950B-TYPE EQUALIZER
PRESCRIPTION SETTINGS

1. GENERAL

1.01 This section is a user's guide to provide settings for the 950B-type delay equalizer (Fig. 1). Recommended settings are given for the most frequently used private line data facilities. The information in this section supplements the ADE950 computer program which supplies settings for any facility. The ADE950 equalizer program is detailed in Section 856-200-100.

1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph.

1.03 The 950B-type equalizer is an active equalizer intended to provide delay equalization on private line circuits. Eight 6-position slide switches permit the selection of any equalizing shape from the more than 1,000,000 available shapes. Characteristics of the 950B-type equalier are provided in Section 314-820-108.

2. PRESCRIPTION METHOD DESCRIPTION

2.01 The prescription method of adjusting the 950B-type equalizer is a table look-up procedure. It is based on a description of the facility to be equalized.

2.02 The four sets of tables given, Table A through Table D, have been selected as the most frequently used private line data facilities in the Bell System. These facilities use a combination of A channel banks and/or T1 carrier equipment plus H88 loaded cable.

2.03 The recommended 950B-type equalizer switch settings are given for 6 kilofeet increments in the total length of the H88 loaded cable used in the facility. This involves some approximation, as the computation of the setting is really based on the midpoint of a range (ie, the setting recommendation for a facility having a range from 15 to 21 kilofeet of H88 loaded cable is based on a computation using 18 kilofeet of cable). The errors resulting from this approximation are negligible.

2.04 Settings are given for lengths of H88 loaded cable up to 75 kilofeet. If the length of cable is longer, or if the facility is not among the four types of facilities listed, the ADE950 computer program should be used to determine the number of 950B-type equalizers needed and their switch settings.

2.05 The information given in Table A through Table D pertains to the following four common facilities:

- Table A provides information for facilities consisting of one pair of A channel banks plus H88 loaded cable.
- Table B provides information for facilities consisting of one T1 carrier plus H88 loaded cable.
- Table C provides information for facilities consisting of two pairs of A channel banks plus H88 loaded cable.
- Table D provides information for facilities consisting of one pair of A channel banks, one T1 carrier, plus H88 loaded cable.

2.06 Each table has separate parts.

- Part 1 (ie, see Table A1) of each table recommends the proper number of 950B-equalizers needed to meet the different conditioning requirements as specified in Section 314-410-500. Special note is made where requirements are met with less than ten percent margin. Use of an extra equalizer should be considered in these cases.
- Part 2 of each table provides the recommended switch settings as a function of H88 loaded cable length when the use of one 950B-type equalizer is called for in Part 1.
- Part 3 for each table lists the delay-frequency characteristics of the 950B-type equalizer

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corresponding to the switch settings recommended in Part 2.

- Part 4 of Tables C and D provides the recommended switch settings, as a function of H88 loaded cable length, when the use of two 950B-type equalizers is called for in Part 1.

- Part 5 of Tables C and D lists the delay frequency characteristics of the two 950B-type equalizers corresponding to the switch settings recommended in Part 4.

3. REFERENCES

3.01 The following publication and document numbers are provided as a guide to supporting and supplementary information for this apparatus.

SECTION	TITLE
314-820-106	J99347 VF Amplitude and Delay Equalizing Units—Description
314-820-107	950A-Type Equalizer—Description
314-820-108	950B-Type Equalizer—Description
314-820-206	J99347 VF Amplitude and Delay Equalizing Equipment—Installation and Adjustment
314-820-506	J99347 VF Amplitude and Delay Equalizing Equipment—Maintenance Testing
332-414-105	4A Echo Suppressor—J68914TA Test Extender—Description
801-401-153	Equipment Specifications for the J99347 Equalizer Equipments
856-200-100	ADE950 Equalizer Program

NUMBER	TITLE
SD-60069-01	4A Echo Suppressor Test Extender
SD-99559-01	Common Systems, VF Amplitude and Delay Equalizer Circuit

