

WLT-100 SECONDARY TEST SET



WLT-100 SECONDARY TEST SET

The **WESTRIP WLT-100** Secondary Test Set has been designed to perform full function testing of the RMS-2007AF, RMS-2002, RMS-85, WESTRIP RMS-2000, AMPTECTOR, and ITEKTOR Logic controllers. It allows the user to check the time current characteristics of the logic programmer at an infinite number of points along its curves, test the programmer diagnostic circuitry, and flux shifter operation. The test set is a rugged, lightweight, portable device designed specifically with the service man in mind.

The following are some simple precautions that should be observed when performing a secondary test on any logic controller.

- * The Test Set operates, at full load, at more than 60 amps and is designed to handle current amplitudes according to the Long Time trip curves. Prolonged or repetitive testing at higher current settings will cause internal damage to the Test Set and Logic.
- * Holding the "CALIBRATE" switch for more than 10 to 15 seconds at a time may cause overheating and/or damage to the Test Set and Logic.
- * Use the "STOP" whenever a trip occurs and the Test Set does not cut off.
- * On AMPTECTOR and ITEKTOR Logic, the general procedure is to start with the high current settings and work down to the lowest current setting. This avoids unnecessary dial changes after calibration.

LEGEND TO PICTURES ON PAGE 5

1> POWER CORD	10> PICK-UP	19> LOGIC SELECTOR
2> FUSE	11> TEST	20> GROUND FAULT
3> POWER	12> CALIBRATE	21> EXTERNAL AMMETER
4> TRIP TIMER	13> RANGE	22> RMS 2007AF & WESTRIP RMS 2000
5> AMMETER	14> VARIAC	INTERFACE CABLE
6> PHASE SELECTOR	15> STOP	23> AMPTECTOR & ITEKTOR INTERFACE
7> ACTUATOR	16> TEST/RESET	CABLE
8> TIMER	17> INST	
9> RESET	18> SHORT DELAY	

1> POWER CORD

Receptacle for inserting modular power cord supplied with unit

2> FUSE

Replace with 4A fuse only.

3> POWER

Switch turns power on and off to the test set. The red lamp indicates when power is on. Lamp will not light if Fuse has failed.

4> TRIP TIMER

Meter shows the elapsed time between the start of the Test and the trip pulse from the logic.

5> AMMETER

Meter shows the level of current flowing to the logic from the test set. The reading updates about 3 times per second.

6> PHASE SELECTOR

4-Position switch that simulates the three phase ("A", "B", "C") currents for testing of the logic inputs. The "N" setting is for testing of the 'GROUND FAULT' on the AMPTECTOR or ITEKTOR logic.

7> ACTUATOR

Binding post that allows an external actuator to be tested with the logic without having to wire directly to the logic.

8> TIMER

Switch to turn the "TRIP TIMER" indication "ON" or "OFF".

9> RESET

Green indication for the “RESET” function of the test set.

10>PICK-UP

Yellow indication that shows “PICK-UP” for the AMPTECTOR or ITECKTOR logic.

11>TEST

Red indication for the “TEST” function of the test set.

12>CALIBRATE

Switch that allows the test current to be set at higher levels. It turns on the output current and prevents the test set from tripping.

13>RANGE

“LO” limits the output current to about 7.5 Amps. “HI” is not limited and will exceed 60A when testing a logic. Care should be taken to start all tests at the lower setting so as not to damage the logic control. The “N” setting of the “PHASE SELECTOR” switch works with the “LO” setting only.

14>VARIAC

Provides for accurate control of the output current. Levels are determined by the setting on the “RANGE” switch.

15>STOP

Switch stops all tests that are in progress.

16>TEST/RESET

Switch to the “TEST” position to begin the test. The “RESET” position to reset the test set after a trip. The test set must be “RESET” after turning the test set “ON” and prior to running any test.

17>INST

Disables the “INSTANTANEOUS” function on the AMPTECTOR and ITECKTOR logic.

18>SHORT DELAY

Defeats the “SHORT DELAY” function on the AMPTECTOR and ITECKTOR logic.

19>LOGIC SELECTOR

Used to select the type of logic being tested.

20>GROUND FAULT

“TEST” position to test the ‘GROUND FAULT’ portion of the Logic. “DEFEAT” position to test the “LONG TIME”, “SHORT TIME”, and “INSTANTANEOUS” functions.

21>EXTERNAL AMMETER

Binding posts that allows an external ammeter to be connected to the test set. Can be used to verify the “AMMETER” reading. A jumper must be placed between the posts if an external ammeter is not used.

22>WESTRIP RMS 2000 & RMS 2007AF INTERFACE CABLE

Used for connecting the test set to the RMS-2007AF & WESTRIP RMS-2000 logics.

23>AMPTECTOR & ITEKTOR INTERFACE CABLE

Used for connecting the test set to the AMPTECTOR & ITEKTOR logics.

