F to ground
(shown here in magenta),
but the path from S "shorts
F out".

VERT 57
C SR 10
SR 800 B A B
VON RLS 115 -48
X Y D D %
NPS LF NPS RF
2S 1250 LM T D 900 RM B
D D -48
RLS C E D ROT 57 -48 B
VON MG E -48 190
E Rot int
F E RLS
B F NPS LR D
S B S 11RS F C S' S

Key to symbols and
relay index on last sheet

**d. E operates and
locks to ground.
E closes the path
to energize ROT.**

VERT 57
C SR 10
SR 800 B A B
VON RLS 115 -48
X Y D D %
NPS LF NPS RF
2S 1250 LM T D 900 RM B
D -48
RLS C E D ROT 57 -48 B
VON MG E -48 190
F E Rot int
RLS
B F NPS LR D
S B S 11RS F C S' S

Path development for
trunk hunting,
digit absorption, and
level blocking.

**(Continued on
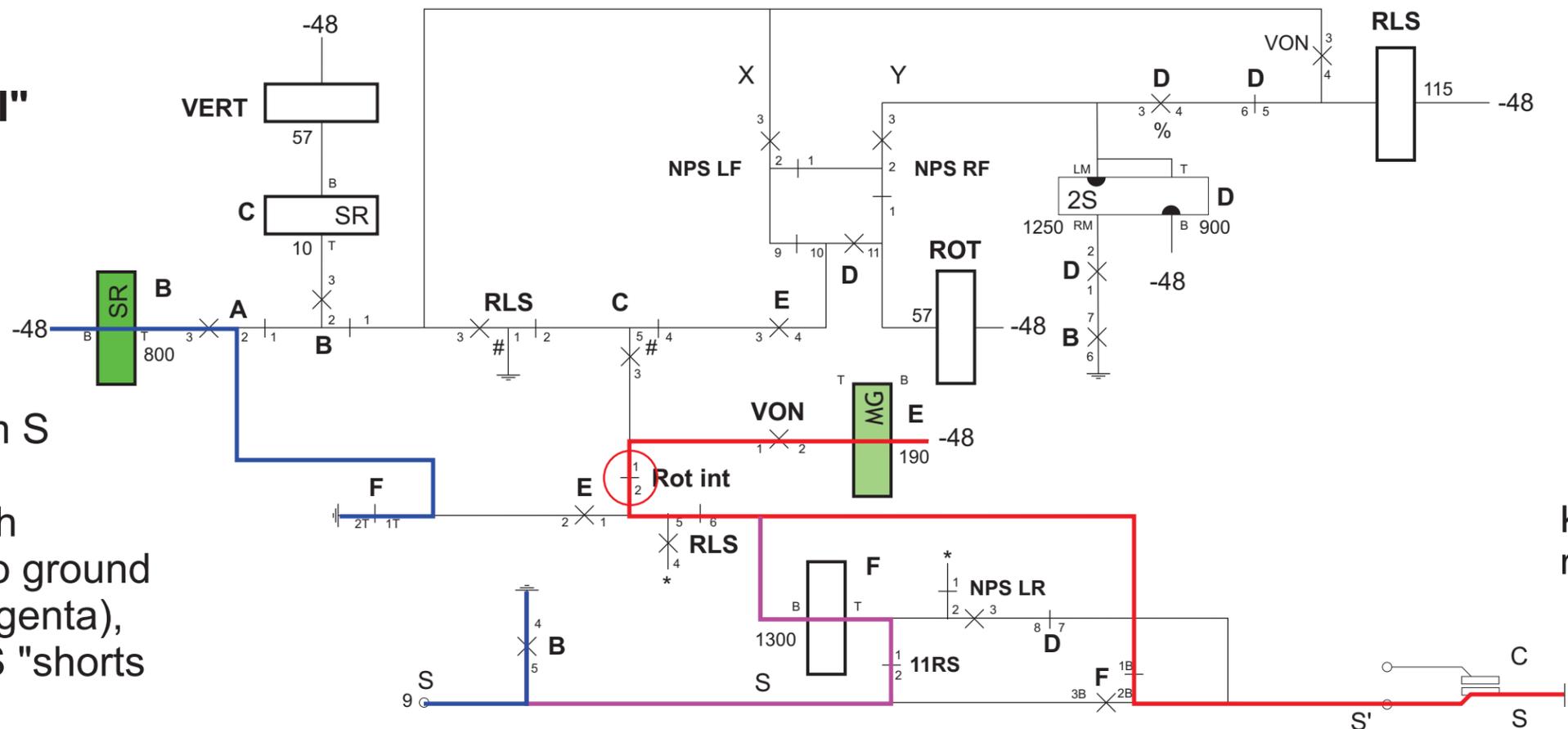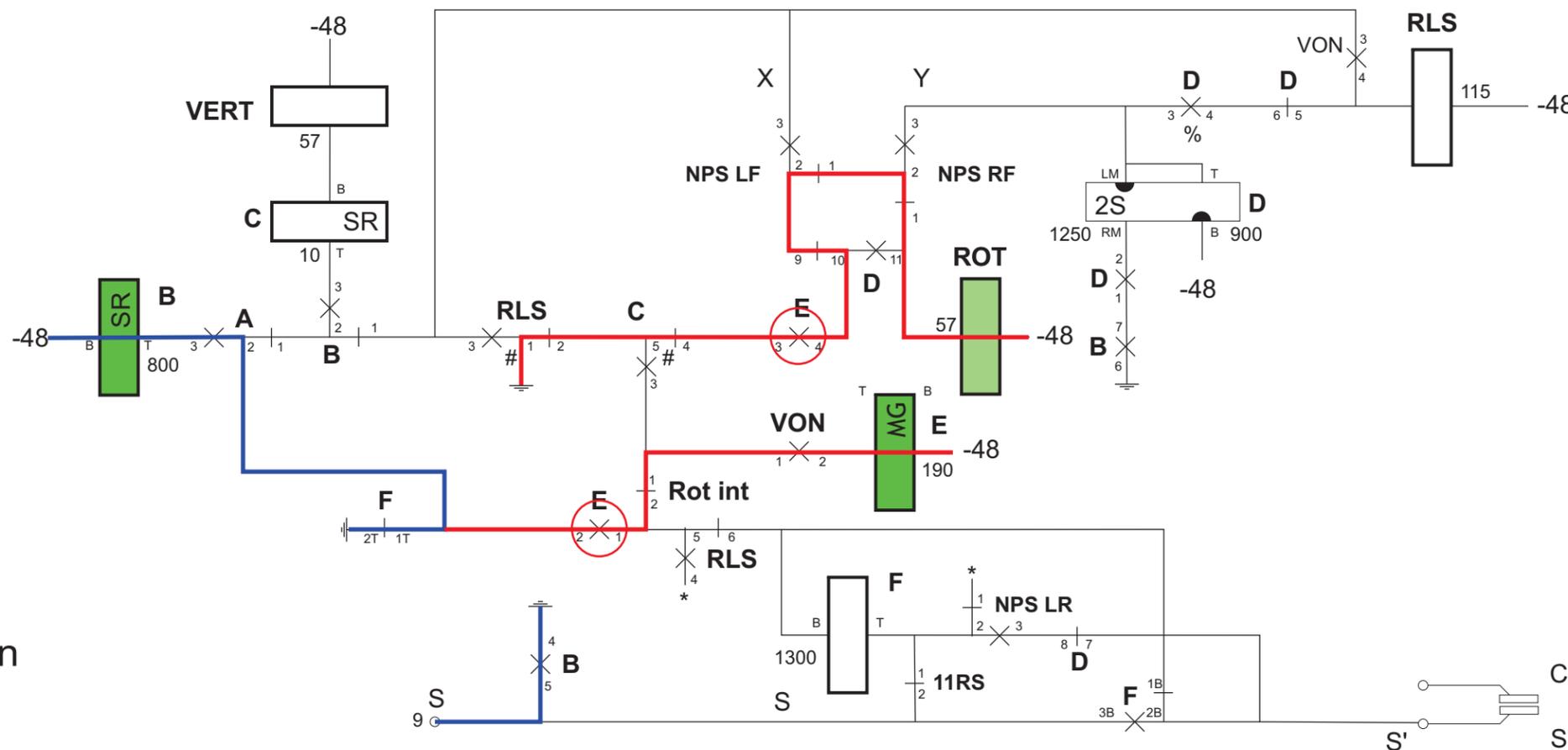next sheet)**

Step-by-step system ED-55242-32 G11 switch Auxiliary intertoll selector (D/A)			
num SXS-SK1052	iss 02	date 2020.01.27	sht 04
proj SXS study	type CDR	dwn DAK	of 01
laboratories dak scientific and technical undertakings Alamogordo, New Mexico			

