TIMING TESTS

CONTENTS

---

1. GENERAL INFORMATION

1.1 This section describes the timing tests to be performed on the following ANI circuits:

SD-32246-01	Line Verification Circuit
SD-32315-01	Automatic Trunk Test Circuit
SD-95810-01	Identifier Circuit
SD-95811-01	Outpulser Circuit
SD-95816-01	Trouble Ticketer Circuit
SD-95817-01	Permanent Signal Identification Circuit
SD-95823-01	Miscellaneous Circuit
SD-95828-01	Automatic Trunk Test Circuit

1.2 Sequence of Tests - The circuits tested per this section may be tested in any convenient sequence. However, the successive steps required for testing any one circuit must be followed as given in this section.

2.. RECORDS AND REQUIREMENTS

2.1 Records: Results of these tests shall be recorded on the Test Trouble Record, SD-97-1313 and summarized on Tests Other Than General and SD-97-1315.

2.2 Requirements: Tests and adjustments covered in this section are based on the timing requirement tables of the schematic drawings.

3. TEST EQUIPMENT

3.1 Test Sets

Note	Amt	ITE or Code	Description
T	1	J24753A or	Timing Test Set
R	1	4325	Timing Test Set
	1	R-3314	Stop, Watch

T - Telephone Company maintenance equipment.

R - Requisition only if TELCo maintenance set is not available.

3.2 Cords

Amt	ITE	Lgth	Cdrs	One End	Other End	With ITE
1	9600	6'	3	310 Plug	310 Plug	4325
1	9303	6'	3	310 Plug	360A,360B 360C Tools	4325
1	9447	6'	1	ITE-4085 Clip	Alligator Clip	4025

3.3 Accessories: Supplied with Timing Test Set.

4. TEST SETUP

4.1 ITE-4325 or J24753A Timing Test Set

4.11 Operate MCF key to NORM.

4.12 With BAT key off, meter should read zero. If not, set needle to zero with the adjusting screw on meter.

4.13 Connect -48 volt central office battery and ground to the set using an ITE-9600 cord.

4.14 Operate BAT key to ON and allow test set to warm up for 30 seconds.

4.15 Adjust the meter to read zero by means of the ADJ-0 potentiometer.

5. LINE VERIFICATION CIRCUIT (SD-32246-01)

5.1 Outpulser Seizure Timing

5.11 Prepare the Timing Test Set as described in Paragraph 4.

5.12 On the Timing Test Set, operate SEND key to MK, REC switch to GRD. -O.C. and MIL SEC switch to 0-5000 positions.

5.13 Hold TST key to CAL and adjust CAL potentiometer until meter reads 100. Release TST key.

5.14 Plug the 310 Plug of the ITE-0303 cord into the TST 1 jack.

5.15 Block relay ST operated. If interval cross connections are installed, block nonoperated relay ST and connect ground to contact 4F and ST relay with and ITE-9547 cord.

5.16 Connect R (red) lead of ITE-9303 cord to U (TT1) relay, W (White) lead to terminal 38 on T.S.H. Connect BK (black) lead to ground.

5.17 Operate and hold TST key to OPR position and read meter when needle stops. Meter reading should be between 40 minimum and 78 maximum (2000-3900 milliseconds).

5.18 Release TST key and unblock relay ST.

5.2 Indicator Display Timing

5.21 Reblock relay ST operated.

5.22 Move R (red) lead of ITE-9303 cord to U (RS) relay.

5.23 Hold TST key to CAL and adjust CAL potentiometer until meter reads 10. Release TST key.

5.24 Operate and hold TST key to OPR and read meter when needle stops. Meter reading should be between 31.2 minimum and 60 maximum. (15.6-30 seconds).

5.25 Release TST key, and unblock relay ST.

5.26 Remove all test connections and restore all keys to normal.

6. AUTOMATIC TRUNK TEST CIRCUIT (SD-32315-01)

6.1 Timer 1

6.11 Block relay ST operated. Block relay STA non-operated and start timing with the R-3314 Stop Watch.

6.12 Observe relay ETM1 and stop timing when it operates. Relay ETM1 should operate in a minimum of 55 seconds and a maximum of 65 seconds.

