

**“PULSE\* 120” – SG-1A**

**ELECTRONIC PRIVATE AUTOMATIC BRANCH EXCHANGE**

**STATION OPERATION AND TESTS**

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PRETEST REQUIREMENTS . . . . .	2	1.01 This section describes the procedures for operation of station sets connected to the PULSE 120 Electronic Private Automatic Branch Exchange (EPABX). The procedures should be performed as operational tests on completion of the EPABX installation prior to the use of the system by the customer.	
3. OPERATING PROCEDURES . . . . .	2	REASON FOR REISSUE	
CHARTS		1.02 This section is reissued to add Chart 14, Chart 15 and correct Chart 3, Step 9.	
1 STATION-TO-STATION CALLS . . . . .	2	2. TESTING	
2 STATION-TO-ATTENDANT CALLS . . . . .	3	2.01 Satisfactory completion of the operating procedures as tests confirms that:	
3 CONSULTATION HOLD, ADD-ON, CALL TRANSFER – INDIVIDUAL . . . . .	4	(a) all apparatus has been installed and connected in accordance with the applicable instructions.	
4 NIGHT SERVICE . . . . .	6	(b) the tests described in Section 553-5011-300 have been completed satisfactorily.	
5 EXECUTIVE RINGBACK . . . . .	7	2.02 In the event that any of the operating procedures cannot be completed as described:	
6 EXECUTIVE OVERRIDE . . . . .	7	(a) Verify that the procedure is applicable to the installation, i.e., that the feature/facility being tested is included in the installation.	
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(b) Ensure that the apparatus items which provide the feature/facility are correctly installed.

(c) Refer to Section 553-5011-500 for information concerning fault-finding and repair.

**PRETEST REQUIREMENTS**

2.03 Ensure that the pretest requirements given in Section 553-5011-300 have been complied with.

**3. OPERATING PROCEDURES**

3.01 Charts 1 through 15, give the sequences of operations to be followed by station users, and the audible signals which should result. The associated console operations and indications are detailed in Section 553-5011-300.

**CHART 1 – STATION-TO-STATION CALLS**

This test must be performed between station lines in a different ten's group to exercise the different switching arrangements in the system. For hotel/motel service, the test must be performed between system numbers in a different ten's group. For correlation between dialed numbers and system numbers, see Section 553-5011-207.

<b>STEP</b>	<b>PROCEDURE</b>	<b>INDICATION</b>
<b>CALLED STATION IDLE</b>		
1	Calling station lifts handset.	Dial tone heard.
2	Calling station dials station number.	Dial tone removed after first pulse, ringing tone heard after the remaining station line number is dialed. Called station rings.
3	Called station answers.	Ringing tone removed, 2-way conversation.
4	Calling and called stations replace handset.	
<b>CALLED STATION BUSY (NOT IN HUNTING GROUP)</b>		
5	Repeat Steps 1 and 2. The call is completed to a known busy station line.	Dial tone silenced after first pulse, busy tone heard after the remaining station line number is dialed.
6	Calling station replaces handset.	

**CHART 1 (Cont) – STATION-TO-STATION CALLS**

Station call within the hunting group will not hunt to station numbers higher or beyond that of the calling number when all the station numbers lower than the calling number are busy.

STEP	PROCEDURE	INDICATION
<b>CALLED STATION BUSY (IN HUNTING GROUP WITH ONE STATION IDLE)</b>		
7	Repeat Steps 1 and 2.	Dial tone silenced after first digit, ringing tone heard after the remaining station line number is dialed.
8	First idle station in hunting group answers.	Ringing tone silenced, 2-way conversation.

**CHART 2 – STATION-TO-ATTENDANT CALLS**

When a QCN102A console is connected to the EPABX the Dial 0 Test is repeated at each station to verify that the corresponding lamp lights on the busy lamp field panel.

