UCRL 2430

UNCLASSIFIED

UNIVERSITY OF
CALIFORNIA

*Radiation
Laboratory*

BERKELEY, CALIFORNIA

DISCLAIMER

This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency Thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

DISCLAIMER

Portions of this document may be illegible in electronic image products. Images are produced from the best available original document.

-1-

no. 44052

UNIVERSITY OF CALIFORNIA

Radiation Laboratory

Contract No. W-7405-eng-48

50-CHANNEL PULSE-HEIGHT ANALYZER
ACCELERATOR TYPE

MAINTENANCE MANUAL

Robert E. Heller

December 15, 1953

Berkeley, California

50-CHANNEL PULSE-HEIGHT ANALYZER, ACCELERATOR TYPE -
MODEL I

SPECIFICATIONS

PULSE-HEIGHT ANALYZER - DWG. 6T5194
ACCELERATOR TYPE - MODEL I

Channels:	50
Channel Widths:	0, 0.05, 1, 3, 5 volts
Resolution:	3 microseconds, single channel 3 microseconds, adjacent channel
Channel Discrimination Stability:	± 0.05 volts
Wall Sharing Error:	1%
Register Scale Factor:	2, 16
Total Count Register Scaling Factor:	Either register scale factor or register scale factor squared.
Single Channel Counting Rates:	30 pps max for scale of 2 240 pps max for scale of 16
Random Analyzer Counting Rate:	500 pps max.
Low-Level Discrimination:	1-volt steps from 2 to 221 volts
Power:	3 KW, 230 volts, 60 cycle, 3 phase

50-CHANNEL PULSE-HEIGHT ANALYZER
ACCELERATOR TYPE

MAINTENANCE MANUAL

Radiation Laboratory, Department of Physics
University of California, Berkeley, California

December 15, 1953

INTRODUCTION

By use of ionization-chamber or scintillation equipment, radioactive particle energy can be transferred into electrical pulses. The pulse amplitudes, in turn, are proportional to particle energy. To establish a radioactivity energy spectrum, an instrument for determination of numerical pulse intensity as a function of particle energy is required. Such an instrument is the pulse-height analyzer.

This maintenance and operation manual for the UCRL 50-Channel Pulse-Height Analyzer, Accelerator Type, is by no means complete. It is intended primarily for use as an operational and maintenance aid.

OPERATING INSTRUCTIONS

CAUTION - ONCE THE PULSE-HEIGHT ANALYZER HAS BEEN PLACED IN SERVICE BY PLUGGING IT INTO A 230-VOLT, 3-PHASE LINE, THE MAIN 3-PHASE BREAKER SHOULD ALWAYS BE LEFT IN THE "ON" POSITION. THIS NOT ONLY WILL PROVIDE POWER FOR THE RACK LIGHTS AND CLOCK, BUT WILL ALSO PROVIDE FOR A MINIMUM DRIFT OF THE SNAPPER STRING VOLTAGE AND PULSE AMPLITUDE OF THE SIMULATED ALPHA PULSER. IF POWER IS REMOVED FROM THESE CIRCUITS, SEVERAL HOURS TO SEVERAL DAYS MAY BE REQUIRED FOR STABILIZATION.

Controls

The UCRL Model I Accelerator Type Pulse-Height Analyzer incorporates the latest electronic advances for high-speed pulse-height analysis, coupled with a mechanical design that makes the unit easy to operate and maintain.

All controls, within easy reach of the operator, are located on the Power Panel, the Control Panel, and the Linear Amplifier. The Simulated Alpha Pulser, although used for testing and calibration purposes, is not necessary for actual operation.

To apply power, after complying with "Caution" above, first actuate the 115-volt circuits with the upper breaker on the power panel. (This breaker is also used to turn off the power.) Next, press the power-push button for several seconds until cooling-fan air can actuate the air paddle switches. In event of a power or cooling failure, indicated by a neon light on the control panel, the analyzer power should be reset using this button.

Most of the designations on the Control Panel are self-evident, but a word of explanation may be in order. The input selector controls coaxial relay RE-1, located on the right wall of the rack. Either a source or the Simulated Alpha Pulser may be selected with this control. However, a second source may be substituted for the Simulated Alpha Pulser, if so desired. A separate gate input circuit is available for coincidence counting application.

The scale-factor selector controls the division rate of the 52 channels of plug-in scaling equipment. In one position a scale of 2 may be obtained, in the other position a scale of 16. The total-count "Squared Normal" switch has the facility of making the total-count scale factor either the same as the other scaling equipment or putting 2 scalers in tandem. This process, of course, squares the total-count scale factor. In the scale factor "2" position, a total count of 2 or 4 may be obtained. In the scale factor "16" position, a total count of 16 or 256 may be obtained.

The bias selector is used for a quick check on the important bias voltages of the snapper. Trim pots are located under the control desk and all voltages should be set to the red line on the meter. Unless the analyzer is subjected to extreme temperature changes, it is more than likely that these controls need never be touched after initial adjustment. However, it is good procedure to check these voltages when starting a run or when functional trouble is suspected.

The count switch is self-explanatory. It is used for putting the snapper gate and running-time meter into operation. When this switch is actuated, one may obtain the number of counts on the registers 1 through 50, and the total of all counts on the total-count register. Suitable scaling factors should be applied to registers. The elapsed period of time for the run is recorded on the running-time meter. To "clear" the analyzer after a run, it is necessary only to reset the running-time meter in the direction indicated by the arrow. An interlocking reset mechanism resets all scaler and register equipment. If it is desired to reset all scaler and register equipment without resetting the running-time meter, reset against the direction of the arrow.