BASIC SETUP AND TEST PROCEDURE

1. Insert the AC cord into the test set and connect to a 120-volt outlet.
2. Select the correct interface for the type of logic being tested. Connect it to the test set by screwing the round connector plugs together. Plug the straight connector into the logic.
3. Turn on test set by placing the "POWER" switch to the "ON" position.
4. "RESET" the Test Set using the "TEST/RESET" switch.
5. If an external ammeter is not used, make certain that a jumper is placed between the "EXTERNAL AMMETER" binding posts.
6. Set "VARIAC" to '0' and "RANGE" to "LO". *After testing a selected pick-up current or delay function, it is advised to return the "VARIAC" control to zero before proceeding to the next test.
7. To begin a test move the "TEST/RESET" switch to the "TEST" position. *When testing pick-up currents, start by selecting "LO" on the "RANGE" switch. With the "VARIAC" at zero turn clockwise until the unit trips or the pick-up light turns on. If the logic controller does not trip at this setting, return the "VARIAC" to zero and select the "HI" position on the "RANGE" switch and proceed with the test.
8. Testing of each logic and function is described in more detail on the following pages.

NOTE: When secondary testing with the Logic on the Breaker, it may not be possible to trip the Actuator and the Test Set Timer at the same time. To test the timing it may be necessary to remove the Actuator wiring.

SAMPLE TEST CHART

DATE: ___/___/___

LOGIC SERIAL NUMBER: _____

LONG TIME FUNCTION:

SWITCH SETTING _____ AMP TAP _____ PICKUP CURRENT _____
 DELAY SETTING _____ TEST CURRENT _____ ELAPSED TIME A _____ B _____ C _____

SHORT TIME FUNCTION:

SWITCH SETTING _____ AMP TAP _____ PICKUP CURRENT _____
 DELAY SETTING _____ TEST CURRENT _____ ELAPSED TIME A _____ B _____ C _____

INSTANTANEOUS FUNCTION:

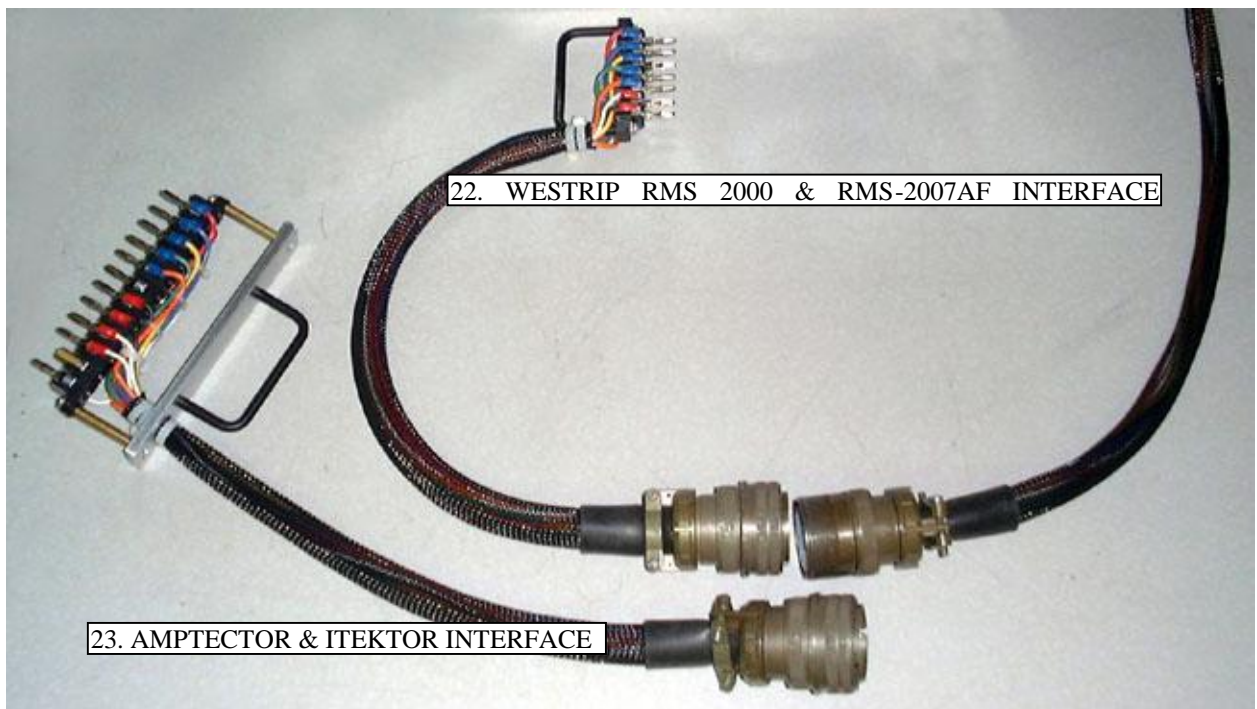
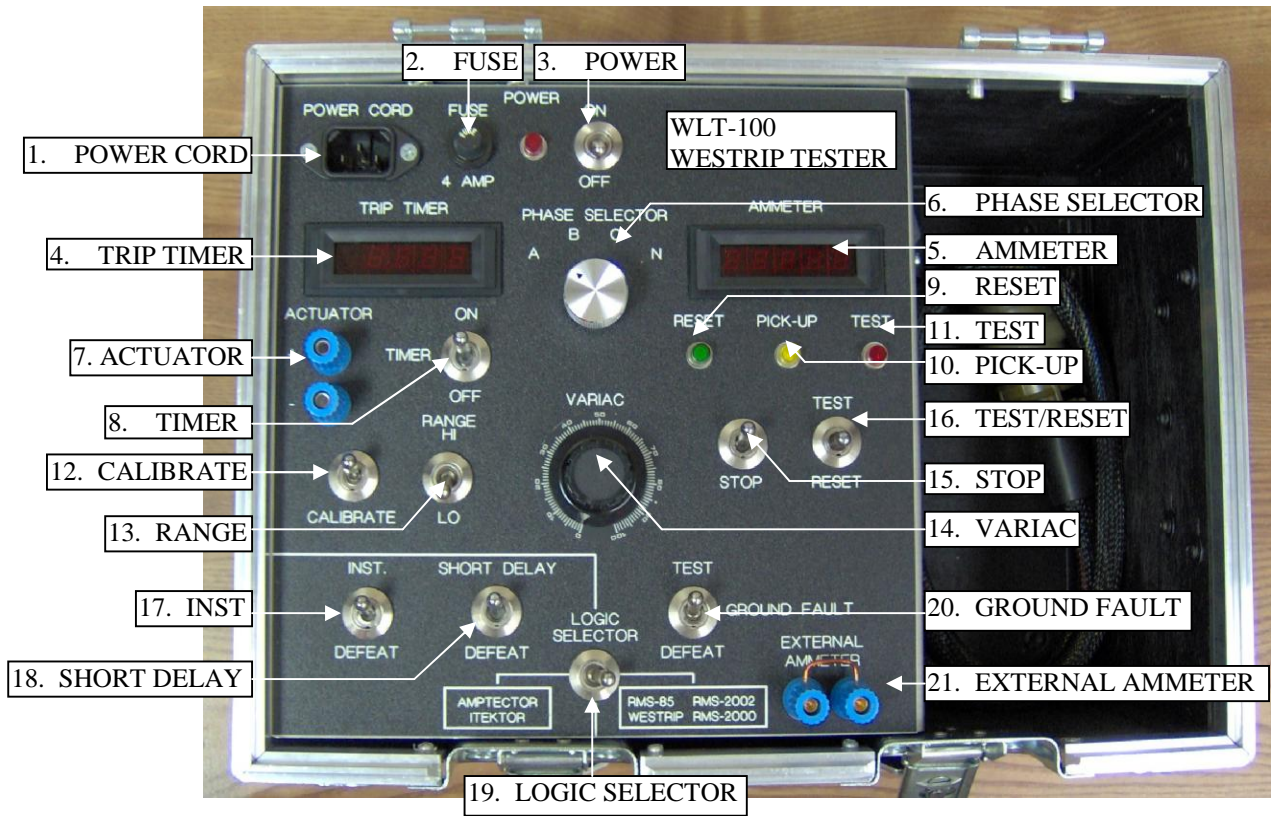
SWITCH SETTING _____ AMP TAP _____ PICKUP CURRENT _____
 TEST CURRENT _____ ELAPSED TIME A _____ B _____ C _____