Figure 2
No NPS contact operated ("normal" level).

e. ROT operates, stepping the switch to step 2.
Rot. Int. opens, de-energizing E and ROT.

We assume the trunk there is idle (no ground on S).
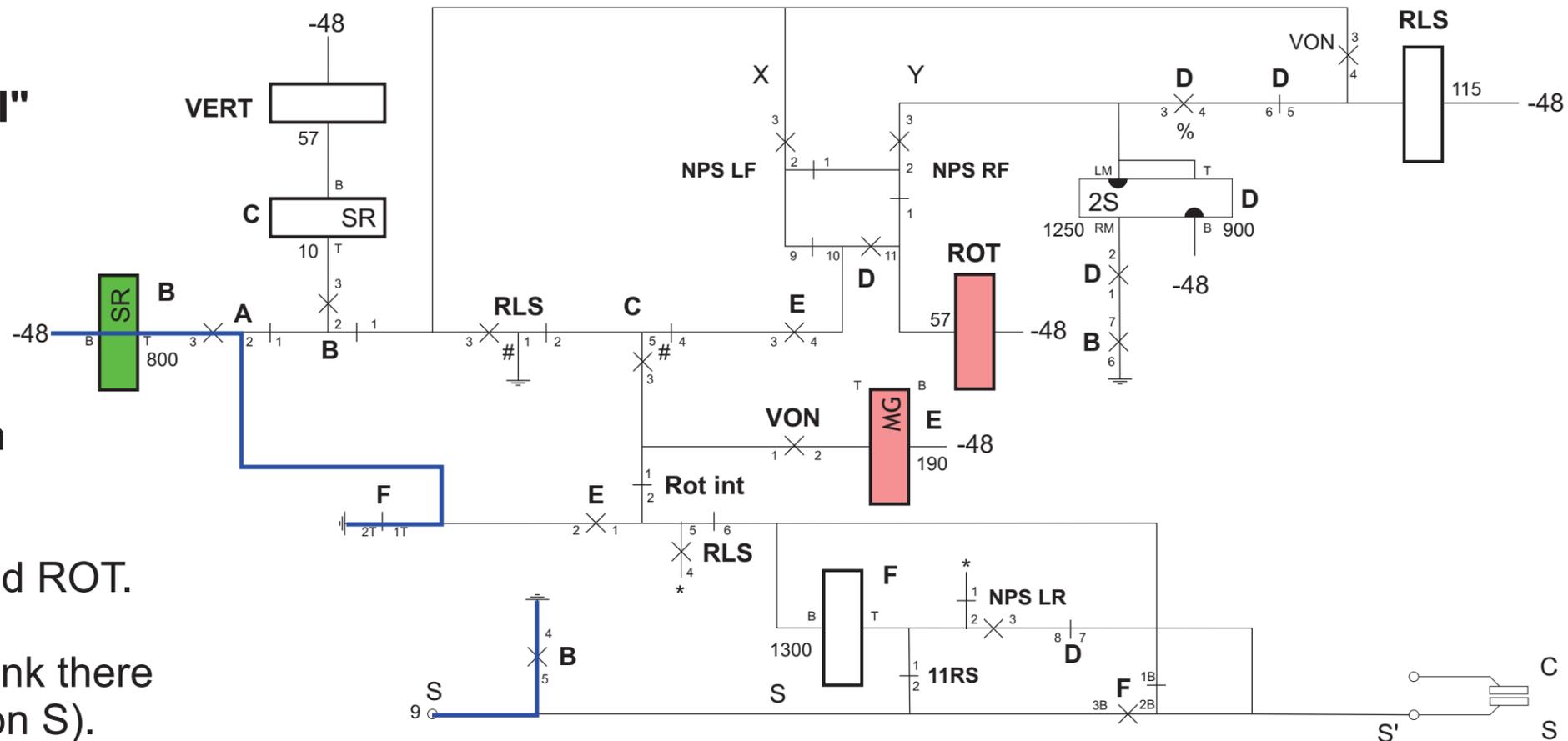
f. E and ROT release;
Rot. Int. closes

(Continued on next sheet)

Key to symbols and relay index on last sheet

Top diagram labels:
VERT 57
C SR 10
SR 800
-48
B A B
RLS C E D
X Y NPS LF NPS RF
3 2 1 2 1
9 10 11 D
ROT 57 -48
D D % VON RLS 115 -48
LM T 2S 1250 RM B 900 D
D 2 1 -48
D 7 B 6
VON MG E 190 -48
Rot int
E RLS
F
F 1300 NPS LR D
B 2T 1T
B
S 9 S 11RS F C S' S

Bottom diagram labels:
VERT 57
C SR 10
SR 800
-48
B A B
RLS C E D
X Y NPS LF NPS RF
ROT 57 -48
D D % VON RLS 115 -48
LM T 2S 1250 RM B 900 D
D -48
D 7 B 6
VON MG E 190 -48
Rot int
E RLS
F
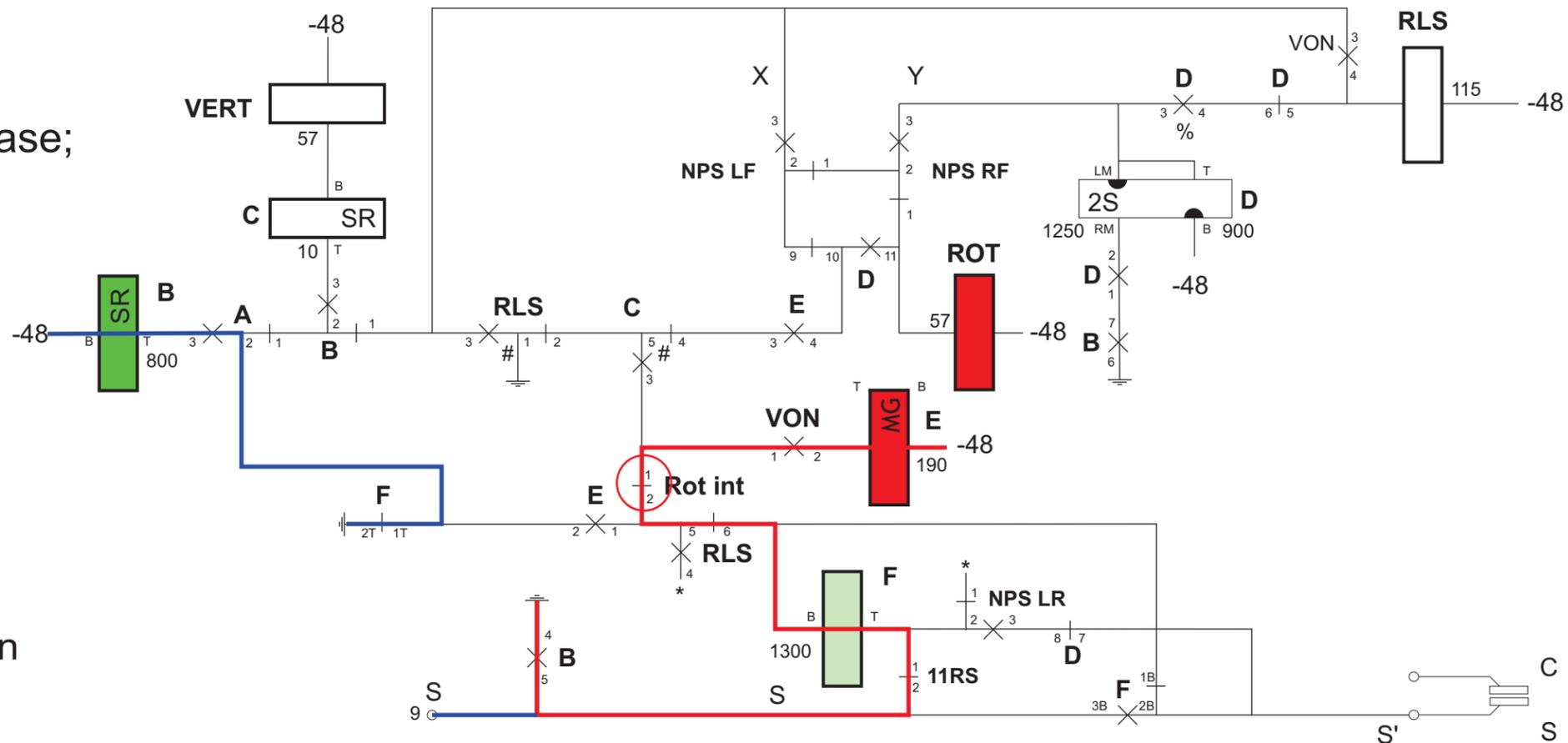F 1300 NPS LR D
B 2T 1T
B
S 9 S 11RS F C S' S