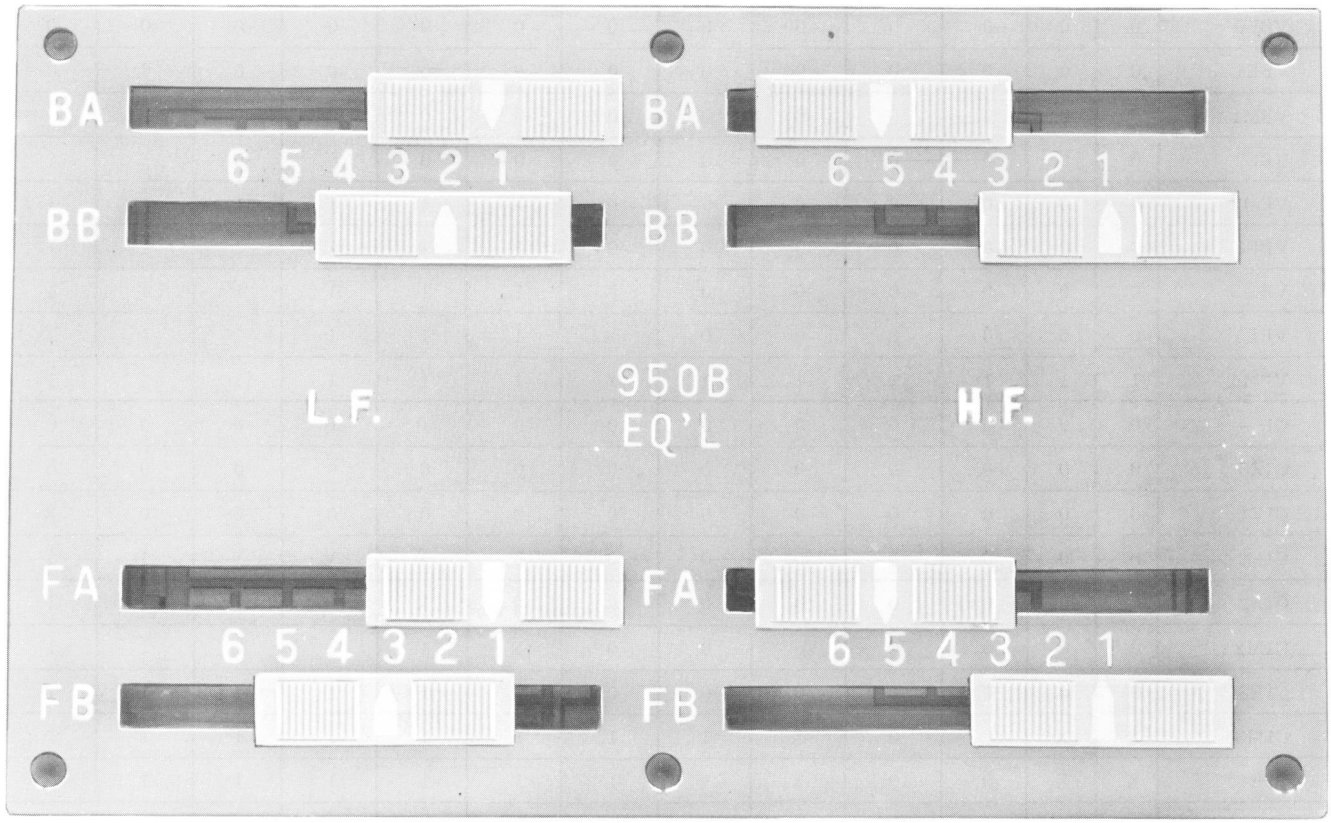

Fig. 1—950B-Type Equalizer

TABLE A1 – NUMBER OF 950B-TYPE EQUALIZERS NEEDED
FACILITY: ONE PAIR OF A CHANNEL BANKS PLUS H88 LOADED CABLE

CONDITIONING REQUIREMENT (NOTE 1)	KILOFEET OF H88 LOADED CABLE (NOTE 2)												
	0-3	3-9	9-15	15-21	21-27	27-33	33-39	39-45	45-51	51-57	57-68	68-69	69-75
VB	0	0	0	0	0	0	0	0	0	0	0	0	0
VBE0	0	0	0	0	0	0	0	0	0	0	0	0	0
VBE1	0	0	0	0	0	0	0	0	0	0	0	0	0
VBM1	0	0	0	0	0	0	0	0	0	0	0	X	1
VBE2	0	0	0	0	0	0	0	0	0	0	0	X	1
VBM2	0	0	0	0	0	0	0	X	1	1	1	1	1
VBE3	0	0	0	0	0	0	0	X	1	1	1	1	1
VBM3	0	0	0	0	0	0	X	1	1	1	1	1	1
VBE4	0	0	0	0	0	0	X	1	1	1	1	1	1
VBM4	1	1	1	1	1	1	1	1	1	1	1	1	1
C1	0	0	0	0	0	0	0	0	0	0	0	0	0
C1E0	0	0	0	0	0	0	0	0	0	0	0	0	0
C1E1	0	0	0	0	0	0	0	0	0	0	0	0	X
C1M1	0	0	0	0	0	0	0	0	X	X	1	1	1
C1E2	0	0	0	0	0	0	0	0	X	X	1	1	1
C1M2	0	0	0	0	0	0	0	X	1	1	1	1	1
C1E3	0	0	0	0	0	0	0	X	1	1	1	1	1
C1M3	X	X	0	0	X	1	1	1	1	1	1	1	1
C1E4	X	X	0	0	X	1	1	1	1	1	1	1	1
C1M4	1	1	1	1	1	1	1	1	1	1	1	1	1
C2	0	0	0	0	0	0	0	0	0	X	X	1	1
C2E0	0	0	0	X	1	1	1	1	1	1	1	1	1
C2E1	X	1	1	1	1	1	1	1	1	1	1	1	1
C2M1	1	1	1	1	1	1	1	1	1	1	1	1	1
C2E2	1	1	1	1	1	1	1	1	1	1	1	1	1
C2M2	1	1	1	1	1	1	1	1	1	1	1	1	1
C2E3	1	1	1	1	1	1	1	1	1	1	1	1	1
C2M3	1	1	1	1	1	1	1	1	1	1	1	1	1
C2E4	1	1	1	1	1	1	1	1	1	1	1	1	1
C2M4	1	1	1	1	1	1	1	1	1	1	1	1	1
C4	0	0	0	0	X	1	1	1	1	1	1	1	1
C5	1	1	1	1	1	1	1	1	1	1	1	1	1