ARC FLASH FUNCTION:

SWITCH SETTING _____ AMP TAP _____ PICKUP CURRENT _____
 TEST CURRENT _____ ELAPSED TIME A _____ B _____ C _____

GROUND FAULT FUNCTION:

SWITCH SETTING _____ PICKUP CURRENT _____
 DELAY SETTING _____ TEST CURRENT _____ ELAPSED TIME A _____ B _____ C _____



TEST PROCEDURE FOR THE WESTRIP RMS-2007AF LOGIC

1. Using the RMS-2007AF Interface Cable, connect to the test set wiring harness to the logic box to be tested.
2. Verify the "VARIAC" is set to zero, "RANGE" is on "LO", then switch "POWER" "ON".
3. Switch the "LOGIC SELECTOR" to "RMS-2007AF, etc".
4. "RESET" the test set.
5. When testing the LSI logic the "GROUND FAULT" switch must be set to "DEFEAT". The LSIG logic can also be tested on this setting except for 'GROUND' function. Set this switch to the "TEST" position to test the 'GROUND' function.
6. After testing a selected pick-up current or delay function, it is advised that the "VARIAC" be returned to zero before proceeding to the next test.
7. When testing pick-up currents, start by selecting the "LO" "RANGE". With the "VARIAC" at zero, turn clockwise until the unit trips or the pick-up light on the logic turns on. If the logic controller does not trip at this setting, return the "VARIAC" to zero and select "HI" "RANGE" and proceed with the test.
8. Testing of each function is described in more detail on the following pages.

The "Sample Test Chart" on page 4 gives a basic layout for recording the results of the test performed on any Logic Control. The form can be used when testing on secondary or primary.

LONG TIME FUNCTION TESTING

PICK-UP TEST

1. Select the Phase to be tested. Make certain all other functions are adjusted so as not to interfere with the selected test.
2. Set the 'LONG TIME' Delay switch to '2' and the 'LONG TIME' Pick up switch to the test point.
3. Start the "Test Set" and slowly increase the "VARIAC" from "0" until the 'PICK-UP' LED on the logic turns on. The "PICK-UP" Light on the Test Set will not function.
4. Record the "AMMETER" reading just as the pick-up LED lights. Compare the reading to that of Chart 2A. The reading should be within +/- 10% of the stated value.
5. Return "VARIAC" control to "0". Repeat for other phases or pick-up settings if desired.