Path development for trunk hunting, digit absorption, and level blocking.

Step-by-step system			
ED-55242-32 G11 switch			
Auxiliary intertoll selector (D/A)			
num SXS-SK1052	iss 02	date 2020.01.27	sht 05
proj SXS study	type CDR	dwn DAK	of 01

laboratories dak
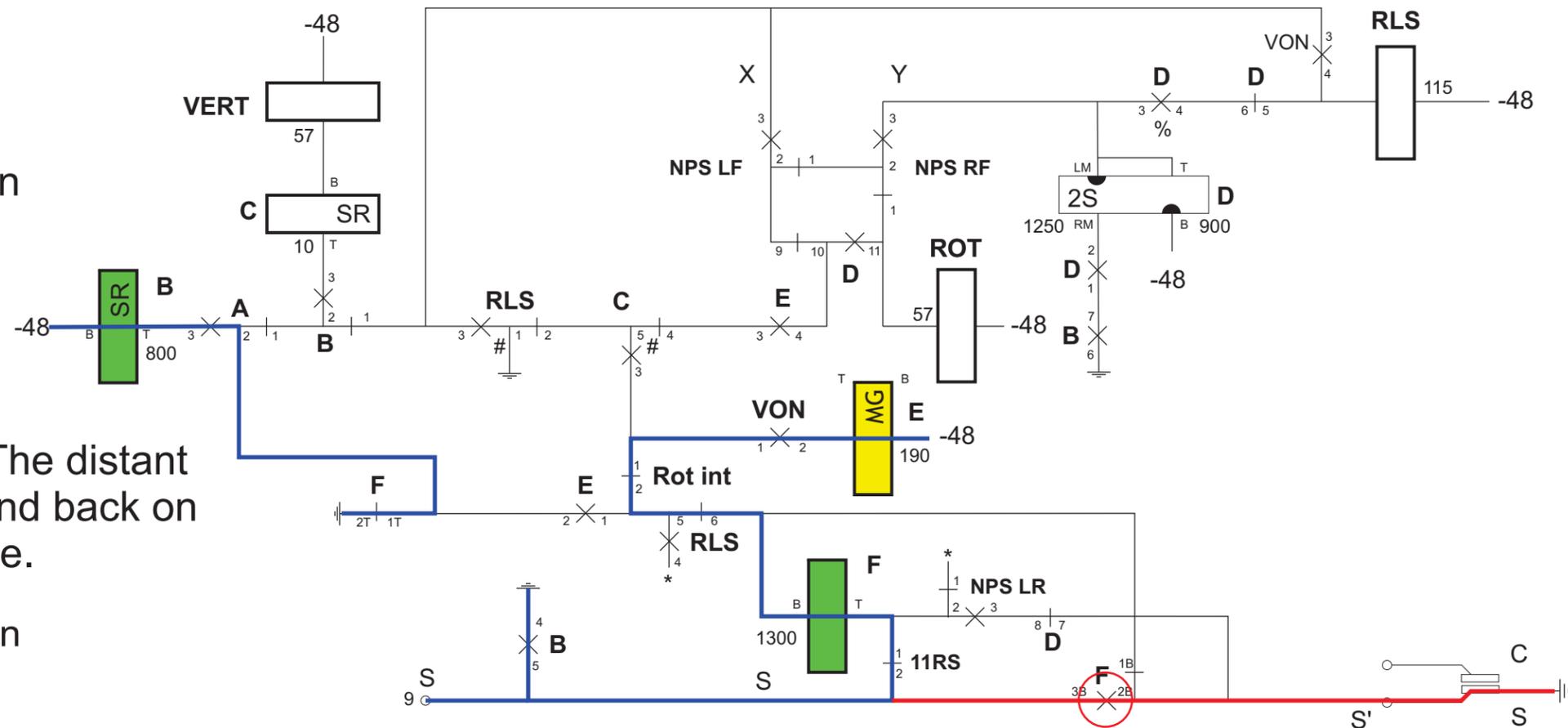scientific and technical undertakings
Alamogordo, New Mexico

Figure 2
No NPS contact operated ("normal" level).