For best accuracy, use the 5-volt channel width. The discrimination stability of a properly operating snapper circuit is within ± 0.05 volts. Under these conditions this provides for a 1 percent accuracy. The 3-volt and 1-volt channel widths are not as accurate, but are for use when more channels are needed over a smaller section of the energy spectrum. However, results equivalent to 1- and 3-volt channel widths may be obtained on 5-volt channel widths by increasing amplifier gain. This will provide better channel discrimination stability than the 1- or 3-volt settings.

High-level discrimination is controlled by the gain controls of the Linear Amplifier. All pulses over channel 50 will be recorded in this channel. However, low-level discrimination may be set on the control panel. By the use of three controls, two rotary switches and the plus-one toggle switch, any low-level discriminator voltage from 2 to 221 volts may be obtained in 1-volt steps.

Data Display

The 50 channels of the pulse-height analyzer output are readable on Veeder-Root registers, and a total-count Veeder-Root register is also included. All registers are motor resettable. The 50-channel scaler light display is mounted in two bays of 26 and 24 channels, and the scaler lights are set against a black background. All scaling lights read from top to bottom, and are relay reset. The scaler in the lower right-hand corner of the scaler frame is used to drive the total-count register, and the lights here are set against a dark red background.

Each register is equipped with a neon indicator to give an indication of pulse repetition. A neon display string is also used to give an indication of pulse repetition vs channel. This indicator can be very useful for a rough visual pulse-height analysis, and is of particular help in setting up an experiment or when the display system is photographed to record data.

TESTING PROCEDURE

A number of simple tests can be placed upon the pulse-height analyzer to determine its reliability and accuracy.

1. Channel Test. Using either a Berkeley Scientific 903 or 904 Double Pulser, the Gate, Flattener, and Amplifier Unit (6T 5394) should be adjusted. The signal pulse should be adjusted to a length of $1\frac{3}{4}$ to $2\frac{3}{4}$ microseconds, and the gate pulse should be adjusted to a length of $\frac{3}{4}$ to $1\frac{1}{4}$ microseconds. The leading edge of the gate pulse is delayed about one microsecond from the leading edge of the signal pulse. The front cover need not be removed from the snapper (6T3404) to check gate or signal-pulse positioning. Enough radiation may be picked up by a Tektronix oscilloscope probe through the lucite cover to make adjustments.

Adjust the pulse amplitude so that it falls in the center of a given channel. The Berkeley Scientific Pulser double-pulse time should be set about $1/2$ microsecond longer than the minimum acceptable to the Gate, Flattener, and Amplifier Unit (6T 5394). The pulser repetition rate should be adjusted so the register repetition rate is between 15 and 17 pulses per second.

With total count in the "Squared" position, each channel count should equal the total count squared. In one run, gate, flattener, amplifiers, snappers, and scalers double-pulse time can be measured and registers can be checked.

2. Wall-Sharing Test. The next-- and most stringent -- test that can be imposed upon the analyzer is the wall-sharing test. Using pulser 6T 6094, pulses are placed on the wall between two channels and adjusted so that approximately half the pulses fall on each side of the wall. The total number of pulses in the two channels then, of course, should equal the pulses recorded on the analyzer total count. Perfect results are not always obtained in this test, but an accuracy of at least 1 percent should be expected, and sometimes accuracies as good as 0.1 percent have been observed.

3. Sliding-Pulser (Linearity) Test. After channel widths have been adjusted, using the 50-position switch of the Simulated Alpha Pulser, the third test placed upon the pulse-height analyzer is the sliding-pulser test. For this test the sliding pulser 6T 6094 is adjusted so that channel No. 50 of the analyzer fires in the high position and channel No. 1 fires in the low position. When the sliding pulser is placed in the sweep position, all the channels of the analyzer will be swept at the rate of one time per minute. A quick check on analyzer operation can be made by this test. The sum of the channel counts should check against the analyzer total count. If glaring irregularities are apparent in the channel-width adjustment, appropriate means may be taken for their correction, thus eliminating error-filled, time-consuming runs and erroneous data. This test, if conducted during two separate periods of time, can check channel discrimination stability (drift) between these two periods.

CALIBRATION

For basic calibration of the analyzer and for obtaining an analyzer zero the following method is suggested: Provided the analyzer has been checked out by the testing procedure, a great deal of time can be saved by using radioactive samples for calibration. For gamma-ray work one may use:

<u>Element</u>	<u>Energy and Peak (mev)</u>
Na ²²	0.511 and 1.28
Cs ¹³⁷	0.667
U ²³⁷	0.110 Neptunium K X-rays 0.060

From these peaks one can obtain an energy-vs-channel plot; and from this, an over-all analyzer zero. This calibration can be made in several minutes. A typical calibration curve is shown (Fig. 8) for Cs¹³⁷. Two curves were taken with a discriminator difference of 5 volts. This makes it easy to pick out slight channel misalignments.

Under some conditions it may be useful to incorporate radioactive calibration tracers during an actual run. This procedure not only saves analyzer calibration time, but is an additional check on discriminator drift and stability. It should be pointed out that drift is less a problem for this equipment than for a slow-speed analyzer, because data can be gathered with such rapidity that circuits have less chance to change with temperature, line voltage, and other phenomena.

MAINTENANCE

Interconnect sheet 6T 5561 should be followed for system wiring. The fundamental electronics of the pulse-height analyzer may be generally divided into four main categories centered around the "Snapper," or heart of the analyzer.

Power and Control Circuitry:	6T 4194 Control Panel 6T 4782 Rectifier 6T 4802 Power Panel 6T 5094 300-v Regulator 6T 5202 Transformer Panel 6T 6881 Fan
Input Circuitry:	2T 4404 Linear Amplifier, Model III 6T 5394 Gate, Flattener, and Amplifier
Snapper Circuitry:	6T 3404 Snapper
Output Display Circuitry:	5T 7852 Register Panel 6T 4204 Plug-in Scale of 2 or 16 6T 7494 Plug-in Scale of 2 or 16 Total Count

This section is devoted to pointing out the salient features of each piece of equipment.