Notes: 1 — Overall conditioning requirements are specified in 314-410-500.
2 — The letter X is used where equalization is not required, however requirements are met with less than 10 percent margin. The use of a 950B equalizer at a point marked X is a system engineering decision.

950B SWITCHES		TABLE A 2 – RECOMMENDED 950B-TYPE EQUALIZER SWITCH SETTINGS FACILITY: ONE PAIR OF A CHANNEL BANKS PLUS KILOFEET OF H88 LOADED CABLE												
		0-3	3-9	9-15	15-21	21-27	27-33	33-39	39-45	45-51	51-57	57-68	68-69	69-75
LF	BA	6	5	5	5	6	5	5	5	4	4	4	4	4
	BB	1	6	6	6	1	5	3	1	6	5	6	3	3
	FA	5	5	5	5	5	4	4	4	4	4	4	4	4
	FB	6	4	3	2	1	6	5	4	3	2	2	1	1
HF	BA	5	5	5	5	5	4	4	4	4	4	4	3	3
	BB	3	2	2	1	1	6	4	3	2	1	1	5	5
	FA	4	4	3	3	3	3	3	3	2	2	2	2	2
	FB	2	1	6	4	3	2	1	1	6	5	4	4	3

FREQUENCY (HZ)	TABLE A3 – DELAY OF 950B-TYPE EQUALIZER (ms) FOR SETTINGS RECOMMENDED IN TABLE A2 FACILITY: ONE PAIR OF A CHANNEL BANKS PLUS KILOFEET OF H88 LOADED CABLE											
	0-3	3-9	9-15	15-21	21-27	27-33	33-39	39-45	45-51	51-57	57-68	68-69	69-75
500	−363	−353	−342	−350	−325	−345	−374	−379	−384	−389	−391	−418	−430
600	−340	−328	−317	−322	−296	−314	−340	−342	−345	−347	−350	−371	−383
800	−280	−263	−248	−250	−224	−234	−251	−245	−240	−234	−238	−245	−255
1000	−202	−178	−161	−161	−139	−139	−145	−128	−116	−104	−115	−100	−107
1200	−115	−90	−75	−76	−66	−57	−55	−33	−24	−16	−31	−11	−13
1400	−44	−26	−19	−24	−23	−15	−14	−1	0	−2	−11	−8	−4
1600	−8	−2	−1	−5	−7	−3	−5	−3	−6	−8	−7	−16	−7
1800	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	−2	−3	−4	−8	−10	−18	−20	−16	−23	−32	−50	−41	−66
2200	−22	−24	−34	−55	−66	−87	−104	−98	−123	−149	−181	−182	−223
2400	−79	−89	−109	−150	−166	−199	−231	−232	−265	−229	−332	−347	−385
2500	−123	−137	−159	−206	−222	−258	−295	−298	−332	−367	−397	−416	−451
2600	−171	−189	−211	−261	−276	−313	−353	−359	−392	−425	−453	−475	−506
2700	−222	−241	−263	−312	−325	−362	−404	−411	−443	−475	−499	−523	−552
2800	−270	−291	−310	−359	−369	−406	−448	−456	−486	−516	−538	−563	−589