g. A path from ground through F and E energizes F and E, but the current is not enough to operate E.
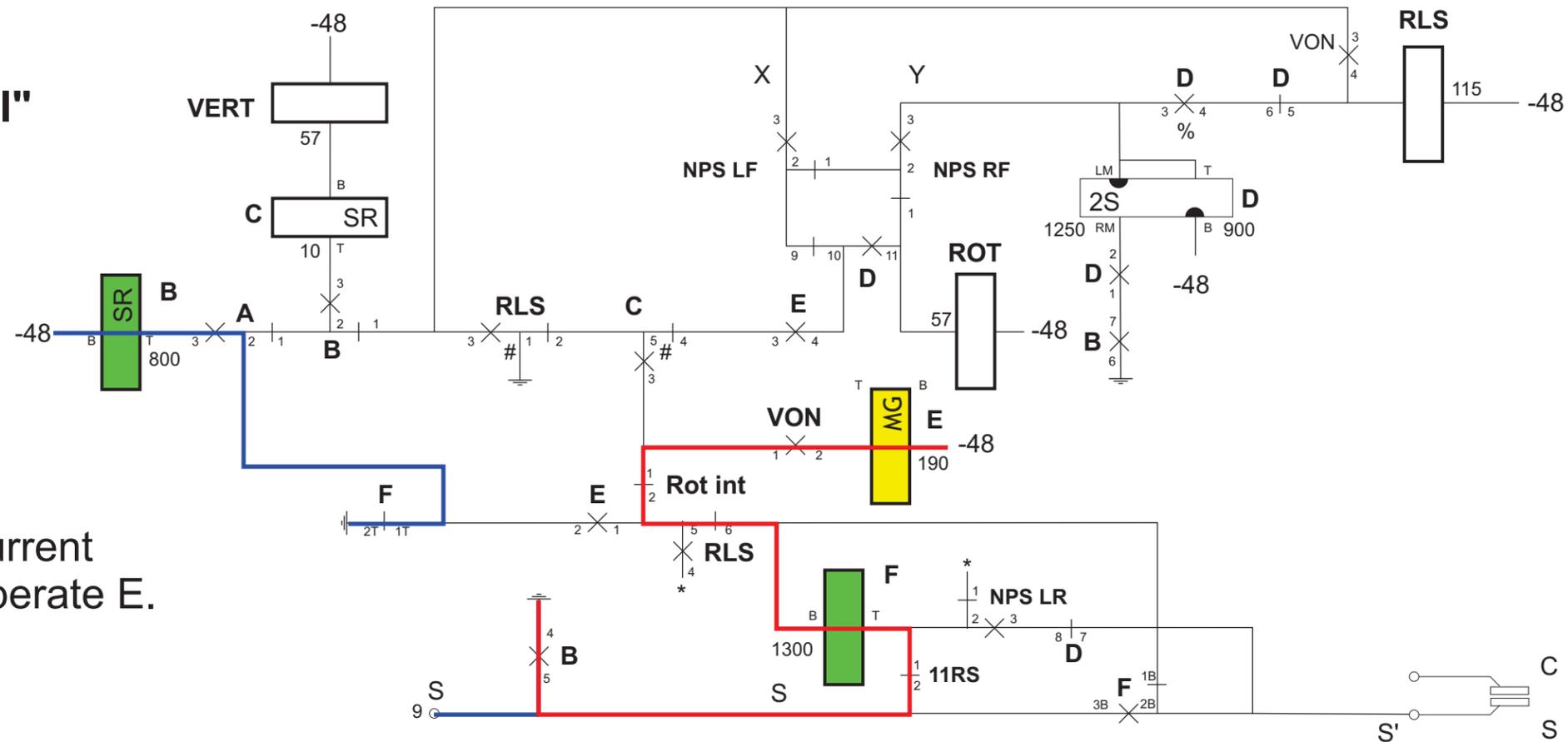
Key to symbols and relay index on last sheet

h. F operates and cuts the connection through to the next stage. F also ties the sleeve from the next stage to the incoming sleeve. The distant switch sends ground back on the outgoing sleeve.

(Continued on next sheet)

Path development for trunk hunting, digit absorption, and level blocking.
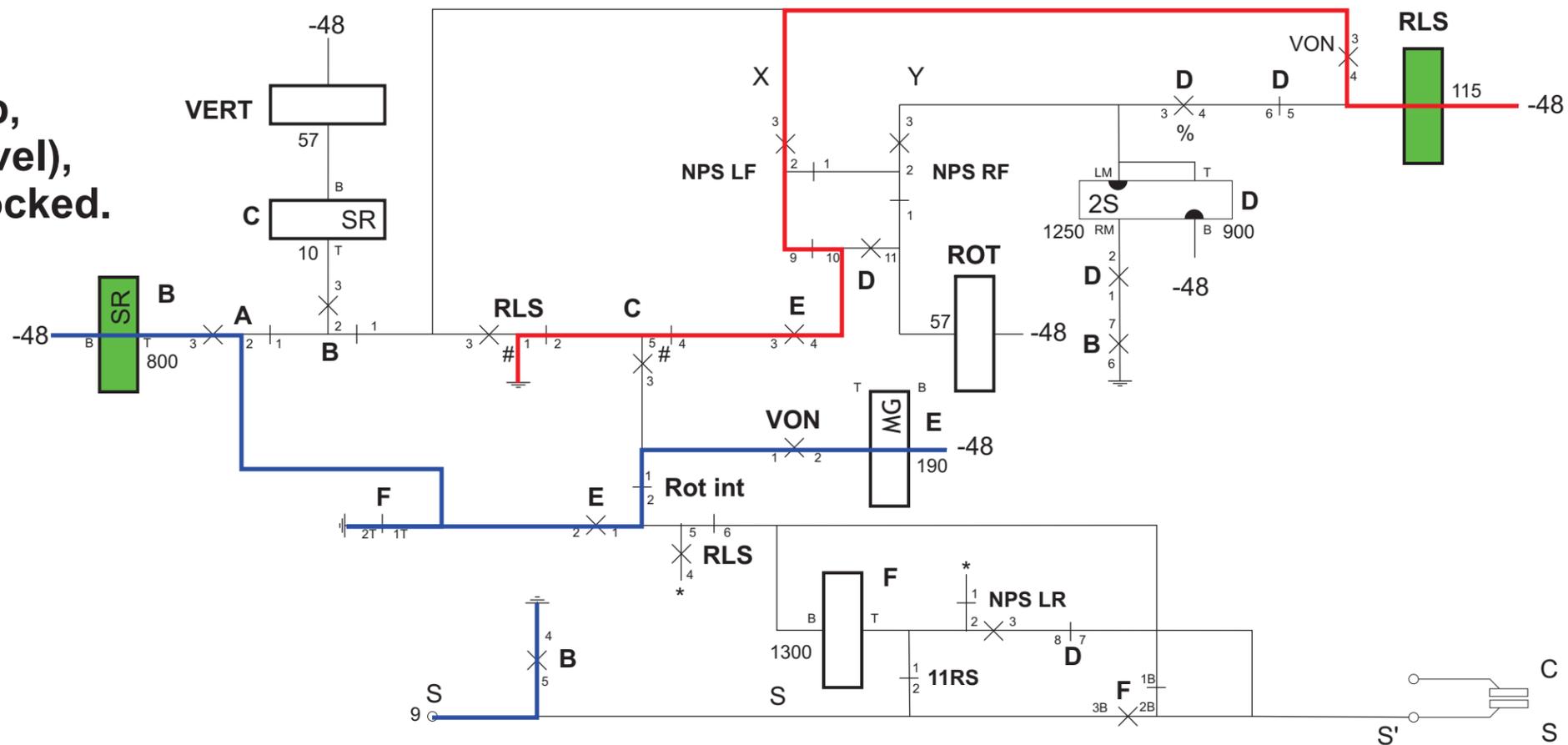
Step-by-step system ED-55242-32 G11 switch Auxiliary intertoll selector (D/A)			
num SXS-SK1052	iss 02	date 2020.01.27	sht 06
proj SXS study	type CDR	dwn DAK	of 01
laboratories dak scientific and technical undertakings Alamogordo, New Mexico			

**Figure 2
No NPS contact operated ("normal" level).**

j. F operated releases A (not seen). A released releases B.

After B releases, only F is operated (through E, which does not operate).

Note: if no idle trunk is found and switch goes to the 11th rotary step, contact 11RS1-2 opens and brings the trunk hunting to a halt.

Other 11RS contacts (not seen) send reorder tone to the calling line.

Key to symbols and relay index on last sheet

Path development for trunk hunting, digit absorption, and level blocking.