STEP	PROCEDURE	INDICATION
<b>DIAL 0 (CONSOLE IDLE)</b>		
1	Calling station lifts handset.	Dial tone heard.
2	Calling station dials "0".	Dial tone removed, ringing tone heard. Tone ringing, indicator lamps lit at console.
3	Attendant answers.	Ringing tone removed, 2-way conversation.
4	Calling station replaces handset.	

**CHART 2 (Cont) – STATION-TO-ATTENDANT CALLS**

STEP	PROCEDURE	INDICATION
<b>CALL TRANSFER BY ATTENDANT (WITHOUT CALL TRANSFER – INDIVIDUAL)</b>		
5	Incoming trunk call completed to station by attendant.	Ringing at station.
6	Called station lifts handset. Attendant releases.	Ringing silenced, 2-way conversation. Call transfer required.
7	Called station flashes switchhook.	Tone ringing, indicator lamps lit at console. Ringing tone heard at station.
8	Attendant answers.	Ringing tone silenced, 3-way conversation. (Trunk held, 2-way conversation when secrecy provided.)
9	Called station replaces handset.	

**CHART 3 – CONSULTATION HOLD, ADD-ON, CALL TRANSFER – INDIVIDUAL**

STEP	PROCEDURE	INDICATION
<b>CONSULTATION HOLD</b>		
1	Incoming or outgoing CO trunk call established to station. (On outgoing calls, wait 13 seconds before proceeding to Step 2.)	2-way conversation between trunks and station parties.
2	Calling station flashes switchhook.	Trunk party held and excluded from connection. Dial tone heard by calling station.
3	Calling station dials second station number.	Dial tone silenced, ringing tone heard.

CHART 3 (Cont) – CONSULTATION HOLD, ADD-ON, CALL TRANSFER – INDIVIDUAL		
STEP	PROCEDURE	INDICATION
4	Called station answers.	Ringing tone silenced, 2-way conversation. Trunk party excluded from conversation.
5	Called station releases.	2-way conversation re-established with trunk party.
<b>ADD-ON</b>		
6	Repeat Steps 1, 2, 3, and 4.	Ringing tone silenced, 2-way conversation with second called station.
7	Calling station flashes switchhook.	3-way conversation.
<b>CALL TRANSFER – INDIVIDUAL</b>		
8	Repeat Steps 1 and 2.	
9	Calling station dials O.	Ringing tone and lamp indications appear at console.
	<i>or</i>	
	Calling station dials called station.	Dial tone silenced, ringing tone heard.
10	(a) Calling station releases.	Trunk hears ringing tone.
	(b) Called station answers.	Ringing tone silenced, 2-way conversation.
	<i>or</i>	<i>or</i>
	(a) Called station answers.	Ringing tone silenced, 2-way conversation, calling station and called station.
	(b) Calling station releases.	External party connected to called station, 2-way conversation.
	Station(s) and trunk party release.	

**CHART 4 – NIGHT SERVICE**

A station assigned to a flexible night service connection may originate and receive calls through its assigned trunk circuit, but it does not have access to station lines and other system features.

STEP	PROCEDURE	INDICATION
<b>FLEXIBLE NIGHT SERVICE (ORIGINATE)</b>		
1	Calling station lifts handset	CO dial tone heard.
2	Call station dials out on CO trunk.	Dial tone removed, CO ringing tone heard.
3	Called subscriber answers.	Ringing tone removed, 2-way conversation.
<b>FLEXIBLE NIGHT SERVICE (RECEIVE)</b>		
4	Incoming call from CO.	Assigned station rings.
5	Assigned station answers.	Ringing silenced, 2-way conversation.
<b>TRUNK ANSWER FROM ANY STATION (TAFAS)</b>		
6	Incoming Call from CO.	TAFAS common bell rings.
7	Any station (except fully restricted station) lifts handset.	Dial tone heard from EPABX and TAFAS ringing continues.
8	Station dials access code "89".	Ringing silenced, 2-way conversation.
9	Perform Call Transfer – Individual if available in system. (See Chart 3.)	As described.