TABLE B1 – NUMBER OF 950B-TYPE EQUALIZERS NEEDED
FACILITY: ONE T1 CARRIER PLUS H88 LOADED CABLE

CONDITIONING REQUIREMENT (NOTE 1)	KILOFEET OF H88 LOADED CABLE (NOTE 2)												
	0-3	3-9	9-15	15-21	21-27	27-33	33-39	39-45	45-51	51-57	57-68	68-69	69-75
VB	0	0	0	0	0	0	0	0	0	0	0	0	0
VBE0	0	0	0	0	0	0	0	0	0	0	0	0	0
VBE1	0	0	0	0	0	0	0	0	0	0	0	0	0
VBM1	0	0	0	0	0	0	0	0	0	0	0	X	X
VBE2	0	0	0	0	0	0	0	0	0	0	0	X	X
VBM2	0	0	0	0	0	0	0	0	X	1	1	1	1
VBE3	0	0	0	0	0	0	0	0	X	1	1	1	1
VBM3	0	0	0	0	0	0	0	X	1	1	1	1	1
VBE4	0	0	0	0	0	0	0	X	1	1	1	1	1
VBM4	0	0	0	0	0	X	1	1	1	1	1	1	1
C1	0	0	0	0	0	0	0	0	0	0	0	0	0
C1E0	0	0	0	0	0	0	0	0	0	0	0	0	0
C1E1	0	0	0	0	0	0	0	0	0	0	0	X	1
C1M1	0	0	0	0	0	0	0	0	X	1	1	1	1
C1E2	0	0	0	0	0	0	0	0	X	1	1	1	1
C1M2	0	0	0	0	0	0	X	1	1	1	1	1	1
C1E3	0	0	0	0	0	0	X	1	1	1	1	1	1
C1M3	0	0	0	0	0	1	1	1	1	1	1	1	1
C1E4	0	0	0	0	0	1	1	1	1	1	1	1	1
C1M4	0	0	0	0	X	1	1	1	1	1	1	1	1
C2	0	0	0	0	0	0	0	0	0	0	X	1	1
C2E0	0	0	0	0	0	X	1	1	1	1	1	1	1
C2E1	0	0	0	X	1	1	1	1	1	1	1	1	1
C2M1	0	0	1	1	1	1	1	1	1	1	1	1	1
C2E2	0	0	1	1	1	1	1	1	1	1	1	1	1
C2M2	0	X	1	1	1	1	1	1	1	1	1	1	1
C2E3	0	X	1	1	1	1	1	1	1	1	1	1	1
C2M3	0	1	1	1	1	1	1	1	1	1	1	1	1
C2E4	0	1	1	1	1	1	1	1	1	1	1	1	1
C2M4	X	1	1	1	1	1	1	1	1	1	1	1	1
C4	0	0	0	0	0	0	1	1	1	1	1	1	1
C5	0	1	1	1	1	1	1	1	1	1	1	1	1

Notes: 1 — Overall conditioning requirements are specified in 314-410-500.
2 — The letter X is used where equalization is not required, however requirements are met with less than 10 percent margin. The use of a 950B equalizer at a point marked X is a system engineering decision.

950B SWITCHES		TABLE B2 – RECOMMENDED 950B-TYPE EQUALIZER SWITCH SETTINGS FACILITY: ONE T1 CARRIER PLUS KILOFEET OF H88 LOADED CABLE												
		0-3	3-9	9-15	15-21	21-27	27-33	33-39	39-45	45-51	51-57	57-68	68-69	69-75
LF	BA	6	6	6	6	6	6	6	5	5	5	5	4	4
	BB	6	6	5	4	4	4	1	6	4	3	2	6	5
	FA	5	5	4	4	4	4	4	3	3	3	3	3	3
	FB	2	1	5	4	3	2	1	6	5	4	3	3	2
HF	BA	6	6	6	6	6	6	6	5	5	5	5	4	4
	BB	6	6	6	6	6	4	2	6	5	3	2	6	4
	FA	5	4	4	4	3	3	3	2	2	2	2	2	2
	FB	2	6	4	2	5	3	2	6	5	4	2	2	1

FREQUENCY (HZ)	TABLE B3 – DELAY OF 950B-TYPE EQUALIZER (ms) FOR SETTINGS RECOMMENDED IN TABLE B2 FACILITY: ONE T1 CARRIER PLUS KILOFEET OF H88 LOADED CABLE											
	0-3	3-9	9-15	15-21	21-27	27-33	33-39	39-45	45-51	51-57	57-68	68-69	69-75
500	−138	−129	−106	−103	−88	−84	−108	−115	−116	−121	−108	−156	−162
600	−117	−106	−82	−77	−61	−57	−75	−79	−76	−78	−61	−104	−106
800	−66	−56	−29	−20	−3	−1	−5	−4	10	12	33	8	11
1000	−16	−8	17	28	41	39	47	49	69	67	87	79	75
1200	18	23	39	49	57	50	62	61	76	68	82	77	64
1400	27	27	35	41	46	39	46	45	53	44	57	48	36
1600	16	15	17	21	24	21	24	24	29	25	36	30	28
1800	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	−11	−12	−15	−21	−31	−33	−37	−46	−53	−57	−76	−78	−89
2200	−21	−27	−36	−52	−76	−85	−97	−118	−133	−147	−179	−191	−216
2400	−40	−54	−73	−98	−134	−152	−172	−204	−223	−245	−279	−301	−332
2500	−56	−75	−97	−127	−166	−187	−210	−245	−265	−290	−323	−348	−380
2600	−77	−100	−125	−157	−197	−221	−247	−283	−304	−330	−361	−389	−421
2700	−101	−127	−154	−187	−228	−253	−281	−318	−339	−365	−395	−424	−456
2800	−128	−156	−184	−217	−257	−283	−312	−349	−370	−396	−423	−454	−485