Figure 3
NPS LF contact operated ("absorb, do not unlock" level), not currently unlocked.
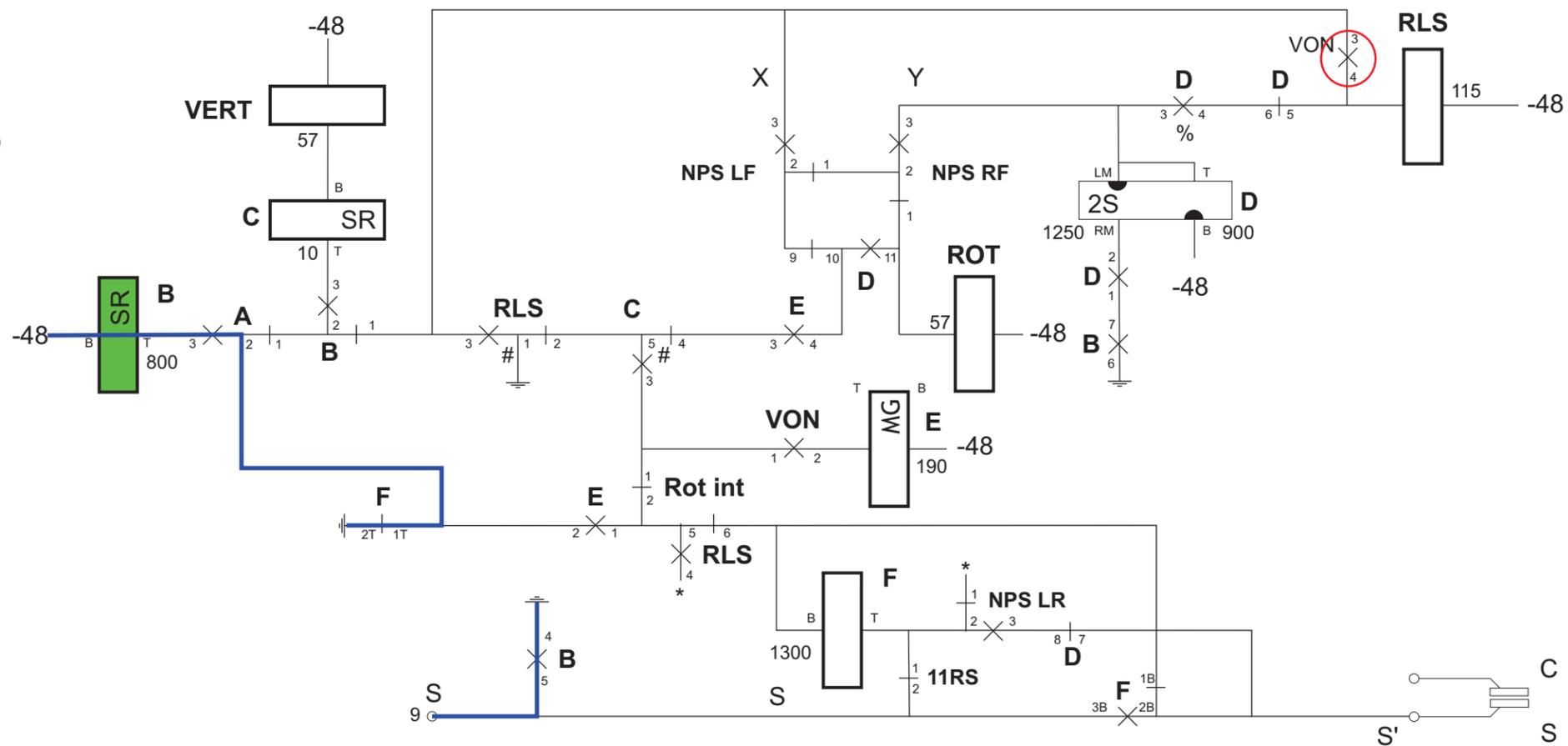
We arrive here from Fig. 1d

a. C released completes path to operate RLS..

b. Shaft returns to home position. VON opens, releasing RLS.

Go to Fig. 1A.

Key to symbols and relay index on last sheet

Path development for trunk hunting, digit absorption, and level blocking.

VERT 57
C SR 10
SR 800
VON RLS 115 -48
X Y D D %
NPS LF NPS RF
2S 1250 900 D
ROT 57 -48
-48
A B
RLS C E D
VON MG E 190 -48
Rot int
RLS
F
NPS LR
1300
11RS
B
S 9
F
S S'
C S

-48
VERT 57
C SR 10
SR 800
VON RLS 115 -48
X Y D D %
NPS LF NPS RF
2S 1250 900 D
ROT 57 -48
-48
A B
RLS C E D
VON MG E 190 -48
Rot int
RLS
F
NPS LR
1300
11RS
B
S 9
F
S S'
C S

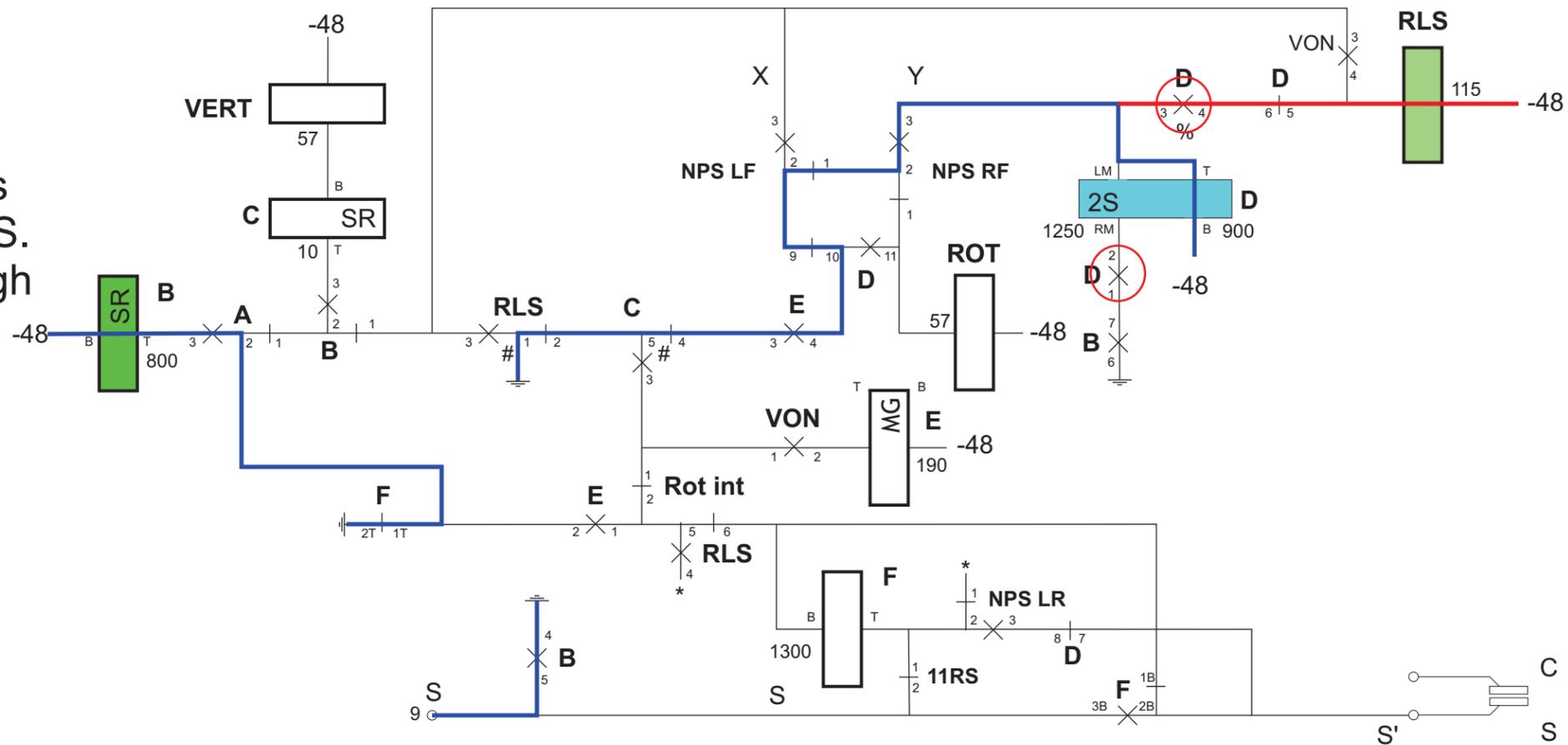**Figure 4**
NPS RF contact operated ("absorb, unlock" level), not currently unlocked.