6.13 Unblock relay ST and remove block from relay STA.

6.2 Timer 2

6.201 Prepare the Timing Test Set as described in Paragraph 4.

6.202 On the Timing Test Set, operate SEND key to MK, REC switch to O.C.-GRD, and MIL SEC switch to 0-500 position.

6.203 Hold TST key to CAL and adjust CAL potentiometer until meter reads 100.

6.204 Plug the 310 plug of ITE-9303 cord into TST1 jack.

6.205 Connect R (red) lead of ITE-9303 cord to 25 of (ST2) relay and W (white) lead to 11 of (ETM2) relay, connect BK (black) lead to ground.

6.206 Operate and hold TST key to OPR and read meter when needle stops. Meter reading should be between 89 minimum and 92 maximum. (445-465 milliseconds). Release TST key.

6.207 If the requirement of Paragraph 6.205 is not met, repeat the test several times and adjust (T2A) potentiometer to meet the requirement.

6.208 Block operated relay (SP2).

6.209 Operate MIL SEC switch to 0-5000 position.

6.210 Hold TST key to CAL and adjust CAL potentiometer until meter reads 50.

6.211 Operate and hold TST key to OPR and read meter when needle stops. Meter reading should be between 60 and 82 (6-8.2 seconds). Release TST key.

6.212 Unblock relay (SP2).

6.213. Block relay (GRF) operated.

6.214 Operate and hold TST key to OPR and read meter when needle stops. Meter reading should be between 60 and 82 (6-8.2 seconds). Release TST key, remove the blocking tools.

6.215 Unblock relay (GRF).

6.3 Timer 3

6.31 Move R (red) lead of ITE-9303 cord to 31 of (ST3) relay and W (white) lead to 2 of (ETM3) relay.

6.32 Block relay (1DGA) operated.

6.33 Operate MIL SEC switch to 0-500 position.

6.34 Hold TST key to CAL and adjust CAL potentiometer until meter reads 100.

6.35 Operate and hold TST KET TO OPR and read meter when needle stops. Meter reading should be between 89 minimum and 93 maximum with XX option (445-465 milliseconds). Release TST key, remove the blocking tools.

6.36 If the requirement of Paragraph 6.35 is not met, repeat the test several times and adjust the T3B potentiometer to meet the requirement.

6.37 With option WQ, block relay CCB operated. Operate and hold TST KEY TO OPR and read meter when needle stops. Meter reading should be between 38 minimum and 42 maximum (1900-2100 milliseconds).

6.38 If the requirement of paragraph 6.37 is not met, adjust the T3C potentiometer. Release the TST KEY and remove the blocking tools.

6.4 Timer 4 (AI Option)

6.401 Move R (red) lead of ITE-9303 cord to 15(ST4) relay and W (white) lead to U (ET4).

6.402 Block relays ET4 and RBA non-operated. Insulate contact 9 of RBA relay with XP option and block relay RBK1 operated. With WQ option, block relay RPK3 operated.

6.403 Operate MIL SEC switch to 0-100 position and REC switch to -48 GRD.

6.404 Hold TST key to CAL position and adjust CAL potentiometer until meter reads 100.

6.405 Operate ahd hold TST KEY TO OPR position and read meter when needle stops. Meter reading should be between 90 minimum and 92 maximum (9.0 - 9.2 milliseconds). Release TST key.

6.406 If requirement of paragraph 6.405 is not met, repeat test several times and adjust the T4C potentiometer to meet the requirement.

6.407 Remove blocking tool from RBK1 or RBK3 relay, insulate contact 1 of M relay, and block operated relays RBK2 and W. With option XS block relay CL15E operated. Operate MIL-SEC to 0-500.

6.408 Hold TST Key to CAL position and adjust CAL potentiometer until meter reads 100.

6.409 Operate and hold TST key to OPR position and read meter when needle stops. Meter reading should be between 21.6 minimum and 24.8 maximum (108-124 milliseconds). Release TST key.

6.410 If requirement of Paragraph 6.409 is not met, repeat tests several times and adjust the T4E potentiometer to meet the requirement.

6.411 Remove insulating tool and blocking tool from W relay and block operated RBT relay. With option XP insulate 9 of relay RBA. If option XS is provided, block relay CL15E operated.

6.412 Hold TST KEY TO CAL position and adjust CAL potentiometer until meter reads 100. Operate MIL-SEC SW. to 0-500.

6.413 Operate and hold TST key to OPR position and read meter when needle stops. Meter reading should be between 72 minimum and 84 maximum (360 - 420 milliseconds). Release TST key.