LONG TIME DELAY

1. Select the Phase to be tested. Make certain all other functions are adjusted so as not to interfere with the selected test.
2. Set the 'LONG TIME' Delay switch to the desired setting; '2', '3', '4', '5', '7', '10', '12', '15', '20', or '24'. These settings are referenced to a current level equal to 600% of the 'LONG TIME' Pick-Up. Actual delays can vary in accordance with the 'Time vs. Current Characteristic' curves. If a current level of 200% or 300% is used, refer to the table below for the corresponding timing range.
3. After the logic is adjusted, set the test current to the desired level, i.e. 300% of the long time pick-up switch setting. "STOP" the test and "RESET" the test set.
4. Start, "TEST", the test set and let run until the logic trips and the "TRIP TIMER" stops. The "TRIP TIMER" should indicate the elapsed time. Compare this time to that of the Chart 1A below or the trip curves. Repeat for other phases or switch settings if desired.
5. Return the "VARIAC" to "0".

Chart 1A

Long Time Delay

*Time in Seconds

		Test Current Level					
		200%		300%		600%	
		Low Side	High Side	Low Side	High Side	Low Side	High Side
Delay Setting	2	14.4	21.6	6.4	9.6	1.6	2.5
	3	21.6	32.4	9.6	14.4	2.4	3.8
	4	28.8	43.2	12.8	19.2	3.2	5.0
	5	36	54	16	24	4	6.3
	7	50.4	75.6	22.4	33.6	5.6	8.8
	10	72	108	32	48	8	12.5
	12	86.4	129.6	38.4	57.6	9.6	15
	15	108	162	48	72	12	18.8
	20	144	216	64	96	16	25
	24	172.8	259.2	76.8	115.2	19.2	30

Chart 2A L/T Pick-Up		LONG TIME PICK UP						
		.4	.5	.6	.7	.8	.9	1.0
Amp Tap	.5	1.00	1.25	1.5	1.75	2.00	2.25	2.50
	.6	1.20	1.50	1.80	2.10	2.40	2.70	3.00
	.7	1.40	1.75	2.10	2.45	2.80	3.15	3.50
	.8	1.60	2.00	2.40	2.80	3.20	3.60	4.00
	.9	1.80	2.25	2.70	3.15	3.60	4.05	4.50
	1.0	2.00	2.50	3.00	3.50	4.00	4.50	5.00

SHORT TIME FUNCTION TESTING

PICK-UP TEST

1. Select the Phase to be tested and set the 'LONG TIME' Delay switch to '24'. Make certain all other functions are adjusted so as not to interfere with the selected test.
2. Set 'SHORT TIME' Delay switch to '.15' and adjust the 'SHORT TIME' Pick up switch to the test point.
3. Start the "Test Set" and slowly increase the "VARIAC" from "0" until the logic trips.
4. Record the "AMMETER" reading at the moment the trip occurs. Compare the reading to the value found in Chart 2B. The reading should be within +/- 10% of the stated value. Repeat for other phases or pick-up settings if desired.
5. Return the "VARIAC" to "0".

SHORT TIME DELAY

1. Select the Phase to be tested and set the 'LONG TIME' Delay switch to '24'. Make certain all other functions are adjusted so as not to interfere with the selected test.
2. Set the 'SHORT TIME' Delay switch to the desired setting; '.1', '.15', '.2', '.25', '.3', '.35', '.4', '.45', '.5', or 'I²T'.
3. Using the "CALIBRATE" switch set the test current to a level that is 150% of the 'SHORT TIME' Pick-up current. Once the "VARIAC" is set, release the "CALIBRATE" switch. "RESET" the test set. When performing the test, the 'INSTANTANEOUS' or 'ARC FLASH' pick-up may interfere. If this occurs adjust the 'DEFEAT SELECTOR' on the logic box to the 'INSTANTANEOUS' setting and Jumper to external connector for the ARC FLASH Defeat to prevent tripping.
4. Start, "TEST", the test set and let run until the logic trips and the "TRIP TIMER" stops. The "TRIP TIMER" should indicate the elapsed time. Compare this time to that of the Chart 1B below or the trip curves. Repeat for other phases or switch settings if desired.
5. Return the "VARIAC" to "0".

Chart 1B Short Time Delay *Time in milli-Sec.		Test Current Level	
		150%	
		Low Side	High Side
Delay Setting	.1	65	100
	.15	98	150
	.2	130	200
	.25	163	250
	.3	195	300
	.35	228	350
	.4	260	400
	.45	293	450
	.5	325	500
	**I ² T	.58 Sec.	.90 Sec.

**I²T Test Settings: 'AMP TAP' = '1.0', 'SHORT TIME' = '2', Test current = 15A.

Chart 2B S/T Pick-up		SHORT TIME PICK UP									
		1.5	2	3	4	5	6	7	8	9	10
Amp Tap	.5	3.75	5.00	7.50	10.0	12.5	15.0	17.5	20.0	22.5	25.0
	.6	4.50	6.00	9.00	12.0	15.0	18.0	21.0	24.0	27.0	30.0
	.7	5.25	7.00	10.5	14.0	17.5	21.0	24.5	28.0	31.5	35.0
	.8	6.00	8.00	12.0	16.0	20.0	24.0	28.0	32.0	36.0	40.0
	.9	6.75	9.00	13.5	18.0	22.5	27.0	31.5	36.0	40.5	45.0
	1.0	7.50	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0

INSTANTANEOUS FUNCTION TESTING

PICK-UP TEST

1. Select the Phase to be tested and set the 'LONG TIME' Delay switch to '24'. Make certain all other functions are adjusted so as not to interfere with the selected test.
2. Set 'INSTANTANEOUS' Pick up switch to the test point.
3. Start the "Test Set" and slowly increase the "VARIAC" from "0" until the logic trips.
4. Record the "AMPERE" reading at the moment the trip occurs. Compare the reading to the value found in Chart 2C. The reading should be within +/- 10% of the stated value. Repeat for other phases or pick-up settings if desired.
5. Return the "VARIAC" to "0".