TABLE C1 – NUMBER OF 950B-TYPE EQUALIZERS NEEDED
FACILITY: TWO PAIRS OF A CHANNEL BANKS PLUS H88 LOADED CABLE

CONDITIONING REQUIREMENT (NOTE 1)	KILOFEET OF H88 LOADED CABLE (NOTES 2 AND 3)												
	0-3	3-9	9-15	15-21	21-27	27-33	33-39	39-45	45-51	51-57	57-68	68-69	69-75
VB	0	0	0	0	0	0	0	0	0	0	0	0	0
VBE0	0	0	0	0	0	0	0	0	0	0	0	0	0
VBE1	1	0	0	0	0	0	0	0	0	0	X	X	1
VBM1	1	1	1	1	1	1	X	1	1	1	1	1	1
VBE2	1	1	1	1	1	1	X	1	1	1	1	1	1
VBM2	1	1	1	1	1	1	1	1	1	1	1	1	1
VBE3	1	1	1	1	1	1	1	1	1	1	1	1	1
VBM3	1	1	1	1	1	1	1	1	1	1	1	1	1
VBE4	1	1	1	1	1	1	1	1	1	1	1	1	1
VBM4	1	1	1	1	1	1	1	1	1	1	1	1	1
C1	0	0	0	0	0	0	0	0	0	0	0	0	0
C1E0	0	0	0	0	0	0	0	0	0	0	0	0	0
C1E1	1	1	1	0	0	0	0	0	X	X	1	1	1
C1M1	1	1	1	1	1	1	1	1	1	1	1	1	1
C1E2	1	1	1	1	1	1	1	1	1	1	1	1	1
C1M2	1	1	1	1	1	1	1	1	1	1	1	1	1
C1E3	1	1	1	1	1	1	1	1	1	1	1	1	1
C1M3	1	1	1	1	1	1	1	1	1	1	1	1	1
C1E4	1	1	1	1	1	1	1	1	1	1	1	1	1
C1M4	1	1	1	1	1	1	1	1	1	1	1	1	1
C2	0	0	0	0	X	X	1	1	1	1	1	1	1
C2E0	1	1	1	1	1	1	1	1	1	1	1	1	1
C2E1	1	1	1	1	1	1	1	1	1	1	1	1	1
C2M1*	2	2	2	2	Y	Y	Y	1	1	1	1	1	1
C2E2*	2	2	2	2	Y	Y	Y	1	1	1	1	1	1
C2M2*	2	2	2	2	2	2	2	2	2	2	2	2	2
C2E3*	2	2	2	2	2	2	2	2	2	2	2	2	2
C2M3*	2	2	2	2	2	2	2	2	2	2	2	2	2
C2E4*	2	2	2	2	2	2	2	2	2	2	2	2	2
C2M4*	2	2	2	2	2	2	2	2	2	2	2	2	2
C4	1	1	1	1	1	1	1	1	1	1	1	1	1
C5*	2	2	2	2	2	2	2	2	2	2	2	2	2

Notes: 1 – Overall conditioning requirements are specified in 314-410-500.
2 – The letter X is used where equalization is not required, however requirements are met with less than 10 percent margin. The use of a 950B equalizer at a point marked X is a system engineering decision.
3 – The letter Y shows uses where using only one 950B equalizer provides less than 10 percent margin over the requirement.

* – Use Tables C4 and C5 when two equalizers are called for.

950B SWITCHES		TABLE C2 – RECOMMENDED 950B-TYPE EQUALIZER SWITCH SETTINGS FACILITY: TWO PAIRS OF A CHANNEL BANKS PLUS KILOFEET OF H88 LOADED CABLE												
		0-3	3-9	9-15	15-21	21-27	27-33	33-39	39-45	45-51	51-57	57-68	68-69	69-75
LF	BA	4	4	4	4	4	4	4	3	3	3	3	3	3
	BB	2	2	2	1	2	1	1	6	6	5	5	4	4
	FA	5	5	5	5	5	5	5	4	4	4	4	4	4
	FB	5	4	4	3	2	1	1	6	6	5	4	4	3
HF	BA	3	3	3	3	3	3	3	3	3	2	2	2	2
	BB	6	5	5	4	4	3	2	2	1	6	6	5	4
	FA	3	3	3	3	3	3	3	2	2	2	2	2	2
	FB	5	4	3	2	2	1	1	6	5	5	4	4	3