**CHART 5 – EXECUTIVE RINGBACK**

<b>STEP</b>	<b>PROCEDURE</b>	<b>INDICATION</b>
1	Calling station lifts handset.	Dial tone heard.
2	Calling station dials desired station number.	Dial tone silenced, busy tone heard.
3	Calling station replaces handset.	
4	Calling station lifts handset.	Dial tone heard.
5	Calling station dials access code “80”, followed by station number.	Calling and called station hear warning tone.
6	Calling station replaces handset.	
7	Called station replaces handset.	Calling and called stations ring.
8	Calling and called station answer.	Ringing silenced, 2-way conversation.

**CHART 6 – EXECUTIVE OVERRIDE**

The executive override feature is disabled when the called station is denied the warning tone application.

<b>STEP</b>	<b>PROCEDURE</b>	<b>INDICATION</b>
1	Station lifts handset.	Dial tone heard.
2	Station dials station number.	Dial tone silenced, busy tone heard.
3	Station replaces handset.	
4	Station lifts handset.	Dial tone heard.
5	Station dials access code “88”, followed by station number.	Warning tone heard by called station and connected party, 3-way conversation. Warning tone is repeated every 13 to 19 seconds.

**CHART 7 – ACCESS TO CO TRUNKS FROM EPABX STATIONS AND TIE TRUNKS**

This test ensures that the appropriate response is received by the station when attempting to select restricted features. Incoming tie trunk operations are similar to those for stations, once dial tone is heard. Erroneous dialing will result in overflow tone or attendant intercept as applicable to the EPABX configuration.

STEP	PROCEDURE	INDICATION
<b>UNRESTRICTED STATION-TO-CO CALL</b>		
1	Station lifts handset.	Dial tone heard.
2	Station dials "9".	Dial tone silenced, CO dial tone heard.
3	Station completes call on exchange network.	Ringing or busy tone heard, as appropriate.
<b>SEMIRESTRICTED STATION-TO-CO CALL</b>		
4	Station lifts handset.	Dial tone heard.
5	Station dials "0".	Dial tone silenced, ringing tone heard.
6	Attendant answers.	Ringing tone silenced, station requests access to exchange network.
7	(a) Attendant dials "9".  (b) Station completes call to CO number (dialing must commence within 15 seconds, which is the time-out period).  <i>or</i>  (a) Attendant dials "9", dials toll access and desired number.	CO dial tone heard, attendant releases.          Ringing, busy or overflow tone heard, as appropriate.
<b>TOLL-DENIED STATION-TO-CO CALL</b>		
8	Station lifts handset.	Dial tone heard.
9	Station dials "9".	Dial tone silenced, CO dial tone heard.



**CHART 7 (Cont) – ACCESS TO CO TRUNKS FROM EPABX STATIONS AND TIE TRUNKS**

STEP	PROCEDURE	INDICATION
10	Station dials toll access code "1" or "0".	Call intercepted by EPABX attendant or station hears overflow tone. Station can access toll network through EPABX attendant, dial "0". See Steps 5, 6, and 7.
<b>FULLY RESTRICTED STATION</b>		
11	Station lifts handset.	Dial tone heard.
12	Station dials "9".	Dial tone silenced, overflow tone heard.
13	Station replaces handset.	
14	Station lifts handset.	Dial tone heard.
15	Station dials "0".	Dial tone silenced, ringing tone heard, (overflow tone heard if system is operating in the night service mode).
16	Attendant answers.	Ringing tone silenced, station requests access to exchange network.
17	Attendant refuses request. Proceed to Step 19.	Fully restricted station identified by incoming call lamp (FR) on the console.
<i>or</i>		
	Attendant dials "9".	Attendant and station hear overflow tone.
18	Attendant depresses RLS DEST key, and refuses request.	Overflow tone silenced.
19	Station replaces handset.	