6.414 If requirement of Paragraph 6.413 is not met, repeat tests several times and adjust the T4G potentiometer to meet requirement.

6.415 Remove insulating tool and blocking tool from RBA relay. Remove blocking tool from RBK2 and RBT relays. With option XS, block relay RBS operated.

6.416 Hold TST key to CAL position and adjust CAL potentiometer until meter reads 100. Operate MIL-SEC SW. to 0-500.

6.417 Operate and hold TST key to OPR position and read meter when needle stops. Meter reading should be between 40 minimum and 48 maximum (200 - 240 milliseconds). Release TST key.

6.418 If requirement of Paragraph 6.417 is not met, repeat step several times and adjust the T4A potentiometer to meet requirement.

6.5 Timer 5 (ZH Option)

6.501 Move R (red) lead of ITE-9303 cord to 25 (ST5) and W (white) lead to U (ET5).

6.502 Block relays ET5 and RBA nonoperated, insulate contact 4 of RBA relay, and block relay RBK1 with option XP operated or relay RBK3 with option XQ. Operate MIL-SEC switch to 0-100.

6.503 Hold TST key to CAL position and adjust CAl potentiometer until meter reads 100.

6.504 Operate and hold TST KEY to OPR position and read meter when needle stops. Meter should be between 90 minimum and 92 maximum. Release TST KEY.

6.505 If requirement of Paragraph 6.504 is not met, repeat test several times and adjust the T5D potentiometer to meet the requirement.

6.506 Remove blocking tool from relay RBK1 or relay RBK3 and block operated CCK relay. Operate MIL-SEC switch to 0-500.

6.507 Hold TST key to CAL position and adjust CAL potentiometer until meter reads 100.

6.508 Operate and hold TST key to OPR position and read meter when needle stops. Meter reading should be between 78 minimum and 88 maximum (390 - 440 milliseconds). Release TST key.

6.509 If requirement of Paragraph 6.508 is not met, repeat test several times and adjust T5A potentiometer to meet the requirement.

6.510 Remove blocking tool from CCK relay and block relay RBK2 operated. Block relay CL15E operated with option Z5. Operate MIL-SEC switch to 0-5000.

6.511 Hold TST KEY TO CAL position and adjust CAL potentiometer until meter reads 100.

6.512 Operate and hold TST key to OPR position and read meter when needle stops. Meter should be between 16 minimum and 18.4 maximum (800 - 920 milliseconds). Release TST key.

6.513 If requirement of Paragraph 6.512 is not met, repeat test several times and adjust T5H potentiometer to meet the requirements.

6.514 Remove blocking tool from RBK2 relay and block operated R relay.

6.515 Hold TST key to CAL position and adjust CAl potentiometer until meter reads 100.

6.516 Operate and hold TST in OPR position and read meter when needle stops. Meter reading should be between 33 minimum and 37 maximum (1650 - 1850 miliseconds). Release TST key.

6.517 Remove insulating tool from relay RBA and remove blocking tool from RBA and R relay. With XQ option, block relay RBS operated.

6.518 Hold TST Key to CAL position and adjust CAL potentiometer until meter reads 100. Operate REC. SW. to 0-500.

6.519 Operate and hold TST key to OPR position and read meter when needle stops. Meter reading should be between 26.4 minimum and 30.4 maximum (132-152 milliseconds). Release TST key.

6.520 If requirement of Paragraph 6.519 are not met, repeat test several times and adjust T5F potentiometer to meet the requirements.

6.6 Timer 6 (ZJ Option)

6.61 Move R (red) lead of ITE-9303 cord to contact 15 of (SLT) relay and W (white) to contact 53 of (ET6) relay. Connect ground to U (WK2) relay. Block relay (WK3) operated.

6.62 Operate MIL-SEC switch to 0-500 position and REC switch to 00-GRD position.

6.63 Hold TST key to CAL position and adjust CAL potentiometer until meter read 100.

6.64 Operate and hold TST KEY IN OPR position and read meter when needle stops. Meter reading should be between 48 minimum and 53 maximum (240-265 milliseconds). Release TST key.