INSTANTANEOUS DELAY

1. Select the Phase to be tested and set the 'LONG TIME' Delay switch to '24'. Make certain all other functions are adjusted so as not to interfere with the selected test.
2. Using the "CALIBRATE" switch set the test current to a level that is 150% of the 'INSTANTANEOUS' Pick-up current. Once the "VARIAC" is set, release the "CALIBRATE" switch. "RESET" the test set.
3. Start, "TEST", the test set and let run until the logic trips and the "TRIP TIMER" stops. The "TRIP TIMER" should indicate the elapsed time. Compare this time to that of the Chart 1C below or the trip curves. Repeat for other phases or switch settings if desired.
4. Return the "VARIAC" to "0".

Chart 1C – Instantaneous Delay

Set Secondary Current No More Than
To 150% of Chart 2C .06 Sec

Chart 2C		INSTANTANEOUS PICK UP									
Inst. Pick-up		2	3	4	5	6	7	8	9	10	12
Amp Tap	.5	5.00	7.50	10.0	12.5	15.0	17.5	20.0	22.5	25.0	30.0
	.6	6.00	9.00	12.0	15.0	18.0	21.0	24.0	27.0	30.0	36.0
	.7	7.00	10.5	14.0	17.5	21.0	24.5	28.0	31.5	35.0	42.0
	.8	8.00	12.0	16.0	20.0	24.0	28.0	32.0	36.0	40.0	48.0
	.9	9.00	13.5	18.0	22.5	27.0	31.5	36.0	40.5	45.0	54.0
	1.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	60.0

ARC FLASH FUNCTION TESTING

PICK-UP TEST

1. Select the Phase to be tested and set the 'LONG TIME' Delay switch to '24'. Make certain all other functions are adjusted so as not to interfere with the selected test.
2. Set 'ARC FLASH' Pick up switch to the test point.
3. Start the "Test Set" and slowly increase the "VARIAC" from "0" until the logic trips.
4. Record the "AMPERE" reading at the moment the trip occurs. Compare the reading to the value found in Chart 2D. The reading should be within +/- 10% of the stated value. Repeat for other phases or pick-up settings if desired.
5. Return the "VARIAC" to "0".

INSTANTANEOUS DELAY

1. Select the Phase to be tested and set the 'LONG TIME' Delay switch to '24'. Make certain all other functions are adjusted so as not to interfere with the selected test.
2. Using the "CALIBRATE" switch set the test current to a level that is 150% of the 'ARC FLASH Pick-up current. Once the "VARIAC" is set, release the "CALIBRATE" switch. "RESET" the test set.
3. Start, "TEST", the test set and let run until the logic trips and the "TRIP TIMER" stops. The "TRIP TIMER" should indicate the elapsed time. Compare this time to that of the Chart 1D below or the trip curves. Repeat for other phases or switch settings if desired.
4. Return the "VARIAC" to "0".

Chart 1D – Instantaneous Delay

Set Secondary Current
To 150% of Chart 2D

No More Than
.05 Sec

Chart 2D		ARC FLASH PICK UP									
Inst. Pick-up		2	3	4	5	6	7	8	9	10	12
Amp Tap	.5	5.00	7.50	10.0	12.5	15.0	17.5	20.0	22.5	25.0	30.0
	.6	6.00	9.00	12.0	15.0	18.0	21.0	24.0	27.0	30.0	36.0
	.7	7.00	10.5	14.0	17.5	21.0	24.5	28.0	31.5	35.0	42.0
	.8	8.00	12.0	16.0	20.0	24.0	28.0	32.0	36.0	40.0	48.0
	.9	9.00	13.5	18.0	22.5	27.0	31.5	36.0	40.5	45.0	54.0
	1.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	60.0

GROUND FAULT FUNCTION TESTING

PICK-UP

1. Set the "GROUND FAULT" switch to the "TEST" setting.
2. Select the Phase to be tested and set the 'LONG TIME' Delay switch to '24'. Make certain all other functions are adjusted so as not to interfere with the selected test.
3. Set 'GROUND FAULT' Delay switch to '.15' and adjust the 'GROUND FAULT' Pick up switch to the test point.
4. Start the "Test Set" and slowly increase the "VARIAC" from "0" until the logic trips.
5. Record the "AMMETER" reading at the moment the trip occurs. Compare the reading to the value found in Chart 2E. The reading should be within +/- 10% of the stated value. Repeat for other phases or pick-up settings if desired.
6. Return the "VARIAC" to "0".