**CHART 8 – ACCESS TO MISCELLANEOUS TRUNKS, PAGING, DICTATION  
FROM EPABX STATIONS AND TIE TRUNKS**

Operation for incoming tie trunk is as for station once EPABX dial tone is heard.

For 2-digit station line numbering system, the miscellaneous trunks are assigned to access codes 81 through 87. For 3-digit station line numbering system (except in hotel/motel service) the miscellaneous trunks are selected by dialing access codes 81 through 87 or 1, 82, 83, 4, 5, 6, and 7. In hotel/motel service, the miscellaneous trunks are assigned to access codes 81 through 86, and 8 (the Long Distance Operator).

STEP	PROCEDURE	INDICATION
<b>STATION-TO-FX, -CCSA, OR -TIE TRUNK CALL</b>		
1	Station lifts handset.	Dial tone heard.
2	Station dials assigned EPABX access code	Remote PBX dial tone may or may not be heard.
3	Station completes call to remote PBX number.	Ringing, busy or overflow tone heard from remote end.
<b>STATION-TO-PAGING TRUNK CALL</b>		
4	Station lifts handset.	Dial tone heard.
5	Station dials assigned EPABX access code	Talking connection to paging facility, or busy tone heard.
<b>STATION-TO-DIAL DICTATION TRUNK CALL</b>		
6	Station lifts handset.	Dial tone heard.
7	Stations dials assigned EPABX access code	Dictation dial tone heard.

<b>CHART 9 – POWER FAIL TRANSFER (PFT)</b>		
Station lines (2)10 through (2)19 are connected to trunks 1 through 10 respectively.		
<b>STEP</b>	<b>PROCEDURE</b>	<b>INDICATION</b>
<b>PFT STATION (ORIGINATE)</b>		
1	Calling station lifts handset (loop start trunk).	CO dial tone heard.
	<i>or</i>	
	Calling station lifts handset and presses ground start button (ground start trunk).	CO dial tone heard.
2	PFT station dials out on CO trunk.	Dial tone removed, CO ringing tone heard.
3	Called subscriber answers.	Ringing tone removed, 2-way conversation.
<b>PFT STATION (RECEIVE)</b>		
4	Incoming call from CO.	PFT station rings.
5	PFT station answers.	Ringing silenced, 2-way conversation.

<b>CHART 10 – “DIGITONE” DIALING</b>		
<b>STEP</b>	<b>PROCEDURE</b>	<b>INDICATION</b>
<b>DIGITONE STATION-TO-STATION CALL</b>		
1	DIGITONE station lifts handset.	Dial tone heard.
2	DIGITONE station dials any assigned station number.	Dial tone silenced, ringing tone heard.
3	Calling station lifts handset.	Ringing silenced, 2-way conversation.

<b>CHART 10 (Cont) – “DIGITONE” DIALING</b>		
<b>STEP</b>	<b>PROCEDURE</b>	<b>INDICATION</b>
<b>DIGITONE TO DIAL PULSE CONVERSION</b>		
4	DIGITONE station lifts handset.	Dial tone heard.
5	DIGITONE station dials “9”.	EPABX dial tone replaced by the CO dial tone.
6	DIGITONE station completes call on exchange network through dial pulse trunk.	Ringling or busy tone heard, as appropriate.
7	Distant party answers.	2-way conversation.
8	Both parties disconnect.	

<b>CHART 11 – WARNING TONE APPLICATION</b>		
The executive override, barge-in, and busy verification features are automatically deactivated when the called station is denied warning tone application.		
<b>STEP</b>	<b>PROCEDURE</b>	<b>INDICATION</b>
1	Calling station lifts handset.	Dial tone heard.
2	Calling station dials desired station number.	Dial tone silenced, busy tone heard.
3	Calling station replaces handset.	
4	Calling station lifts handset.	Dial tone heard.
5	Calling station dials access code “80”, followed by station number.	Calling and called station hear warning tone.
6	Calling station replaces handset.	