Power Panel 6T 4802

Three-phase 230-volt power needed to operate the analyzer is fed through PGI of this unit. Pin 4 of the plug serves as an equipment ground. A choke-capacitor filter is inserted in each leg of the three-phase line to eliminate extraneous pulses, rf, and hash that may be present on power lines near high-power particle accelerators.

A main breaker CB-1 is provided for the 3-phase line, and the lights 1, 2, and 3 indicate the condition of each of the three phases. The main breaker should be turned off only if work is to be pursued on the power circuits. All equipment, with the exception of the "always on" bus, can be turned off by use of ganged CB 2-3-4.

In order for RE-1 and RE-2 to operate and supply three-phase power to the analyzer circuits, the air-paddle interlock circuit must be complete. In order to start the analyzer and complete this interlock circuit, an air-paddle bypass push button PB-1 is located on control panel 6T 4194. Fuse F-1 is 5-ampere protection for the "always on" bus.

Control Panel 6T 4194

The purpose of the control panel is to bring all the analyzer controls within easy reach of the operator. Input selector S-9 of the unit actuates coaxial relay RE-1 on the rack, which selects either the source or pulser (6T 6094) for the analyzer input. Selector S-6 provides for a scale of 2 or 16. Deck A operates a killer circuit on the scaling equipment to extinguish unused scaler (6T 4204 and 6T 7494) lights during use in the scale-of-2 position. The network R76, R77 and C-1 is a click filter for this killer circuit. Deck B operates the scaler-switching relays RE-1 (6T 4204 and 6T 7494). Selector S-5 is used to provide metering positions for ME-1, and trimming of these positions may be made by the use of R-35 (Snapper String Current), R-64 (Snapper 6BN6 Quadrature Grid Bias), R-67 (Snapper On-turner Off-turner Bias), and R-66 (Snapper Blocking Oscillator Bias).

Count-stop switch S-7 is used to control the running-time meter ME-2 of this unit and RE-2 of 6T 5394 which grounds the suppressor grid of V-14.

The reset wheel of time meter ME-2 incorporates microswitch S-8, which is closed as the time meter is reset. This switch is in parallel with microswitch S-1 of 5T 7852, and functions to start the reset motor for the registers and actuates RE-1 of 5T 7852, which in turn resets plug-in scalers 6T 4204 and 6T 7494. Reset PB-1 of this unit actuates RE-1 and RE-2 of 6T 4802, and after the fans are pulling enough air to close the air-paddle circuit, power will be applied to analyzer circuitry and PB-1 may be released. The total-count "Squared-Normal" switch S-10 actuates RE-2 located on the right wall of the scaler compartment of the rack. Its purpose is to select either a single channel of scaling equipment (6T 7494) or to put two channels of scaling equipment in tandem for the total count. The result is either a normal or squared total count.

Precision resistors associated with S-4 of this unit are used to obtain proper current through the 6BN6 Snapper bias string for selection of channel width. However, design is such that a constant current is always drawn from the bias supply for maximum power-supply stability. By positioning S-4, channel widths of 1, 3, and 5 volts may be obtained, and test widths of 0.05 and 0 volts can be selected.

All fifty 6BN6 Snappers of the analyzer can be raised by use of discriminator switches S-1, S-2, and S-3 and their associated precision resistor circuitry. By combining the functions of these three switches, any voltage from 2 to 221 volts may be obtained in 1-volt steps. The control panel clock is wired to the "always on" bus.

Transformer Panel 6T 5202

Little need be said about the transformer panel except that the unit is used to provide 6.3 volts a. c. for the scaler filaments.

Rectifier 6T 4782

The rectifier unit is composed of a three-phase delta-wye transformer and a three-phase full-wave selenium bridge plus a control relay and an a. c. 3 amp 600-volt fuse. All 115-volt circuits for the analyzer are obtained from center-tap-leg connections on the delta side of the transformer, and therefore, caution should be used in loading the 115 volts available on the rack plug strips. Loads should be balanced within 500 volt-amps and phase relationships should be observed.

The 360-volt tap is used for the wye side of the transformer which supplies the rectifier bridge. However, if line voltage is high, the 320-volt wye connection may be used.

300 Volt Regulator 6T 5094

The purpose of this unit is to take the unregulated d-c output of 6T 4782 and regulate it at 300 volts for use by 2T 4404, 6T 3404, 6T 5394, 6T 7494, and 26 units of 6T 4204. It contains a time delay relay TE-1 (set to 45 seconds) which applies B+ only after filaments are up to temperature. R-53 should be adjusted for $\pm$ 300 volts by metering TS 1-7 to ground.

The unregulated d-c is fed out on TS 1-5 and provides power to drive the 51 Veeder-Root registers. TS 1-6 and TS 1-8 supply power to actuate the coils of RE-1 of 6T 4204 and 6T 7494. Thirteen relays are connected in series on each of TS 1-6 and TS 1-8. Protection is provided to the analyzer circuitry by RE-1 of 6T 5094. If overvoltage is supplied to analyzer circuitry through the improper operation of the regulator tubes, this relay will drop out the 300-volt bus. Ripple voltage on the 300-volt bus (TS 1-7) should be less than 0.08 volts.

A minus-105-volt bias supply is also incorporated on this chassis to supply bias for the register drive tubes. A neon indicator light is incorporated for unregulated d. c., regulated d. c., and the bias supply for easy trouble-shooting.