FREQUENCY (HZ)	TABLE C3 – DELAY OF 950B-TYPE EQUALIZER (ms) FOR SETTINGS RECOMMENDED IN TABLE C2. FACILITY: TWO PAIRS OF A CHANNEL BANKS PLUS KILOFEET OF H88 LOADED CABLE											
	0-3	3-9	9-15	15-21	21-27	27-33	33-39	39-45	45-51	51-57	57-68	68-69	69-75
500	–595	–592	–614	–628	–583	–596	–604	–610	–646	–634	–628	–651	–660
600	–572	–567	–589	–601	–554	–565	–573	–577	–613	–599	–590	–613	–619
800	–503	–493	–514	–521	–470	–475	–483	–479	–514	–493	–475	–498	–494
1000	–394	–378	–398	–395	–341	–335	–343	–327	–361	–329	–302	–320	–307
1200	–241	–220	–237	–222	–175	–159	–168	–141	–171	–134	–112	–117	–114
1400	–80	–65	–77	–60	–40	–29	–37	–18	–41	–24	–25	–24	–46
1600	2	3	–3	2	–1	–2	–9	–5	–16	–21	–26	–30	–48
1800	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	–10	–1	–7	–9	2	0	12	–7	–20	–5	–30	–23	–46
2200	–44	–44	–75	–97	–77	–105	–91	–138	–185	–171	–221	–223	–278
2400	–165	–186	–235	–276	–251	–295	–291	–343	–402	–395	–440	–452	–507
2500	–248	–274	–324	–368	–342	–387	–387	–434	–492	–488	–526	–542	–591
2600	–330	–358	–407	–449	–422	–466	–469	–510	–566	–563	–595	–612	–657
2700	–405	–432	–478	–518	–490	–531	–535	–572	–626	–623	–650	–668	–708
2800	–470	–495	–537	–575	–546	–584	–590	–622	–673	–670	–693	–711	–749

950B SWITCHES			TABLE C4 – RECOMMENDED 950B-TYPE EQUALIZER SWITCH SETTINGS USING TWO EQUALIZERS FACILITY: TWO PAIRS OF A CHANNEL BANKS PLUS KILOFEET OF H88 LOADED CABLE											
			0-3	3-9	9-15	15-21	21-27	27-33	33-39	39-45	45-51	51-57	57-68	68-69	69-75
EQUALIZER NUMBER 1	LF	BA	2	2	2	2	2	2	2	2	2	2	2	2	2
		BB	4	4	4	4	5	4	4	4	4	5	4	3	4
		FA	3	3	3	3	3	3	3	3	3	3	3	3	2
		FB	3	3	3	2	2	2	1	2	1	1	1	1	6
	HF	BA	2	2	2	2	2	2	2	2	2	2	2	2	2
		BB	1	3	3	3	3	3	3	3	5	3	4	5	4
		FA	3	2	2	2	2	2	2	2	2	2	2	2	2
		FB	1	6	6	6	6	5	5	5	5	4	4	4	3
EQUALIZER NUMBER 2	LF	BA	2	2	2	2	2	2	2	2	2	2	2	2	2
		BB	4	5	6	4	5	6	5	5	5	5	5	5	5
		FA	6	6	6	5	5	5	5	5	5	5	5	5	5
		FB	1	1	1	6	6	6	5	5	5	4	4	4	3
	HF	BA	2	2	2	2	3	2	3	3	3	3	3	3	3
		BB	3	3	4	5	1	6	1	2	3	2	2	2	2
		FA	5	5	5	5	5	5	4	4	4	4	4	4	4
		FB	2	1	1	1	1	1	6	6	5	5	4	3	3

FREQUENCY (HZ)	TABLE C5 – DELAY OF 950B-TYPE EQUALIZERS (ms) FOR SETTINGS RECOMMENDED IN TABLE C4 FACILITY: TWO PAIRS OF A CHANNEL BANKS PLUS KILOFEET OF H88 LOADED CABLE												
	0-3	3-9	9-15	15-21	21-27	27-33	33-39	39-45	45-51	51-57	57-68	68-69	69-75
500	−1052	−1073	−1054	−1030	−1002	−1024	−981	−1021	−979	−987	−996	−1006	−961
600	−970	−990	−971	−939	−912	−932	−881	−928	−878	−885	−894	−903	−849
800	−717	−733	−713	−666	−644	−655	−587	−647	−582	−595	−592	−591	−531
1000	−381	−393	−372	−338	−335	−324	−278	−307	−271	−294	−269	−245	−236
1200	−203	−210	−191	−201	−201	−186	−179	−153	−168	−173	−149	−126	−141
1400	−133	−141	−131	−119	−114	−119	−92	−68	−78	−63	−51	−39	−32
1600	−6	−18	−24	6	2	−14	8	18	23	16	24	30	24
1800	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	14	−17	−4	−2	−8	−25	−15	−22	−39	−37	−41	−43	−58
2200	−44	−115	−101	−100	−110	−164	−141	−157	−162	−193	−184	−178	−216
2400	−186	−232	−230	−251	−270	−311	−304	−333	−341	−373	−375	−386	−420
2500	−248	−293	−299	−328	−355	−383	−397	−431	−451	−479	−497	−524	−552
2600	−332	−396	−404	−434	−463	−482	−516	−550	−580	−606	−638	−673	−696
2700	−466	−546	−550	−575	−595	−613	−655	−685	−717	−744	−781	−819	−837
2800	−633	−716	−712	−730	−737	−757	−797	−821	−849	−877	−913	−948	−962