6.7 Timer 7

6.71 Move R (red) lead of ITE-9303 cord to 1V (PLTA) relay and W (white) lead to U (PLT) relay.

6.72 Block operated relay EP.

6.73 Operate SEND key to MK, MIL SEC switch to 0-5000 position and the REC switch to -48V-GRD.

6.74 Hold TST key to CAL and adjust CAL potentiometer until meter reads 100.

6.75 Operate and hold TST key to OPR and read meter when needle stops. Meter reading should be between 22.8 minimum and 25.2 maximum. (1140 - 1260 milliseconds). Release TST key.

6.76 Unblock all relays.

6.77 Remove all test connections and restore all keys to normal.

7. IDENTIFIER CIRCUIT (SD-95810-01)

7.1 Traffic Rate Timing

7.11 Prepare the Timing Test Set as described in Paragraph 4.

7.12 On the Timing Test Set, operate the REC witch to O.C.-GRD position and the SEND key to MK.

7.13 Set the MIL SEC switch to the 0-5000 position.

7.14 Hold TST key to CAL and adjust CAL potentiometer until meter reads 100. Release TST key.

7.15 Plug the 310 plug at ITE-9303 cord in the TST1 jack.

7.16 Connect the W (white) lead of ITE-9303 cord to 8 (HTT) relay and R (red) lead to U (HTR) relay. Connect the BK (black) lead of ITE-9303 cord to ground.

7.17 Connect ground to 8 make (HHT) relay using an ITE-9447 cord.

7.18 Operate and hold TST key to OPR and read meter when needle stops moving. Meter should read between 19.4 minimum and 34 maximum (970-1700 milliseconds). Release TST KEY.

7.19 Remove test connections and restore all keys to normal.

8. OUTPULSER CIRCUIT (SD-95811-01)

8.1 Work Timing (FS28)

8.101 Prepare the Timing Test Set as described in Paragraph 4.

8.102 On the Timing Test Set, operate SEND key to MK, REC switch to O.C.-GRD, and MIL SEC switch to 0-500 position.

8.103 Hold TST key to CAL and adjust CAL potentiometer until meter reads 100. Release TST key.

8.104 Plug the 310 plug of the ITE-9303 cord into the TST1 jack.

8.105 Connect R (red) lead of ITE-9303 cord to U (STM1) relay, W (white) lead to 1U (ETM1) relay. Connect BK (black) lead to ground.

8.106 Block relay (ETMA) nonoperated.

8.107 Operate and hold TST key to OPR position and read meter when needle stops moving. Meter reading should be between 60 minimum and 100 maximum (300-500 milliseconds).

8.108 Release TST key and block relay L1 operated.

8.109 Operate MIL SEC switch to 0-5000, hold TST key to CAL position and adjust CAL potentiometer until meter reads 100. Release TST key.

8.110 Operate and hold TST key to OPR and read meter when needle stops moving. Meter reading should be between 36 minimum and 60 maximum (1800-3000 milliseconds).

8.111 Release TST key and remove blocks from relays (ETMA) and (L1).

8.2 Party Test and Abandoned Call Timing (FS 29)

8.21 Party Test (When Option Furnished)

8.211 Move R (red) lead of ITE-9303 cord to the upper winding terminal relay STM2. Connect W (white) lead to 1U terminal of relay ETM2.

8.212 Operate MIL SEC switch to 0-500. Hold TST key to CAL position and adjust CAl potentiometer until meter reads 100. Then release TST key.

8.213 Block relay PT1 operated and CCKF and STM1 nonoperated.

8.214 Operate and hold TST Key to OPR and read meter when needle stops moving. Meter reading should be between a minimum of 39 and a maximum of 70 (corresponding to 190-350 milliseconds).

8.215 Release TST key and remove blocks from PT1 and STM1 relays.

8.22 Abandoned Call

8.221 Make connections as outlined in Paragraph 8.211.

8.222 Block nonoperated relay CCKF if not previously blocked from prior test.

8.223 Operate MIL SEC switch to 0-500. Hold TST key to CAL position and adjust CAL potentiometer until meter reads 50. Then release TST key.

8.224 Operate and hold TST key to OPR position and read meter when needle stops moving. Meter reading should be between minimum of 40 and a maximum of 65 (corresponding to 00-650 milliseconds).