Fan 6T 6881

This unit provides 1200 cfm cooling for the frame of plug-in scaler equipment composed of units 6T 4204 and 6T 7494. Air is pulled in from the filters at the rear of this unit and expelled through the scaler perforated front. Air-paddle switches are installed in each fan slip stream and are part of the analyzer interlock circuit. This fan and interlock-paddle-switch unit is of plug-in construction with Air-Loc fasteners for easy servicing of the scaler plug circuits.

All analyzer air filters should be kept free of dust and dirt. Excessive clogging will greatly reduce the volume of cooling air. Every three or four months all fans in this unit as well as other fans and blowers throughout the analyzer should be lubricated with several drops of SAE 20 oil.

Linear Amplifier 2T 4404

Two inputs are available to the Pulse-Height Analyzer, one from Simulated Alpha Pulser 6T 6094, the other input from a source. The input selector on 6T 4194 switches RE-1, located on the lower part of the right wall of the analyzer rack. One side of the relay is connected to the pulser, the other side is connected to the source. The swinger on this relay is the input to Linear Amplifier 2T 4404.

This unit, a standard piece of UCRL counting equipment, has an input impedance of 125 ohms and has been designed for negative-pulse-in, positive-pulse-out. It consists of three tandem three-tube feedback chains. Two identical cathode follower output stages are provided, and the bandwidth of the amplifier may be selected by use of S-2 for 0.5 Mc, 2 Mc, or 8 Mc. S-1 is a step gain attenuator which is augmented by use of R-26 sliding gain attenuator. The first feedback chain is shock mounted against tube microphonics.

Gate, Flattener, and Amplifier 6T 5394

One output of 2T 4404 is connected to this unit. The function of the unit is to lengthen, flatten, and amplify the scintillation pulses for use in the Snapper Unit (6T 3404) and to generate a gate pulse for each scintillation pulse used by the snapper.

Of the split input to the unit, one leg serves a positive pulse to the grid of V-6. However, it should be noted that this grid receives its bias from the lower end of the 6BN6 Bias String (6T 3404), and therefore will not trip on a pulse amplitude much under that set by the discriminator control on 6T 4194.

V-6 and V-7 are amplifiers and Xtal 3 serves as a clipper. The control R-36 should be set at the point where V-8 triggers reliably. The short pulse generated by single-shot multivibrator V-8 is amplified and stretched by V-9 and Xtal 4 circuitry. This system makes for a lengthened pulse with a sloping tail and a short dead time. The length of this slope determines the length of the signal pulse.

One branch of the input pulse from the linear amplifier is fed through Xtal 1, which charges C-2 only when the output pulse of the stretcher is used to cut off the grid of V-1. The signal pulse width is controlled by R-3. V-2, V-3, V-4, and V-5 form a three-stage feedback chain with a gain of 10 and a rated output of 500 volts. This chain feeds the grid signal bus of the 6BN6 snapper tubes (6T 3404).

Circuitry associated with V-10 is the gate generator. This single-shot multivibrator is subject to tripping by the signal only when the external gate coincidence circuit associated with V-14 is activated either by a plus-15-volt coincidence pulse or RE-2. RE-2 is controlled by the stop-count switch on 6T 4194. Referring to V-10, the control R-51 should be set at the point where V-10 triggers reliably, and gate length should be set by R-57. Clipping of the output pulse is accomplished in Xtal 6 with the voltage being set by V-11 and its circuitry, and a low-impedance output is obtained by use of cathode follower V-12. The gate pulse may be delayed with respect to the signal pulse in 1/4-microsecond steps up to 2 microseconds by use of the delay line and S-1.

RE-1 is a protection relay for the amplifier; high voltage from the self-contained power supply cannot be applied to the feedback amplifier without + 300-volt d. c.

Snapper 6T 3404

This unit is the heart of the Pulse-Height Analyzer. The current through a resistor string composed of fifty 250-ohm precision resistors, typical R-1, is controlled by the channel voltage width switch S-4 at the control panel 6T 4194. The power supply in the lower corner of schematic 6T 3404 supplies current from the string. The lower discrimination of the string may be lowered or raised in 1-volt steps between the limits of 2 and 221 volts by S-1, S-2, and S-3 of 6T 4194. Bias voltages on the grids of 6BN6 tubes caused by current flowing through the 250-ohm precision resistors determines the pulse height at which each 6BN6 snapper circuit fires.

The 6BN6 and one-half of a 12AT7 form an excellent discriminator circuit. As the signal pulse approaches the grid bias voltage, all that is needed to make the 6BN6 - 12AT7 circuit into a one-shot multivibrator is a positive gate pulse on the quadrature grid. This gate pulse from 6T 5394 usually lasts for 3/4 to 1-1/4 microseconds and the leading edge of the gate pulse is delayed about one microsecond from the leading edge of the signal pulse. The flattened signal pulse is usually 1-3/4 to 2-3/4 microseconds long. The accelerator grid of the 6BN6 receives its d. c. voltage from the plate of the 12AT7. It is this connection that gives the circuit feedback for one-shot multivibrator action. C-26 and R-3 provide additional feedback through the 6BN6 grid circuit. It must be emphasized that in order to have good channel stability (the unit is capable of ± 50 millivolts) a snapping action is essential. This snapping action may easily be observed by

looking at the on-turner output pulse of the 12AT7 (V-2) with a Tektronix 514D oscilloscope. The on-turner is fed through delay network L-1 and C-27 (0.1 micro-seconds delay) and then C-6 to fire a blocking oscillator which supplies an output pulse for the scaling equipment. However, this output pulse is not supplied if the next higher channel has been tripped, because an off-turner pulse stops the blocking oscillator through C-4. Therefore, only the highest channel tripped will provide an output pulse.