GROUND DELAY

1. Select the Phase to be tested and set the 'LONG TIME' Delay switch to '24'. Make certain all other functions are adjusted so as not to interfere with the selected test. Verify that "GROUND FAULT" is set to "TEST".
2. Set the 'GROUND FAULT' Delay switch to the desired setting; '.1', '.15', '.2', '.25', '.3', '.35', '.4', '.45', or '.5'.
3. Using the "CALIBRATE" switch set the test current to a level that is 300% of the 'GROUND FAULT' Pick-up current. Once the "VARIAC" is set, release the "CALIBRATE" switch. "RESET" the test set.
4. Start, "TEST", the test set and let run until the logic trips and the "TRIP TIMER" stops. The "TRIP TIMER" should indicate the elapsed time. Compare this time to that of Chart 1E below or the trip curves. Repeat for other phases or switch settings if desired.
5. Return the "VARIAC" to "0".

Chart 1E

Ground Fault Delay

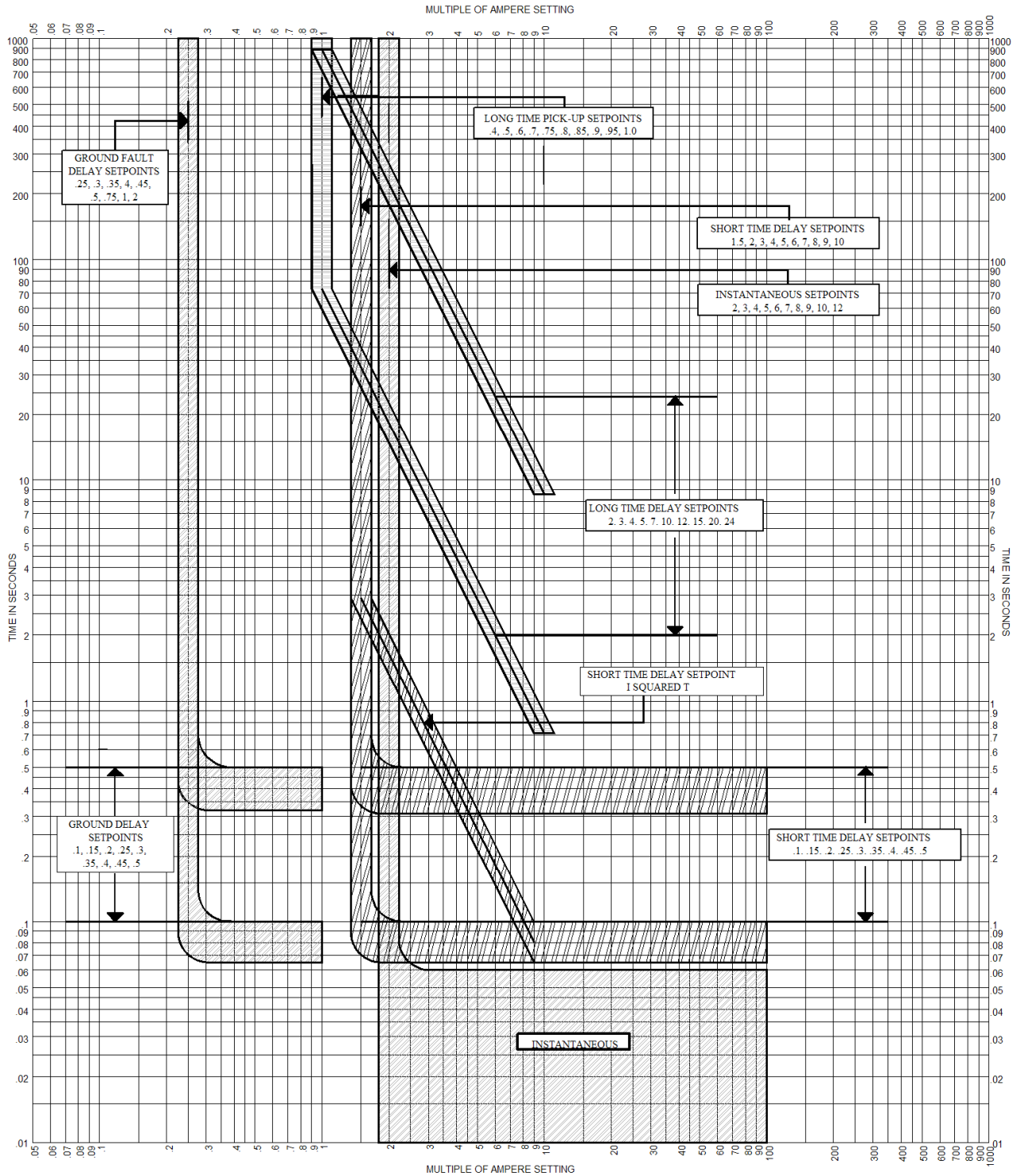
*Time in milli-Sec

		Test Current Level	
		300%	
Delay Setting		Low Side	High Side
	.1	65	100
	.15	98	150
	.2	130	200
	.25	163	250
	.3	195	300
	.35	228	350
	.4	260	400
	.45	293	450
.5	325	500	