We arrive here from Fig. 1d

a. C released completes path to D winding T-B. D is energized for 1st step operation.
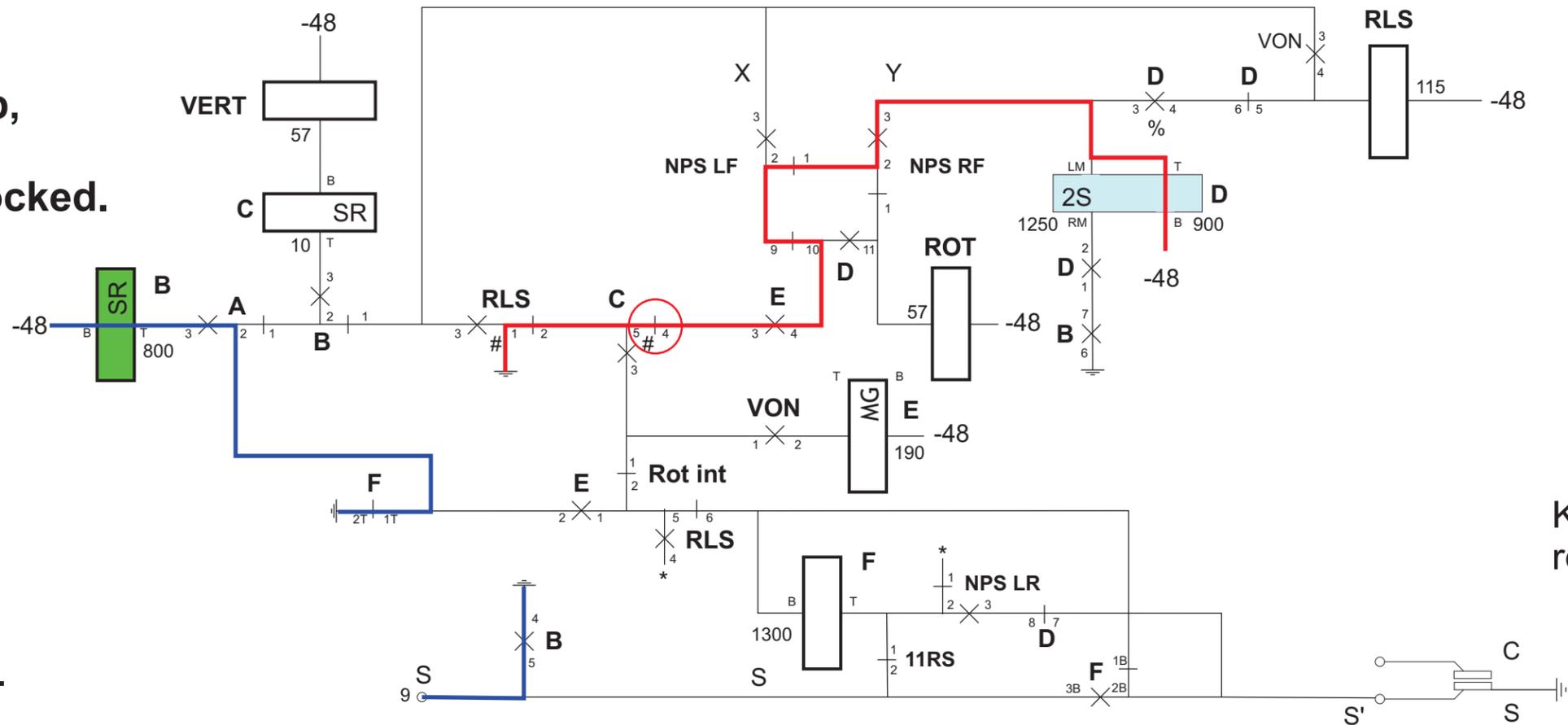
b. D operates to 1st step. That closes path to energize RLS. D closes path through its own LM-RM winding, but that is shorted out for now.

Key to symbols and relay index on last sheet

Path development for trunk hunting, digit absorption, and level blocking.