TABLE D1 – NUMBER OF 950B-TYPE EQUALIZERS NEEDED
FACILITY: ONE PAIR OF A CHANNEL BANKS, ONE T1 CARRIER, PLUS H88 LOADED CABLE

CONDITIONING REQUIREMENT (NOTE 1)	KILOFEET OF H88 LOADED CABLE (NOTES 2 AND 3)												
	0-3	3-9	9-15	15-21	21-27	27-33	33-39	39-45	45-51	51-57	57-68	68-69	69-75
VB	0	0	0	0	0	0	0	0	0	0	0	0	0
VBE0	0	0	0	0	0	0	0	0	0	0	0	0	0
VBE1	0	0	0	0	0	0	0	0	0	0	0	0	X
VBM1	0	0	0	0	0	0	0	0	X	X	1	1	1
VBE2	0	0	0	0	0	0	0	0	X	X	1	1	1
VBM2	X	0	0	0	X	X	1	1	1	1	1	1	1
VBE3	X	0	0	0	X	X	1	1	1	1	1	1	1
VBM3	X	X	X	0	X	1	1	1	1	1	1	1	1
VBE4	X	X	X	0	X	1	1	1	1	1	1	1	1
VBM4	1	1	1	1	1	1	1	1	1	1	1	1	1
C1	0	0	0	0	0	0	0	0	0	0	0	0	0
C1E0	0	0	0	0	0	0	0	0	0	0	0	0	0
C1E1	0	0	0	0	0	0	0	0	0	0	X	1	1
C1M1	0	0	0	0	0	0	X	1	1	1	1	1	1
C1E2	0	0	0	0	0	0	X	1	1	1	1	1	1
C1M2	X	0	0	0	X	1	1	1	1	1	1	1	1
C1E3	X	0	0	0	X	1	1	1	1	1	1	1	1
C1M3	1	X	X	1	1	1	1	1	1	1	1	1	1
C1E4	1	X	X	1	1	1	1	1	1	1	1	1	1
C1M4	1	1	1	1	1	1	1	1	1	1	1	1	1
C2	0	0	0	0	0	0	0	1	1	1	1	1	1
C2E0	1	1	1	1	1	1	1	1	1	1	1	1	1
C2E1	1	1	1	1	1	1	1	1	1	1	1	1	1
C2M1	1	1	1	1	1	1	1	1	1	1	1	1	1
C2E2	1	1	1	1	1	1	1	1	1	1	1	1	1
C2M2	1	1	1	1	1	1	1	1	1	1	1	1	Y
C2E3	1	1	1	1	1	1	1	1	1	1	1	1	Y
C2M3	Y	Y	1	1	1	1	1	1	1	1	1	1	2
C2E4	Y	Y	1	1	1	1	1	1	1	1	1	1	2
C2M4*	2	2	2	Y	Y	Y	1	1	1	1	1	1	2
C4	0	1	1	1	1	1	1	1	1	1	1	1	1
C5	Y	Y	1	1	1	1	1	1	1	1	1	1	2

Notes: 1 — Overall conditioning requirements are specified in 314-410-500.
2 — The letter X is used where equalization is not required, however requirements are met with less than 10 percent margin. The use of a 950B equalizer at a point marked X is a system engineering decision.
3 — The letter Y shows uses where using only one 950B equalizer provides less than 10 percent margin over the requirement.

* — Use Tables D4 and D5 where two equalizers are called for.