Chart 2E – Ground Fault Pick-up Currents

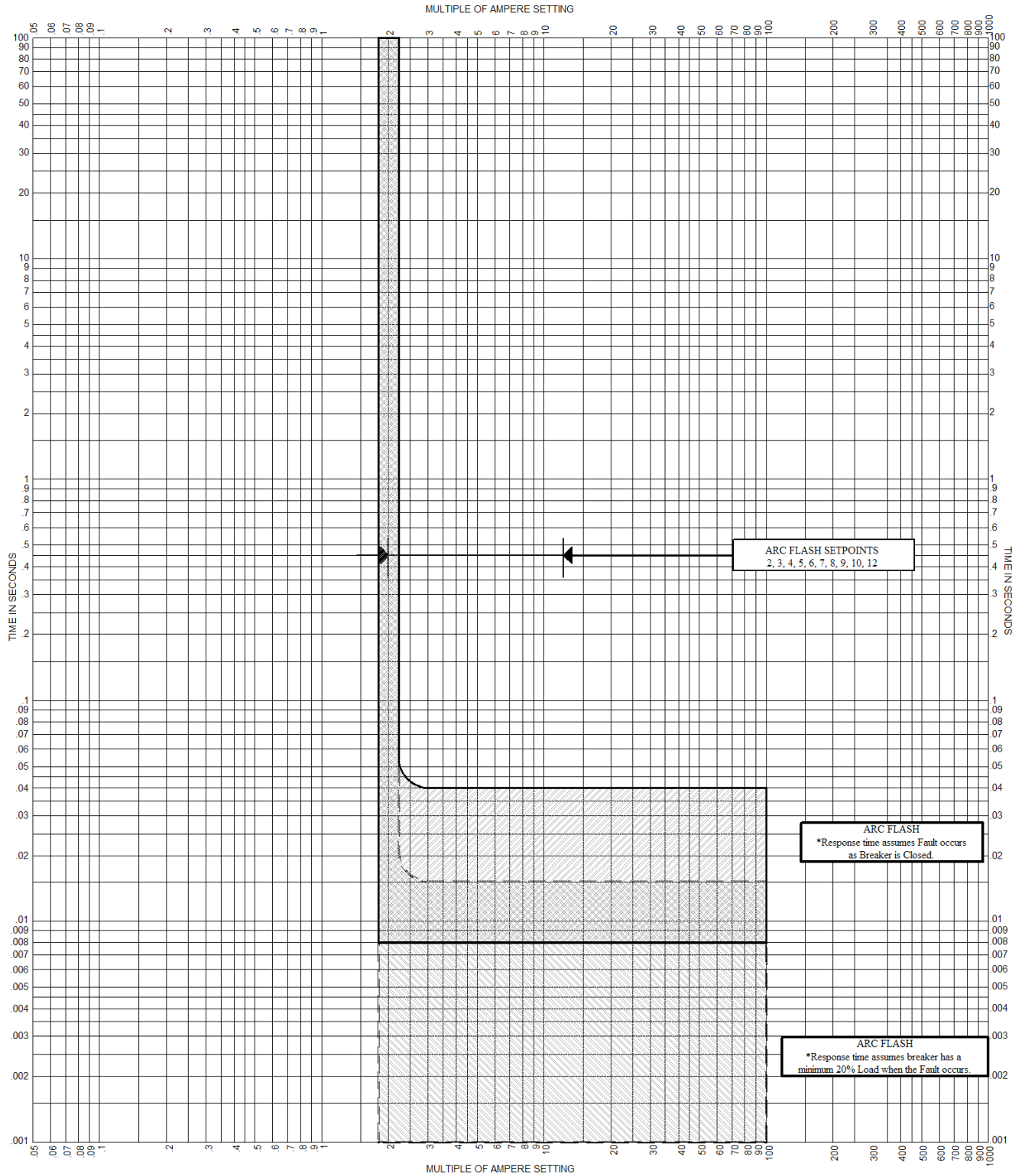
GROUND FAULT PICK UP									
.25	.3	.35	.4	.5	.6	.75	1.0	2.0	Defeat
1.25	1.50	1.75	2.00	2.50	3.00	3.75	5.00	10.0	No Trip

NOTE – 'GROUND FAULT' Pick ups not affected by 'AMP TAP' setting.



FOR WESTRIP **WESTRIP RMS-2007AF PROGRAMMABLE LOGIC CONTROL Rev.01** **TIME-CURRENT CHARACTERISTIC CURVES** DATED 2007

STANDARD DEVIATION FOR AMPERE SETTING IS +/- 10%



WESTRIP RMS-2007AF PROGRAMMABLE LOGIC CONTROL Rev.01 TIME-CURRENT CHARACTERISTIC CURVES
 FOR RMS-2007AF ARC FLASH CURVE DATED 2007

STANDARD DEVIATION FOR AMPERE SETTING IS +/- 10% _____

Curve as shown does not include breaker clearing time. _____

TEST PROCEDURE FOR THE AMPTECTOR

Some of the precautions on page 2 and the following procedure has been taken from Westinghouse Document #5245B18 and adapted so that the Amprector logic can be tested similarly using the WLT-100 Secondary Test Set. Using the AMPTECTOR & ITEKTOR Interface Cable, connect to the test set wiring harness to the logic box to be tested.

*Time marked on Amprector dials are Top of the band, so shorter times should be expected.

*Set the "LOGIC SELECTOR" to the "AMPTECTOR/ITEKTOR" setting.