Your attention is called to R-17, which is an impedance in the common blocking oscillator grid circuit. It is the pulse voltage generated across this impedance that permits only one blocking oscillator to fire at a time. R-21 is a slope control for the gate pulse. A slightly negative gate pulse slope is desirable. The output of each blocking oscillator is fed to analyzer scaling equipment (6T 4204). The output of PG-8 supplies a pulse when channel one 6BN6 circuit has been tripped. It is fed to the total count scaler. (6T 7454). The bias from the first 6BN6 circuit is applied to the grid of V-6 for the Gate Flattener and Amplifier unit (6T 5394). This helps the gate generator discriminate against noise, hash, and unwanted electrical impulses that would cause erroneous readings and unwanted dead time. RE-1, RE-2, and RE-3 are used as part of a bias interlock circuit. B+ cannot be applied without snapper bias.

For a rough alignment of the snapper discriminators, S-4 on the control panel (6T 4194) should be set to zero channel width, and all the 6BN6 cathode potentiometers R-5 (6T 3404) should be set to the off position. R-17 should be jumpered with a short clip lead. The pulse height from the Simulated Alpha Pulser (6T 6094) should be adjusted so as to just fire one discriminator circuit of the Snapper. Next set R-5₁ so channel one just fires, set R-5₂ so channel two just fires, channel three, channel four, and so on through channel fifty.

It will be noted that as the higher channel fires, it will turn off the previous channel. With R-17 shorted channels may not share too well. However, a seventy - to ninety-percent figure should be realized. If this is not the case, one would do well to check snapper circuitry; a weak 12AT7 or 6BN6 may impair discriminator stability.

After the analyzer has been rough-aligned, the short should be removed from R-17 of 6T 3404, and S-4 of 6T 4194 should be returned to the 1-, 3-, or 5-volt channel width. The channels should then be set with the 50-position switch of the Simulated Alpha Pulser 6T 6094 and aligned in a more precise manner by continued adjustments of R-5. Last, a sweeping pulser check should be run and data recorded for future analyzer "quick checks!"

Plug-in Scale of 2 or 16 (6T 4204)

CAUTION: THESE UNITS ARE INTERLOCK PROTECTED TO PREVENT OPERATION WITHIN THE RACK WITHOUT ADEQUATE FAN COOLING. NEVER BYPASS INTERLOCKS OR SERIOUS DAMAGE TO THE IN39 DIODES COULD BE VERY COSTLY. ALL SCALER UNITS SHOULD BE IN THE RACK WHEN OPERATING, AS THEIR FILAMENTS HELP PROVIDE A THREE-PHASE POWER BALANCE, AND SCALER RELAY COILS ARE CONNECTED IN SERIES.

Twenty-five of these plug-in units are used to provide scaling and register-drive facilities for the analyzer. For servicing, remove from the rack and test with unit 6T 6393. Each unit incorporates two channels of the following: pulse-inverter-amplifier, four diode coupled binaries, and a register drive.

RE-1 of this unit serves as a scale-factor switch. When a scale of 16 is employed, four binaries in each channel are placed in tandem and pin 3 of PG-1 is tied to pin 4 of PG-1 through S-6 of 6T 4194. This circuit is in turn tied to ground RE-1 of 5T 7852 except when the scalers are being reset by this relay. When a scale of 2 is used, pin 3 of PG-1 is lifted from ground by S-6 of 6T 4194 to kill the last three binaries of each channel and RE-1 of the scaler selects the output of the first binary for the register drive tube grid. The double pulse time of each scaler should be about 2 microseconds, and they should operate on 15-volt positive input pulses of 0.5 microsecond width.

The regulated 300 volts, taken from unit 6T 5094, is dropped to 250 volts by decoupling filter R-1, C-1 of the rack, and is used for B + on 6T 4204 and 6T 7494 units.

Plug-in Scale of 2 or 16 Total Count (6T 7494)

The rack relay RE-2, controlled by S-10 of 6T 4194, is provided to connect two channels of the scaler with the red front in tandem to give a scale factor squared for the "total count!" It should be noted that the total count scales the pulse output of the first 6BN6-12AT7 snapper circuit 6T 3404 before the off-turner is applied, and therefore should record every pulse falling above and including the first channel. If the analyzer is functioning properly, the total count should always equal the sum of the channel readings. When checking this scaler on test unit 6T 6394, it should be noted that input No. 1 has a double pulse time of 2 microseconds while input No. 2 has a double pulse time of 10 microseconds.

Register Panel 5T 7852

This unit provides registers for the fifty channels of the analyzer and one register for the total count. A neon flasher is placed across every register so a quick visual check on its rate may be observed. A neon indicator display is also provided to give a visual check of count intensity with channel. All neons are type NE-2.

A motor and gear-drive system is provided to reset all registers if the Running-Time Meter of 6T 4194 is reset. RE-1 serves to reset all scaling equipment 6T 4204 and 6T 7494 for the analyzer. A small glob of SAE No. 90 Hypoid grease is suggested for all worm gears and miter gears. Use no lubricant for bearings, as the ball races are grease-packed and need no attention.

Simulated Alpha Pulser 6T 6094

Every effort has been made to achieve a stable pulse output of voltage amplitude from this unit. The power supply is sola regulated. A 6Y6-G is used as a series tube, two 12AX7's are used as d. c. amplifiers, and an 85A2 is used as a voltage reference. Upon inserting a milliammeter on the tip and ring of a jack plug for J-1, the meter should read 5 milliamperes $\pm 20\%$. R-9 should be adjusted for smooth operation of RE-1. This may be adjusted by listening; however, it is better to use an oscilloscope.