**CHART 11 (Cont) – WARNING TONE APPLICATION**

STEP	PROCEDURE	INDICATION
7	Called station terminates original call and replaces handset.	Calling and called stations ring.
8	Calling and called station answer.	Ringling silenced, 2-way conversation.

**CHART 12 – CODE RESTRICTION**

Both the allowed and denied part of the code restriction chart must be completed to fully exercise the code restriction feature.

*Note:* The programmed allowed codes may be tested without incurring toll charges to the subscriber, by completing the following trunk circuit rearrangements:

- (a) Select the highest numbered trunk position in the EPABX as the test trunk. This will permit immediate selection of the test trunk since trunk hunting is from the high to the low numbered trunk positions.
- (b) Program the test trunk as loop start so that no exchange network responses are required by the EPABX.
- (c) Disconnect the trunk wiring to the exchange cable network to prevent access to the exchange and toll networks during test. Under these circumstances the indications from the network shown in the chart, will not be apparent. If overflow tone is heard at any step during the test, this indicates a faulty code allowed feature.

STEP	PROCEDURE	INDICATION
<b>CODE ALLOWED</b>		
1	Station lifts handset.	EPABX dial tone heard.
2	Station dials 9.	EPABX dial tone silenced. Exchange network dial tone heard.
3	Station dials toll access code, e.g., 1 or 112.	No indications are heard.

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<b>CHART 12 (Cont) – CODE RESTRICTION</b>		
<b>STEP</b>	<b>PROCEDURE</b>	<b>INDICATION</b>
4	Station dials area code. Ignore this step if area code need not be dialed.	No indications are heard.
5	Station dials exchange code.	No indications are heard.
6	Station completes call through exchange network.	Ringing tone heard after the exchange network is dialed.
7	Called party answers.	Ringing tone removed, 2-way conversion.
8	On completion of the call calling station and called party disconnect.	
<b>CODE DENIED</b>		
9	Station lifts handset.	EPABX dial tone heard.
10	Station dials 9.	EPABX dial tone silenced. Exchange network dial tone heard.
11	Station dials toll access code, e.g., 1 or 112.	If access code is denied overflow tone is heard or the EPABX attendant intercepts the call. Proceed to Step 12 when toll access code is allowed.
12	Station dial area code.	If area code is denied overflow tone is heard or the EPABX attendant intercepts the call. Proceed to Step 13 when area code is allowed.
13	Station dials exchange code.	Overflow tone is heard or the EPABX attendant intercepts the call when the denied exchange code is dialed.
14	Insert trunk circuit packs and reconnect trunk wiring to the exchange network cable.	

**CHART 13 – HOTEL/MOTEL MESSAGE REGISTRATION**

This test must be performed on system numbers in a different ten's group to exercise the message register arrangement. For dialed numbers versus system numbers, see Section 553-5011-207.

STEP	PROCEDURE	INDICATION
<b>MESSAGE REGISTRATION CONTROL CARD SWITCH IN "SINGLE PULSE" POSITION</b>		
1	Unrestricted station lifts handset.	Dial tone heard.
2	Station dials "9".	CO dial tone heard.
3	Station dials Hotel/Motel number.	Attendant console signals.
4	Attendant answers.	Message register, associated with station number, advances by one count.
<b>MESSAGE REGISTRATION CONTROL IN "REPETITIVE" POSITION</b>		
1	Unrestricted station lifts handset.	Dial tone heard.
2	Station dials "9".	CO dial tone heard.
3	Station dials Area Code requiring multiple units followed by a number.	Terminating station rings.
4	Terminating station goes off hook.	Message register advances by one count.
5	Terminating station stays off hook.	Message register advances one count; under CO control one count is sufficient to checkout this operation.