A) 3- Phase

The "PHASE SELECTOR" switch permits checking of all phase inputs to verify the pick-ups are similar. Since all feed into a common pick-up and timing circuit, it is only necessary to use a single phase to check out all of the solid state circuitry. To verify each phase is similar, a single circuit function should be used. Long Time pickup should be about 5 amp on each of the 3 phases when set at 1X.

B) Pick-Up

Values are mid-band with a +/- 10% tolerance.

C) Long Delay Pick-Up ("RANGE" to "LO", "TIMER" to "OFF")

- 1> "RESET" and then "TEST"
- 2> Slowly increase the "VARIAC" until the "PICK-UP" light glows steadily indicating the pick-up.
- 3> Use "STOP" switch to cut off current.

D) Long Delay Time ("RANGE" to "HI", 'Short Delay' and 'Inst.' Pick-ups set above 6X, use "CALIBRATE" to adjust the "VARIAC" for a current output of 30 Amps or 6X)

- 1> "RESET", then "TIMER" to "ON".
- 2> "TEST" – Test Set will stop when Amprector trips the output. "TRIP TIMER" should read less than dial setting but not under 2/3 of the setting, i.e. if set at 36 it should be more than 24 seconds.
- 3> Any multiple of sensor may be checked. See the performance curves for approximate trip time to be expected.

E) Instantaneous ("RANGE" to "HI", "TIMER" to "OFF")

- 1> Set Long Delay time to maximum so long delay will not trip to fast.
- 2> Set "SHORT DELAY" on the test set to "DEFEAT" to disable the 'Short Delay' function.
- 3> "RESET" and then "TEST", increase the "VARIAC" steadily and rapidly until relay "clicks" off the test set. (If current is preset to about ¾ of the setting, using the calibrate switch, the final setting can be approached slower for better accuracy).
- 4> "RESET", then hold "INST." to "DEFEAT" position, "TEST", and read the "AMMETER".

F) 12X Discriminator GO/NO-GO test (If Amprector does not have an Instantaneous trip function, perform this test.)

- 1> Do steps E.1 and E.2.
- 2> With "VARIAC" set at zero, "RESET", and then "TEST". Gradually, but within 3 seconds raise the output current to 65 amps using the "VARIAC". The Amprector should not trip instantaneously. After about 2 seconds "STOP" the test set. Do not adjust the "VARIAC" at this time.
- 3> "RESET". Wait about 10 seconds then "TEST". Amprector should trip instantaneously.
- 4> Using the "CALIBRATE" switch, adjust "VARIAC" for 45 Amp output. "RESET". Wait about 10 seconds then "TEST". The Amprector should not trip instantaneously. After about 2 seconds "STOP" the test set.

G) Short Delay Pick-Up ("RANGE" to "HI", "TIMER" to "OFF", and 'Instantaneous' to Max.)

- 1> Move "SHORT DELAY" switch from "DEFEAT" position, time to min and proceed similar to Instantaneous above.
- 2> Set "SHORT DELAY" switch to "DEFEAT" to read "AMMETER" as in E.4 above.

H) Short Delay Time ("RANGE" to "HI", "TIMER" to "ON", and 'Instantaneous' to Max.)

NOTE: It is possible under certain conditions, that the fixed discriminator or Instantaneous function max. will trip instantaneously during short delay time testing. To avoid this, merely hold the "INST." switch in the "DEFEAT" position while performing the test in Step H.4.

- 1> Set Short Delay pick-up dial at 4X (20 Amps)
- 2> Set "VARIAC" at 10X (50 Amps) using the "CALIBRATE" switch.
- 3> Verify "SHORT DELAY" switch is not in the "DEFEAT" position.
- 4> "RESET", then "TEST". The "TRIP TIMER" should indicate the elapsed time.

This step can be repeated to check consistency of delay.

I) Ground Pick-Up

- 1> "PHASE SELECTOR" to "N".
- 2> "VARIAC" set at zero, "RANGE" to "LO"
- 3> "RESET", then "TEST".
- 4> Adjust "VARIAC" until logic trips. (0.9 to 12 amps)
- 5> For Amprector with adjustable pick-up, see chart on top of Amprector, in D.B. 32-850 or I.B. 33-790)
- 6> If sensors are connected to the Amprector during the test expect increased pick-up currents due to the required sensor exciting current. Again, see the chart mentioned in I.5 for typical values.

J) Ground Time

- 1> With "PHASE SELECTOR" at "N", hold the "CALIBRATE" switch and adjust the "VARIAC" to 2.5A output.
- 2> Release the "CALIBRATE" switch.
- 3> "RESET", then "TEST". The "TRIP TIMER" should indicate the elapsed time.

K) Long Delay Reset (Test with any Long Delay pick-up and time setting)

- 1> Set current to 30 Amps and find Long Delay trip time as in Section D. (Remember "RANGE" switch, and 'Short Delay' and 'Inst.' Pick-Up settings.)
- 2> Start test again, but when time is about up, drop current to about 80% of Long Delay pick-up setting. ("PICK-UP" light should go out)
- 3> Quickly raise current back to 30 amps and allow Amptector to trip.
- 4> The total time on counter should be between 150% and 200% of the trip time in (1) above.
(If time setting in (1) is very low, run test at 15 amps instead of 30 amps.)