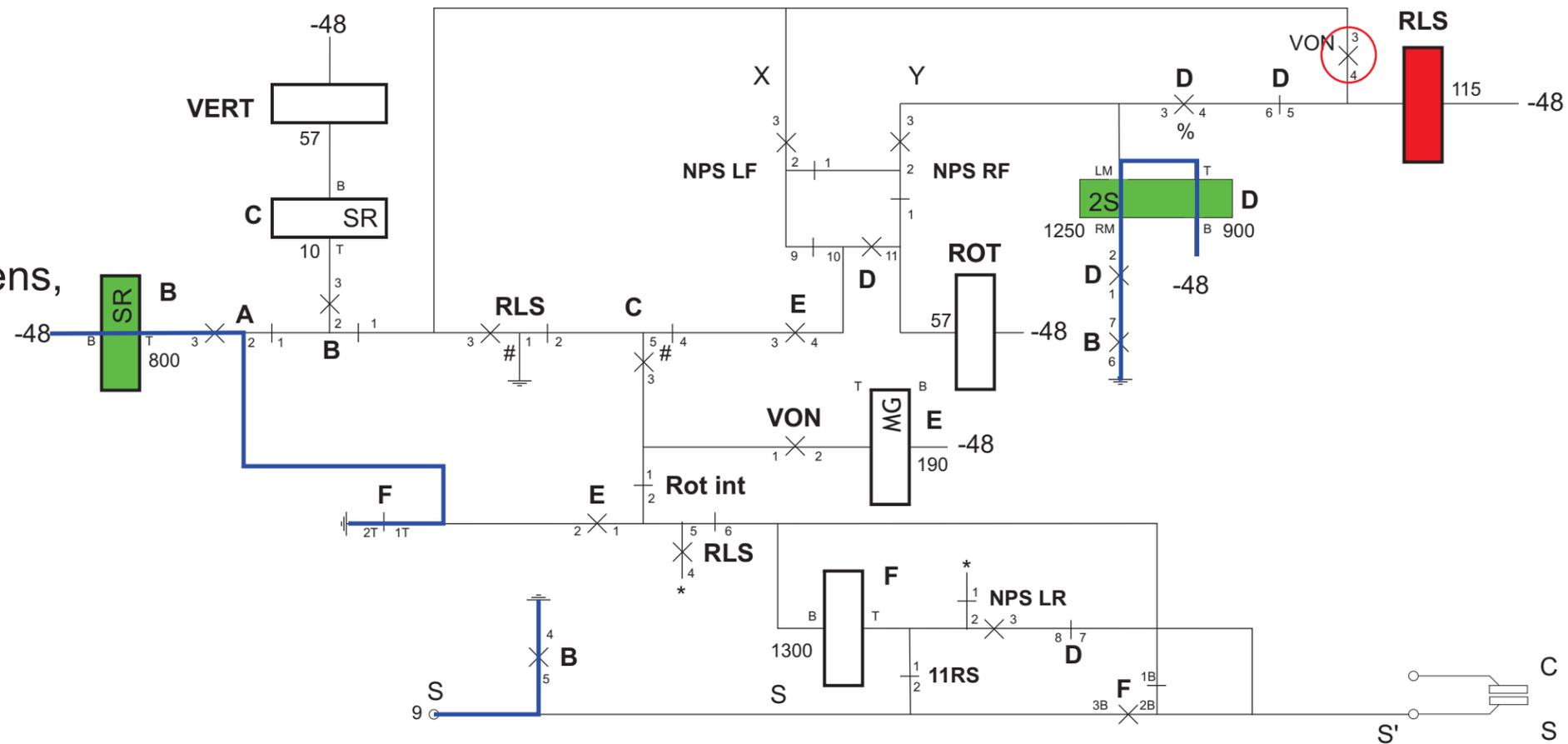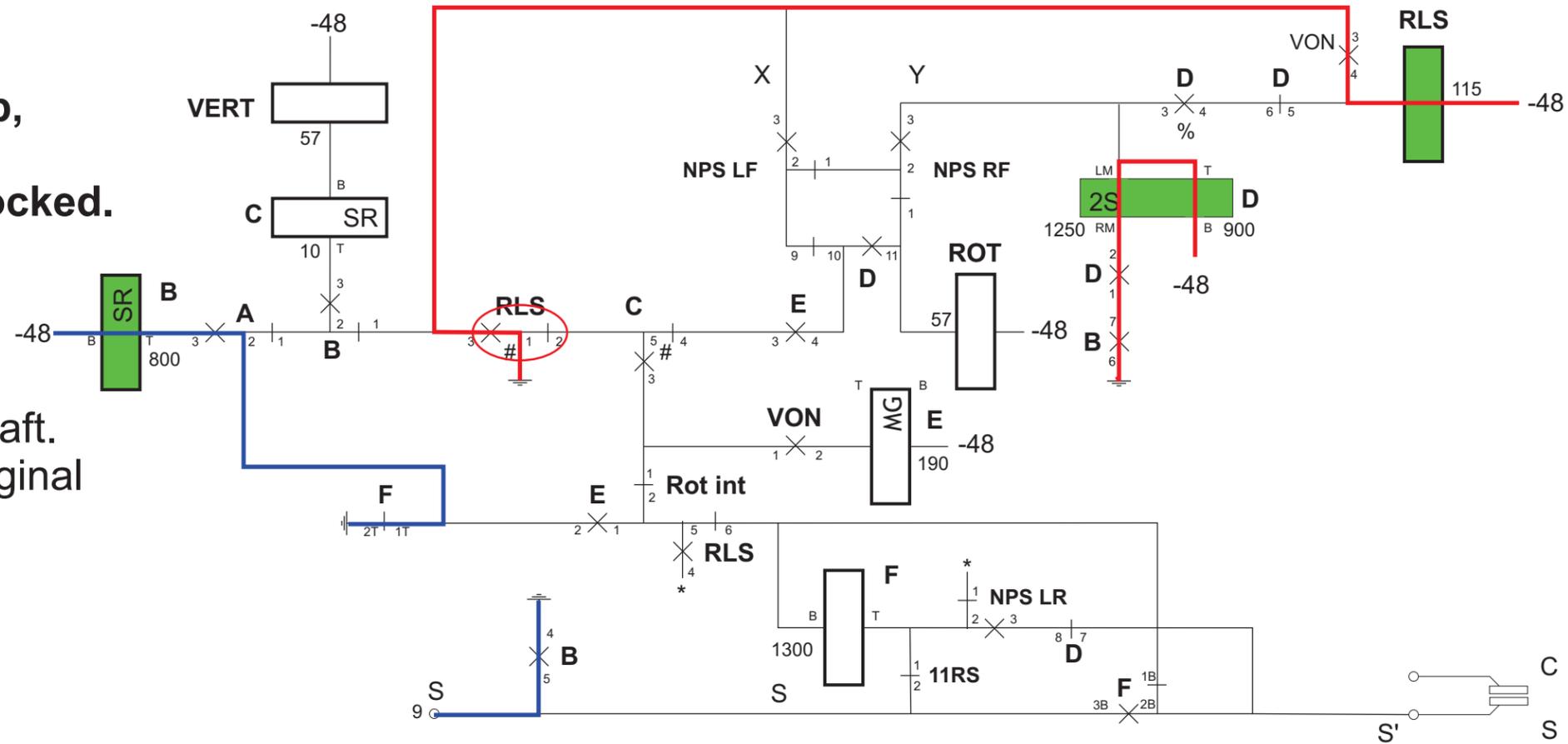|			
Step-by-step system ED-55242-32 G11 switch Auxiliary intertoll selector (D/A)			
num SXS-SK1052	iss 02	date 2020.01.27	sht 09
proj SXS study	type CDR	dwn DAK	of 01
laboratories dak scientific and technical undertakings Alamogordo, New Mexico			

Figure 4
NPS RF contact operated ("absorb, unlock" level), not currently unlocked.

c. RLS operates and locks to ground. RLS releases switch shaft. RLS 1-2 opens original operate path to D.

The path through both windings of D operates D fully. That establishes the "unlocked" mode. (See Fig. 6.)

d. When shaft is home, VON 3-4 opens, releasing RLS.

Then go to Fig. 1A.

Key to symbols and relay index on last sheet

Path development for trunk hunting, digit absorption, and level blocking.

Step-by-step system		
ED-55242-32 G11 switch		
Auxiliary intertoll selector (D/A)		

num SXS-SK1052	iss 02	date 2020.01.27	sht 10
proj SXS study	type CDR	dwn DAK	of 01