8.225 After test, release TST key and remove block from relay CCKF.

8.3 Trouble Ticketer Timing (FS 31)

8.31 Move R (red) lead of ITE-9303 cord to U (TTST) relay, and W (white) lead to 1U (ETT) relay.

8.32 Insulate contacts 4 break (TTB) relay, 6 break (DL) relay, 1 make (ETT) relay.

8.33 Block relays (TTB) and (RL) nonoperated.

8.34 Operate and hold TST key to OPR and read meter when needle stops. Meter reading should be between 55 minimum and 75 maximum (550-750 milliseconds).

8.35 Release TST key, remove insulation from 4 break (TTB) relay, 6 break (DL) and 1 make (ETT) relay. Remove from relays (TB) and (RL).

8.4 Over-all Timing (FS 30)

8.41 On the timing test set, operate MIL SEC switch to 0-5000 position.

8.42 Hold TST key to CAL and adjust CAL potentiometer until meter reads 40. Release TST key.

8.43 Move R (red) lead of ITE-9303 to U (TAL) relay, and W (white) lead to 1U (TAL1) relay.

8.44 Insulate 4 make (TAL1) relay and block relay (TTST) nonoperated.

8.45 Operate and hold TST key to OPR and read meter when needle stops. Meter reading should be between 56 minimum and 88 maximum (7-11 seconds). Release TST key.

8.46 Remove block from (TTST) relay and insulate on from 4 make (TAL1) relay.

8.47 Remove all test connections and restore all keys to normal.

9. TROUBLE TICKETER CIRCUIT (SD-95816-01)

9.1 Timer of Day Alarm Timing (FS 18)

9.11 Prepare the Timing Test Set as described in Paragraph 4.

9.12 Insulate contact 11 break (ALM) relay.

9.13 Block relay (P) operated and start timing with the R3314 stop watch.

9.14 Observe relay (AL) and stop timing when (AL) operates. Relay (AL) should operate between 8 seconds minimum and 25 seconds maximum after relay P was blocked operated.

9.15 Unblock relay (P), remove insulation from 11 break (ALM) relay.

9.16 Operate (LR) key to release relay (AL).

9.2 Progress Timing

9.21 On the Timing Test Set operate SEND key to MK, REC switch to O.C.-GRD and MIL SEC switch to 0-5000.

9.22 Hold TST key to CAL and adjust CAL potentiometer until meter reads 100. Release TST key.

9.23 Plug the 310 plug of the ITE-9303 cord into the TST1 jack.

9.24 Connect R (red) lead of ITE-9303 cord to U (DISC) relay and W (white) lead to 1U (TM) relay. Connect BK (black) lead to ground.

9.25 Insulate contacts 7B (ON) relay, 11B (ALM) relay 1B (AV) relay.

9.26 Block nonoperated relay A. Hold TST key to OPR and read meter when needle stops moving. Meter reading should be between 14.8 minimum and 28 maximum (740-1400 milliseconds).

9.27 Release TST key and remove insulation from contacts 7 (ON) relay 11 (ALM) relay a 1 (AV) relay. Remove block from relay A.

9.28 Remove test connections and restore all keys to normal.

10. MISCELLANEOUS CIRCUIT (SD-95823-01)

10.1 All Outpulsers Busy Alarm Timing (FS16)

10.11 At the Trouble Ticketer Frame operate BAT key.

10.12 Block relay (B1) operated and start timing with the 3314 stop watch. Observe that lamp (AOB) lighted.

10.13 Observe lamp (AOBA) and stop timing when it lights. Lamp (AOBA) should light and major alarm (N option) or minor alarm (Q option) should sound between 40 and 62 seconds after relay (B1) was operated.

10.14 Remove block from relay (B1). Lamp (AOB) is extinguished.

10.15 Momentarily operate key (AR). Lamp (AOBA) is extinguished and alarm silenced.

11. LINE VERIFICATION CONNECTOR AND DISPLAY CIRCUIT (SD-95828-10)

11.1 Outpulsing Connection Timing (FS16)

11.11 Prepare the Timing Test Set as described in Paragraph 4.

11.12 On the Timing Test Set, operate SEND key to MK, REC switch to O.C.-GRD and MIL SEC switch to 0-5000 position.

11.13 Hold TST KEY TO CAL and adjust CAL potentiometer until meter reads 100. Release TST key.

11.14 Plug the 310 plug of the ITE-9303 cord into the TST1 jack.

11.15 Connect the R (red) lead of ITE-9303 cord to U (TM) relay and W (white) lead to 1U (TM1) relay. Connect BK (black) lead to ground.