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CHART 14 -- CALL PICKUP		
STEP	PROCEDURE	INDICATION
<b>DIRECTED PICKUP (STATION-TO-STATION)</b>		
1	Calling station A lifts handset.	Dial tone heard.
2	Calling station A dials station B.	Dial tone removed after first pulse, ringing tone heard after the remaining station line numbers are dialed. Called station B rings.
3	Pickup station C lifts handset.	Dial tone heard.
4	Pickup station C dials access code "42" followed by the number of station B.	Ringing silenced, 2-way conversation between station C and station A.
5	Stations A and C replace handsets.	
<b>DIRECTED PICKUP (CO TRUNK-TO-STATION)</b>		
6	Incoming call from CO.	Tone ringer sounds on console.
7	Attendant answers.	Tone ringer silenced, 2-way conversation.
8	Attendant dials station A.	Attendant and trunk calling party hear ringing tone. Station A rings.
9	Attendant releases.	
10	Pickup station B lifts handset. (Station B can be fully restricted or semi-restricted.)	Dial tone heard.
11	Pickup station B dials access code "42" followed by the number of station A.	Ringing silenced, 2-way conversation between station B and trunk calling party.
12	Station B replaces handset.	



<b>CHART 14 (Cont) – CALL PICKUP</b>		
<b>STEP</b>	<b>PROCEDURE</b>	<b>INDICATION</b>
<b>GROUP PICKUP (STATION TO-STATION)</b>		
13	Calling station A lifts handset.	Dial tone heard.
14	Calling station A dials station B.	Dial tone removed after first pulse, ringing tone heard after the remaining station line numbers are dialed. Called station B rings.
15	Station C (in the same call pickup group as station B) lifts handset.	Dial tone heard.
16	Pickup station C dials access code "41".	Ringing silenced, 2-way conversation between station C and station A.
17	Stations A and C replace handsets.	

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CHART 15 – CALL FORWARD		
STEP	PROCEDURE	INDICATION
<b>REQUESTS</b>		
1	Station A lifts handset.	Dial tone heard.
2	Station A dials access code “43” followed by the number of station B.	Dial tone heard after dialing “43”. Burst of miscellaneous tone heard after all station numbers for station B are dialed.
3	Station A replaces handset.	
<b>CALL PROCESSING</b>		
4	Station C lifts handset.	Dial tone heard.
5	Station C dials station A.	Station B rings.
6	Station B lifts handset.	Ringling silenced, 2-way conversation between station B and station C.
7	Stations B and C replace handsets.	
8	Station C lifts handset.	Dial tone heard.
9	Station C dials access code “43” followed by the number of station A.	Overflow tone heard after all station numbers for station A are dialed.
10	Station C replaces handset.	
11	Station C lifts handset.	Dial tone heard.
12	Station C dials access code “43” followed by the number of station B.	Dial tone heard after dialing “43”. Burst of miscellaneous tone heard after all station numbers for station B are dialed.
13	Station C replaces handset.	
14	Station A dials station C.	Station B rings.
15	Station B lifts handset.	Ringling silenced, 2-way conversation between station A and station B.
16	Stations A and B replace handsets.	

<b>CHART 15 (Cont) – CALL FORWARD</b>		
<b>STEP</b>	<b>PROCEDURE</b>	<b>INDICATION</b>
<b>CANCELLATION</b>		
17	Station A lifts handset.	<b>Dial tone heard.</b>
18	Station A dials access code "44".	<b>Burst of miscellaneous tone is heard.</b>
19	Station C lifts handset.	<b>Dial tone heard.</b>
20	Station C dials access code "44".	<b>Burst of miscellaneous tone is heard.</b>
21	Station C lifts handset.	<b>Dial tone heard.</b>
22	Station C dials station A.	<b>Station A rings.</b>
23	Station A lifts handset.	<b>Ringling silenced, 2-way conversation between station A and station C.</b>
24	Stations A and C replace handsets.	
25	Station A lifts handset.	<b>Dial tone heard.</b>
26	Station A dials station C.	<b>Station C rings.</b>
27	Station C lifts handset.	<b>Ringling silenced, 2-way conversation between station A and station C.</b>
28	Stations C and A replace handsets.	