CAUTION: WHEN PLACING THE PULSER IN OPERATION, THE POWER SUPPLY SHOULD BE PLUGGED INTO THE "ALWAYS ON" BUS OF THE ANALYZER. BECAUSE OF THE CHARACTERISTICS OF THE 85 A2 TUBE, IT MAY TAKE FROM SEVERAL HOURS TO SEVERAL DAYS TO STABILIZE, AND CONTINUAL OPERATION ALSO ADDS TO THE USEFUL LIFE OF THE TUBE.

Reorder Information

All reorder information may be obtained directly or from cross-reference data obtained on Master Assembly and Drawing List 6T 5194. This number has been engraved on the control panel face for convenience.

50-CHANNEL PULSE-HEIGHT ANALYZER, ACCELERATOR TYPE

Fig. 1 Front view - Showing Removal of Plug-in Scaler and Control Panel

Fig. 2 Rear view - Showing Removal of Fan for Scaling Equipment

Fig. 3 Operating Position - Note all Controls are within easy reach of operator with desk removed

Fig. 4 Two Channel Plug-in Scale of 2 or 16

Fig. 5 Plug-in Scaler on Test - Plug-in Scaler, Test Unit, and Berkeley 903 Pulser

Fig. 6 Front View - Control Panel

Fig. 7 Rear/Side View - Control Panel

Fig. 8 C_s^{137} Plot

Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig. 6

Fig. 7

21

21

UCRL-2430

Fig. 8

PRINT LIST

PULSE HEIGHT ANALYZER - DWG. 6T 5194
ACCELERATOR TYPE - MODEL I

2T 4404	Linear Amplifier Model III (Schematic)
5T 7852	Register Panel (Schematic)
5T 7861	Register Panel (Parts List)
5T 7874	Register Panel (Assembly)
6T 3404	Snapper (Schematic)
6T 4194	Control Panel (Schematic)
6T 4204	Plug-in Scale of 2 or 16 (Schematic)
6T 4673	Portable Rack (Assembly)
6T 4782	Rectifier (Schematic)
6T 4802	Power Panel (Schematic)
6T 5094	300 volt Regulator (Schematic)
6T 5194	Master Assembly and Dwg. List
6T 5202	Transformer Panel (Schematic)
6T 5394	Gate, Flattener, and Amplifier (Schematic)
6T 5561	Interconnect Data for Rack
6T 6094	Simulated Alpha Pulser (Schematic)
6T 6393	Plug-in Scaler Test Unit (Schematic)
6T 6713	Data Sheet
6T 6723	Calibration Sheet
6T 6881	Fan (Schematic)
6T 7491	Plug-in Scale of 2 or 16 Total Count (Schematic)
6T 7585	Plug-in Scaler Frame (Schematic)
6T 7591	Installation Data
6T 7881	Motor Driven Potentiometer

3 TUBES & COMPONENTS TO BE MOUNTED ON A SHOCK MOUNTED CHASSIS

"PLATE VOLTAGE" (PANEL) $\frac{53}{B+7}$ POS.

[illegible]

ZN-803

24

PARTS LIST FOR SCHEMATIC NO. 5T 7852

Change Letter	Drawn By	Check By	Date	Desig.	Quan.	Specifications
	U.C.T.			Mtr.	1	Speed Reducer Motor, Bodine Type NSY-12R 1/150 HP 115V 60 Cycle, 1800 RPM Ratio 30:1
				C-1	1	1 MFD. 600V METALITE CAPACITOR
				NE-1 to 100	100	Neon - Type NE-2
				PG-1	1	2 Pin Female Recept. Hubbell #7468
				R-1 to 50	50	510K 1/2W Carbon Resistor
				R-51 to 100	50	100K 1W " "
				R-101	1	390K 2W " "
				R-102	1	100K 1W " "
				Reg-1 to 50	(ref)	Veeder Root Counter 6 Digit, Per Modification 5T 8141
				*RE-1	1	RELAY-DPDT-ADVANCE NO K-1504 NOTE: (TO BE USED ON ACCELERATOR TYPE ONLY)
				S-1	1	Micro Switch #BZ-2 RL 2
				TS-1,2	2	52 Point W.E. Terminal Strip
				TS-3	1	TERM. STRIP - JONES 2-142
<u>HARDWARE</u>						
				51		Bronz Worm Gears - Boston No. D1134 (See 5T8081-1 & 2)
				12		Ball Bearings N.D. #77R4
				50		Steel Worms (DUH) Boston
				5		Pr. Steel Miter Gears - Boston Gear No. L95Y (See 6T3871-1)
				1		Motor Shaft Coupling - Boston J-62 (See 6T3901)
				5		Lord Shock Mounts - No. 200 PH 35
				15		Torrington B-45 Needle Bearings
				1		Pr. Steel Miter Gears - Boston Gear No. L-96Y (See 6T3871-2)
<u>DRAWING LIST</u>						
				5T 7852	-	Schematic
				5T 7861	-	Parts List (This)
				5T 7874	-	Assembly
				5T 7884	1	Chassis
				5T 7894	1	Outer Register Cover
				5T 7904	1	Inner # "
				5T 8081-1	50	Worm Gear Modification
				5T 8081-2	1	" " " "
				5T 3901	1	Univ. Joint Modification Boston 760