laboratories dak
scientific and technical undertakings
Alamogordo, New Mexico

Figure 5
NPS LR contact operated (level blocked), not currently unlocked.
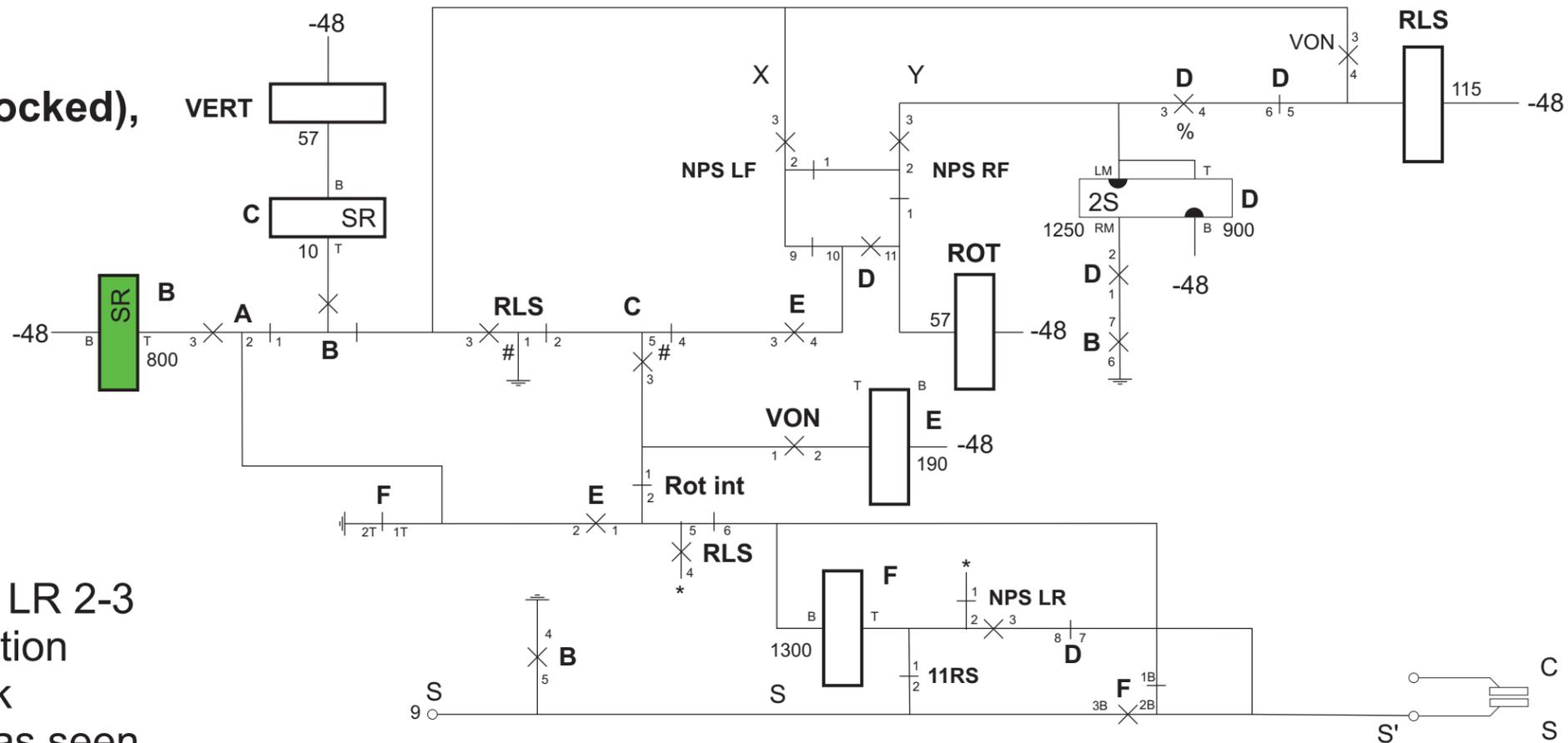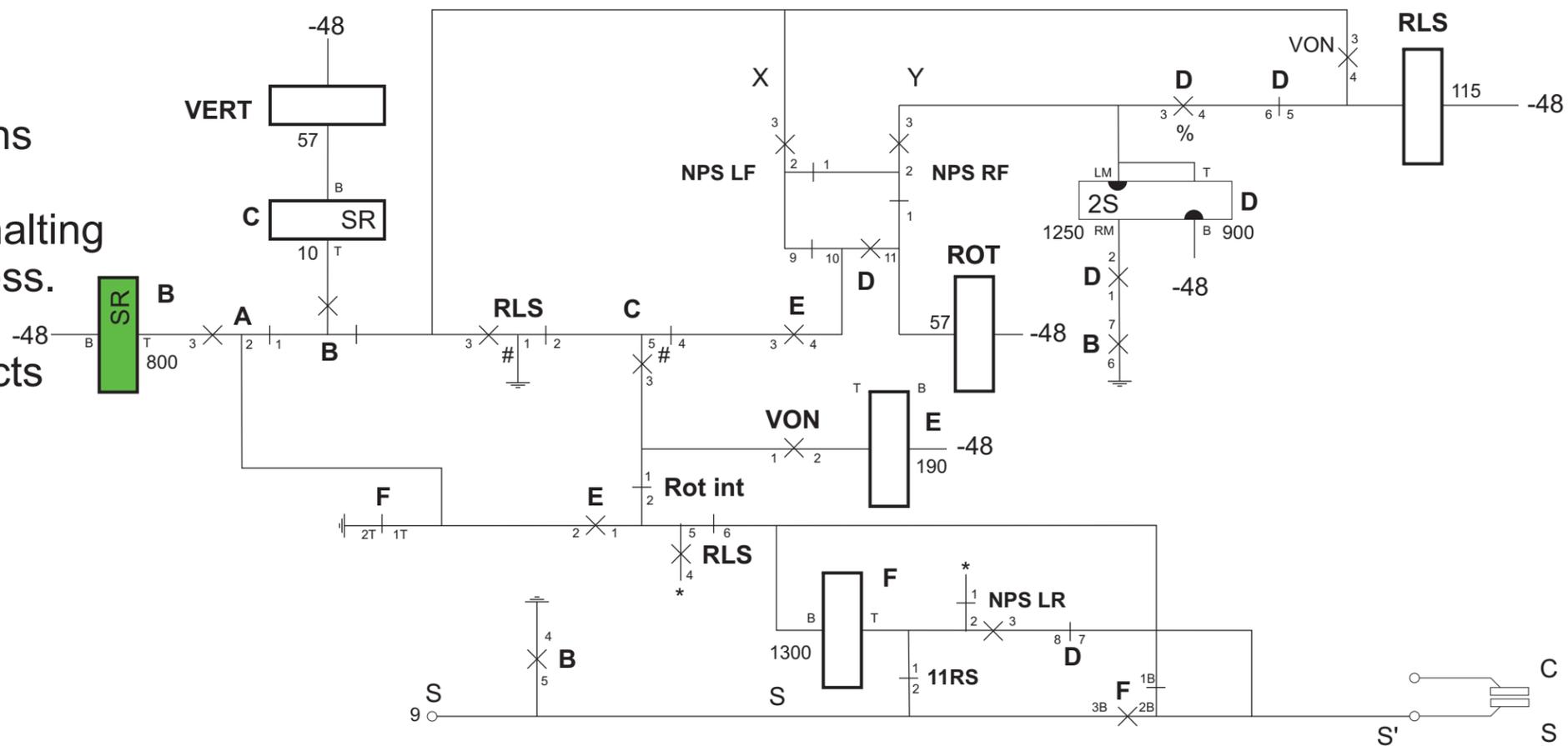
a. C released completes path to operate ROT.

Path through NPS LR 2-3 "fakes" busy condition on all trunks. Trunk hunting proceeds as seen on Figs. 2c-d.

b. When shaft turns to rotary step 11, 11RS 1-2 opens, halting the stepping process.

Other 11RS contacts (not seen) send reorder tone to the calling line.

Path development for trunk hunting, digit absorption, and level blocking.

Step-by-step system
ED-55242-32 G11 switch
Auxiliary intertoll selector (D/A)

num SXS-SK1052	iss 02	date 2020.01.27	sht
proj SXS study	type CDR	dwn DAK	of 01

laboratories dak
scientific and technical undertakings
Alamogordo, New Mexico
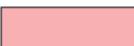
Figure 6
Consequeces of "locked" status

"Locked" status of the digit absorption and level blocking system is brought about when the D relay is operated. In that case, neither type of digit absorption nor level blocking will happen on levels set for those.

• Absorb and do not unlock: See Fig. 3a. With D operated, contact D9-10-11 in effect rearranges the circuit to as seen in Fig. 2a, and operation proceeds as for a "normal" level; the digit is not absorbed.

• Absorb and unlock: see Fig. 4a. With D operated, contact D9-10-11 in effect rearranges the circuit to as seen in Fig. 2a, and operation proceeds as for a "normal" level; the digit is not absorbed.

• Level blocked: See Fig. 5a. With D operated, contact D7-8 opens the path that "fakes" trunk busy at all rotary steps, so operation proceeds as for a "normal" level; the level is not blocked.

Path development for trunk hunting, digit absorption, and level blocking.

Step-by-step system			
ED-55242-32 G11 switch			
Auxiliary intertoll selector (D/A)			
num SXS-SK1052	iss 02	date 2020.01.27	sht 12
proj SXS study	type CDR	dwn DAK	of 01

laboratories dak
scientific and technical undertakings
Alamogordo, New Mexico

Key
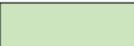
☐ (white)	Relay released
☐ (light green)	Coil energized but relay not yet operated
☐ (green)	Relay operated
☐ (yellow)	Coil energized but current too little to operate (marginal relay)
☐ (light blue)	Coil energized for 1st step operation
☐ (blue)	Relay operated to 1st step
☐ (pink)	Relay de-energized but not yet released
☐ (red)	Just now or recently released
☐ (gray)	Status varies

— (red line) Path newly shown this figure

— (blue line) Path first shown earlier

◯ (red circle) Contact change signficant

Relays with functions*

A Line
B Line slow release
C Vertical stepping in process
D Level unlock memory
E Rotary step
F Cut through

*Only relays seen in this drawing.

Path development for trunk hunting, digit absorption, and level blocking.

Step-by-step system
ED-55242-32 G11 switch
Auxiliary intertoll selector (D/A)

num SXS-SK1052	iss 02	date 2020.01.27	sht 13
proj SXS study	type CDR	dwn DAK	of 01

laboratories dak
scientific and technical undertakings
Alamogordo, New Mexico