11.16 Block all (RS-) relays operated.

11.17 Connect ground to 12 Make (TM1) relay using an ITE-9447 cord.

11.18 On Timing Test Set, operate and hold TST key to OPR, and read meter when needle stops. Meter reading should be between 40 and 72. (2000-3600 milliseconds).

11.19 Release TST key.

11.2 Display Timing

11.21 Block relay (LO) operated.

11.22 Hold TST key to CAl and adjust CAL potentiometer until meter reads 10.

11.23 Operate and hold TST key to OPR and read meter when needle stops. Meter reading should be between 42 and 77 (20.7-38.7 seconds).

11.24 Remove blocks from all (RS-) relays and (LO) relay.

11.25 Remove all test connections and restore all keys to normal.

12. AUTOMATIC TRUNK TEST CIRCUIT (SD-95889-01)

12.1 Over-all Timing (Timer 1) - (FS 30)

12.11 Block operated relay (STM1) and start timing with the R-3314 stop watch.

12.12 Observe relay (ETM1) and stop timing when it operates. Relay (ETM1) should operate in 55 seconds minimum and 65 seconds maximum. If necessary, repeat test and adjust (TM1) potentiometer to meet this requirement.

12.13 Remove block from relay (STM1).

12.2 Timer 2 (FS 31)

12.21 Prepare the Timing Test Set as described in Paragraph 4.

12.22 On the Timing Test Set, operate SEND key to MK, REC switch to -48V-GRD, and MIL SEC switch to 0-5000 position.

12.23 Hold TST key to CAL and adjust CAL potentiometer until meter reads 100. Release TST key.

12.24 Plug the 310 plug end of the ITE-9303 cord into the TST1 jack.

12.25 Connect the R (red) lead of ITE-9303 cord to U (STM2) relay and W (white) lead to contact 1 fixed of (ETM2) relay. Connect BK (black) lead to ground.

12.26 Operate and hold TST key to OPR and read meter when needle stops. Meter reading should be between 96 minimum 220 maximum.

12.27 Block (ONH) relay operated and BLK nonoperated. ETM2 should operate 7.5-16 seconds.

12.28 Remove block from (REC) relay and (BLK) relay.

12.3 Timer 3 (FS 32)

12.31 On the Timing Test Set, Operate MIL SEC switch to 0-100, and REC switch to 48-GRD.

12.32 Hold TST key to CAL and adjust CAL potentiometer until meter reads 100. Release TST key.

12.43 Move R (red) lead to ITE-9303 to U (STM4) relay and W (white) lead to 13 (ETM4) relay.

12.44 Operate and hold TST key to OPR and read meter when needle stops. Meter reading should be between 86 minimum and 90 maximum (86-90 milliseconds). Release TST key.

12.45 Insulate 5B (CB) relay. Meter should read between 410-460 milliseconds.

12.46 If the requirement in Paragraph 12.44 is not met, repeat test and adjust TM4 potentiometer until the requirement is met.

12.47 Remove all test connections and restore all keys to normal...

13. PERMANENT SIGNAL IDENTIFICATION CIRCUIT (SD-95817-01)

13.1 Time Out

13.11 Prepare the Timing Test Set as described in Paragraph 4.

13.12 On the Timing Test Set, operate SEND key to MK, REC switch to O.C.-GRD and MIL SEC switch to 0-5000 position.

13.13 Hold TST key to CAL position and adjust CAL potentiometer until meter reads 100. Release TST key.

13.14 Insert the 310 plug end of the ITE-9303 cord into the TST1 jack.

13.15 Connect the R (red) lead of ITE-9303 cord to U (ST) relay and W (white) lead to 1U (TO) relay. Connect BK (black) lead to ground.

13.16 Operate and hold TST key to OPR and read meter when needle stops. Meter reading should be between 40 minimum and 72 maximum (2-3.6 seconds).

13.17 Remove all test connections and restore all keys to normal.

No changes are indicated due to extensive revision.

Manager, Product Engineering
Control Center

Reason for Reissue
To change paragraphs 6.205, 6.214, 6.31, 6.35, 6.36, 6.401, 6.402, 6.407, 6.411, 6.415, 6.501 6.502, 6.510, 6.517, 6.71 thru 6.76 and to add paragraphs 6.37 and 6.38.