ZN-793

PARTS LIST FOR SCHEMATIC NO. 5T 7852									
Design.	Quan.	Specifications	SHOWN ON	JOB NO.	SER. NO.	DATE ISSUED	DATE REQD	NO. REQD TO	DELIVER
5T 7971	1	Micro Switch Mount							
5T 8141	50	Register Modification							
5T 8162	9	Register Separator							
6T 1003	1	Motor Mounting Plate							
6T 1011	1	Motor Mounting Bearing Plate							
6T 1021	2	Motor Mounting Bracket							
10Z 1003	2	17" Terminal Strip Support (Stock)							
10Z 5021-38	30	Stud - 1 Male End & 1 Female End							
10Z 1703	2	52 Pt. Backing Plate (Stock)							
6T 3824	1	Main Shaft Bracket							
6T 3833	5	Worm Shaft Bracket							
6T 3842	1	Main Shaft							
6T 3861	5	Worm Shaft							
6T 3871-1	10	Altered Miter Gear							
6T 3881	50	Altered Worm Gear							
6T 3891	1	Drive Shaft							
6T 3851	1	Drive Shaft Housing							
6T 3901	1	Altered Universal Joint BOSTON #J 62							
6T 3871-2	2	Altered Miter Gear							
6T 3291	1	PG-1 MOUNT BRACKET							
6T 5842	1	STAR WHEEL							
6T 5851	1	FINGER							
6T 5861	1	FINGER BLOCK							
6T 5871	1	FILLER BLOCK							
6T 1044	1	Neon Indicator Mounting STRIP							
6T 1054	1	Neon Indicator Bracket							
6T 1314	1	Neon Indicator TERMINAL STRIP							
5T 7985	(ref)	Portable Reg. Rack Assembly							
5T 8111	(ref)	O.A. Dwg. List CHEM TYPE							
6T 5194	(REF)	" " " ALL TYPE							
* REMOVE FROM PL + SCHEMATIC FOR LATER USE.									

Farns.

REVISION	DATE	BY	REASON
1	10/1/54	J. H. W.	INITIAL DESIGN
2	10/1/54	J. H. W.	REVISIONS
3	10/1/54	J. H. W.	REVISIONS
4	10/1/54	J. H. W.	REVISIONS
5	10/1/54	J. H. W.	REVISIONS
6	10/1/54	J. H. W.	REVISIONS
7	10/1/54	J. H. W.	REVISIONS
8	10/1/54	J. H. W.	REVISIONS
9	10/1/54	J. H. W.	REVISIONS
10	10/1/54	J. H. W.	REVISIONS
11	10/1/54	J. H. W.	REVISIONS
12	10/1/54	J. H. W.	REVISIONS
13	10/1/54	J. H. W.	REVISIONS
14	10/1/54	J. H. W.	REVISIONS
15	10/1/54	J. H. W.	REVISIONS
16	10/1/54	J. H. W.	REVISIONS
17	10/1/54	J. H. W.	REVISIONS
18	10/1/54	J. H. W.	REVISIONS
19	10/1/54	J. H. W.	REVISIONS
20	10/1/54	J. H. W.	REVISIONS
21	10/1/54	J. H. W.	REVISIONS
22	10/1/54	J. H. W.	REVISIONS
23	10/1/54	J. H. W.	REVISIONS
24	10/1/54	J. H. W.	REVISIONS
25	10/1/54	J. H. W.	REVISIONS
26	10/1/54	J. H. W.	REVISIONS
27	10/1/54	J. H. W.	REVISIONS
28	10/1/54	J. H. W.	REVISIONS
29	10/1/54	J. H. W.	REVISIONS
30	10/1/54	J. H. W.	REVISIONS
31	10/1/54	J. H. W.	REVISIONS
32	10/1/54	J. H. W.	REVISIONS
33	10/1/54	J. H. W.	REVISIONS
34	10/1/54	J. H. W.	REVISIONS
35	10/1/54	J. H. W.	REVISIONS
36	10/1/54	J. H. W.	REVISIONS
37	10/1/54	J. H. W.	REVISIONS
38	10/1/54	J. H. W.	REVISIONS
39	10/1/54	J. H. W.	REVISIONS
40	10/1/54	J. H. W.	REVISIONS
41	10/1/54	J. H. W.	REVISIONS
42	10/1/54	J. H. W.	REVISIONS
43	10/1/54	J. H. W.	REVISIONS
44	10/1/54	J. H. W.	REVISIONS
45	10/1/54	J. H. W.	REVISIONS
46	10/1/54	J. H. W.	REVISIONS
47	10/1/54	J. H. W.	REVISIONS
48	10/1/54	J. H. W.	REVISIONS
49	10/1/54	J. H. W.	REVISIONS
50	10/1/54	J. H. W.	REVISIONS
51	10/1/54	J. H. W.	REVISIONS
52	10/1/54	J. H. W.	REVISIONS
53	10/1/54	J. H. W.	REVISIONS
54	10/1/54	J. H. W.	REVISIONS
55	10/1/54	J. H. W.	REVISIONS
56	10/1/54	J. H. W.	REVISIONS
57	10/1/54	J. H. W.	REVISIONS
58	10/1/54	J. H. W.	REVISIONS
59	10/1/54	J. H. W.	REVISIONS
60	10/1/54	J. H. W.	REVISIONS
61	10/1/54	J. H. W.	REVISIONS
62	10/1/54	J. H. W.	REVISIONS
63	10/1/54	J. H. W.	REVISIONS
64	10/1/54	J. H. W.	REVISIONS
65	10/1/54	J. H. W.	REVISIONS
66	10/1/54	J. H. W.	REVISIONS
67	10/1/54	J. H. W.	REVISIONS
68	10/1/54	J. H. W.	REVISIONS
69	10/1/54	J. H. W.	REVISIONS
70	10/1/54	J. H. W.	REVISIONS
71	10/1/54	J. H. W.	REVISIONS
72	10/1/54	J. H. W.	REVISIONS
73	10/1/54	J. H. W.	REVISIONS
74	10/1/54	J. H. W.	REVISIONS
75	10/1/54	J. H. W.	REVISIONS
76	10/1/54	J. H. W.	REVISIONS
77	10/1/54	J. H. W.	REVISIONS
78	10/1/54	J. H. W.	REVISIONS
79	10/1/54	J. H. W.	REVISIONS
80	10/1/54	J. H. W.	REVISIONS
81	10/1/54	J. H. W.	REVISIONS
82	10/1/54	J. H. W.	REVISIONS
83	10/1/54	J. H. W.	REVISIONS
84	10/1/54	J. H. W.	REVISIONS
85	10/1/54	J. H. W.	REVISIONS
86	10/1/54	J. H. W.	REVISIONS
87	10/1/54	J. H. W.	REVISIONS
88	10/1/54	J. H. W.	REVISIONS
89	10/1/54	J. H. W.	REVISIONS
90	10/1/54	J. H. W.	REVISIONS
91	10/1/54	J. H. W.	REVISIONS
92	10/1/54	J. H. W.	REVISIONS
93	10/1/54	J. H. W.	REVISIONS
94	10/1/54	J. H. W.	REVISIONS
95	10/1/54	J. H. W.	REVISIONS
96	10/1/54	J. H. W.	REVISIONS
97	10/1/54	J. H. W.	REVISIONS
98	10/1/54	J. H. W.	REVISIONS
99	10/1/54	J. H. W.	REVISIONS
100	10/1/54	J. H. W.	REVISIONS