950B SWITCHES		TABLE D2 – RECOMMENDED 950B-TYPE EQUALIZER SWITCH SETTINGS FACILITY: ONE PAIR OF A CHANNEL BANKS, ONE T1 CARRIER, PLUS KILOFEET OF H88 LOADED CABLE												
		0-3	3-9	9-15	15-21	21-27	27-33	33-39	39-45	45-51	51-57	57-68	68-69	69-75
LF	BA	5	5	5	4	4	4	4	4	4	4	4	3	3
	BB	1	1	1	6	5	5	5	3	3	2	2	6	5
	FA	5	5	5	4	4	4	4	4	4	4	4	4	3
	FB	3	2	1	6	6	5	4	3	3	2	1	1	6
HF	BA	4	4	4	4	4	4	4	3	4	3	3	3	3
	BB	6	5	4	3	3	2	2	6	1	5	4	3	2
	FA	3	3	3	3	3	3	2	2	2	2	2	2	2
	FB	6	5	4	3	2	1	6	6	5	4	3	3	3
FREQUENCY (HZ)		TABLE D3 – DELAY OF 950B-TYPE EQUALIZER (ms) FOR SETTINGS RECOMMENDED IN TABLE D2 FACILITY: ONE PAIR OF A CHANNEL BANKS, ONE T1 CARRIER, PLUS KILOFEET OF H88 LOADED CABLE												
500		−424	−417	−411	−418	−447	−441	−426	−438	−441	−460	−456	−489	−480
600		−397	−389	−381	−386	−414	−406	−388	−397	−400	−415	−408	−441	−428
800		−322	−309	−297	−296	−321	−308	−284	−284	−285	−291	−277	−303	−280
1000		−217	−200	−185	−176	−194	−177	−151	−138	−135	−133	−119	−126	−96
1200		−97	−82	−70	−57	−63	−53	−35	−17	−11	−12	−16	−2	12
1400		−8	−3	−2	5	9	5	8	13	23	9	−8	3	−9
1600		14	11	6	6	11	4	3	−4	7	−5	−13	−13	−28
1800		0	0	0	0	0	0	0	0	0	0	0	0	0
2000		−14	−9	−4	−5	−19	−20	−30	−16	−43	−49	−64	−63	−53
2200		−48	−47	−49	−61	−97	−110	−136	−123	−166	−195	−228	−237	−231
2400		−131	−141	−156	−182	−229	−253	−281	−281	−320	−362	−398	−415	−416
2500		−187	−202	−221	−251	−298	−324	−349	−355	−389	−433	−467	−486	−488
2600		−246	−263	−284	−316	−361	−387	−410	−419	−448	−492	−524	−544	−547
2700		−303	−321	−343	−374	−417	−442	−461	−473	−498	−541	−570	−591	−594
2800		−355	−373	−394	−424	−465	−488	−505	−518	−539	−581	−608	−629	−633

950B SWITCHES			TABLE D4 – RECOMMENDED 950B-TYPE EQUALIZER SWITCH SETTINGS USING TWO EQUALIZERS FACILITY: ONE PAIR OF A CHANNEL BANKS, ONE T1 CARRIER, PLUS KILOFEET OF H88 LOADED CABLE											
			0-3	3-9	9-15	15-21	21-27	27-33	33-39	39-45	45-51	51-57	57-68	68-69	69-75
EQUALIZER NUMBER 1	LF	BA	3	3	3	3	3	3							3
		BB	3	2	3	2	2	2							1
		FA	3	3	3	3	3	2							2
		FB	2	2	1	1	1	1	← NOT APPLICABLE →						5
	HF	BA	3	3	3	3	3	3							3
		BB	3	3	3	3	3	3							4
		FA	3	3	2	2	2	2							2
		FB	1	1	6	6	6	5							2
EQUALIZER NUMBER 2	LF	BA	4	3	3	3	3	3							3
		BB	1	6	6	6	5	6							6
		FA	6	6	5	5	5	5							5
		FB	1	1	6	6	5	5	← NOT APPLICABLE →						2
	HF	BA	3	3	3	3	3	3							3
		BB	2	2	3	4	5	6							6
		FA	5	5	5	5	5	5							4
		FB	3	4	3	3	2	2							3

FREQUENCY (HZ)	TABLE D5 – DELAY OF 950B-TYPE EQUALIZERS (ms) FOR SETTINGS RECOMMENDED IN TABLE D4. FACILITY: ONE PAIR OF A CHANNEL BANKS, ONE T1 CARRIER, PLUS KILOFEET OF H88 LOADED CABLE												
500	−753	−769	−735	−743	−744	−713							−684
600	−665	−680	−641	−647	−647	−610							−566
,800	−429	−436	−398	−393	−389	−350							−274
1000	−197	−188	−187	−166	−154	−149							−67
1200	−103	−90	−112	−94	−70	−95							−13
1400	−63	−53	−58	−51	−19	−45							25
1600	−15	−4	−4	−2	16	1	← NOT APPLICABLE →						30
1800	0	0	0	0	0	0							0
2000	−3	−19	−26	−27	−27	−39							−79
2200	−58	−88	−110	−115	−110	−146							−207
2400	−142	−178	−206	−220	−224	−270							−375
2500	−187	−215	−252	−271	−289	−335							−482
2600	−250	−262	−313	−336	−370	−413							−598
2700	−343	−337	−402	−424	−470	−508							−713
2800	−463	−443	−513	−532	−582	−613							−818