QUAN

6	Hinges - Mc Kinney #721
4	Door Handles - Alladin # 439813
4	Casters - Colson (Swivel) # 3-308-43
1	1" Adalot Bushing
26	Airlock Receptacles # 99967-C-098
3	Fans, Broan 10" Ceiling Exhaust Fans
	Grainer # 10, 932 (Without Escutcheon & Shutters)
2	Air Filters, Fiberglass Dust Stop Type B 11x17x1
10	AIRLOC WING TYPE ROUND HEAD STUDS # W78293-3-1.350
26	AIRLOC CROSS PINS # 99785-2
16	AIRLOC WING TYPE ROUND HEAD STUDS # W78293-5-1.600
F5-2	1 AMPHENOL BLUE RIBBON RECEPT. 26-109-16

GT4673

DRAWING LIST

1021212-152	2	STND. SPACING BUSHING
GT 4673	(1)	Assembly (THIS)
GT 4685	1	Frame
GT 4693-1	1	Rack Rear Door (Right Hand)
GT 4693-2	1	" " " (Left Hand)
GT 4703	1	Rack Top
GT 4712	2	Rack Side Cover
GT 4732	1	Rack Center Cover
GT 4722	1	Air Filter Mount
GT7382	6	Fan Cover
102 9053	2	Filter Bracket
102 9063-2	2	Filter Plate
102 9083	6	Blower Fan Guards
GT 1962	4	Transformer Mounts
GT 4853	1	Scaler Compartment - Bottom
GT 4842	1	" " " - Side
GT5243	1	REGISTER ESCUTCHEON
102-1212-149	3	SPACER BUSHING
GT 4632	1	CENTER STD PANEL
GT5613	1	GATE FLATTENED-AMP #300K REGULATOR: PANEL
GT4612	2	PANEL CLIPS
GT7001	2	FAN GUIDE PIPE
GT7011-1	1	" " " BRKT
GT7011-2	1	" " " " "
GT7021	1	FEMALE PLUG SUPPORT

N No 3-308-43
4 PLACES

B	FW	6-24-53	ADDED GT7382 TO
A	DR		DWG. LIST
			GEN. CHANGES

4200-61	ACCELERATOR
GT7194	MAILED

RADIATION LABORATORY

GT4673

GT4673B

ZN-801

32

2

LIST OF MATERIAL		
ITEM OR PART NUMBER	DESCRIPTION	

PARTS LIST

DESIG	QUAN	DESCRIPTION
F-1	1	3 Amp. 600 V.(A.C.) Fuse w/Holder
T-1	1	Transformer, Trans Rex Spec #1143 Pri. 220V CT/60 cyc. 2500 VA Sec 360V to N, 320V Tap 2000 VA
SEL	1	Rectifier 3 ϕ Bridge 6-22-1BM
REL	1	Allied PO-9A-115 3PDT Relay

Drawing List

6T4782	-	Schematic & Parts List (this)
--------	---	-------------------------------

NOTE: Install on floor of rack.

64
4 FARNS.

FINISHES				SHOP NOTES		SHOP ORDERS		DESIGN JOB NO.	DIFFERENTIAL PULSE HEIGHT ANALYZER	
X SAW CUT, FLAME CUT, SHEAR				UNLESS OTHERWISE SPECIFIED		JOB NO.		4200-61	ACCELERATOR TYPE RECTIFIER	
S ROUGH MACHINE				1. TOLERANCES ON DIMENSIONS +		SERIAL NO.		SHOWN ON	SCHEMATIC & P.L.	
AVERAGE MACHINE				2. BREAK EDGES 1/64 MAX.		DATE ISSUED		6T5194	SCALE	
S SMOOTH MACHINE				3. 30° CHAMFER ENDS OF ALL SCREW THREADS		DATE REGD.		MASTER	DO NOT SCALE THIS DRAWING	
				4. 1 1/2 PITCH THREAD RELIEF WITH ROUND NOSE TOOL ON MACH. CUT SCREW THREADS		NO. REGD.			RADIATION LABORATORY	
						DELIVER TO			UNIVERSITY OF CALIFORNIA-BERKELEY	
Change Letter	Drawn By	Check By	Date	CHANGES					DRAWN BY	DATE
R	W	W	6-25-53						G. Woo	3-25-53
									CHECKED BY	APPR. BY
									REIKELL	REIKELL

ZN-796

32

UCRL-2430

6T4782B

L-1 MILLER D-7829 .13MH ea. 30A ea.
 L-2 MILLER 7829 .13MH ea. 30A ea.

LIST OF MATERIAL		
ITEM OR PART NUMBER	DESCRIPTION

64
 4 FARNS

				FINISHES	SHOP NOTES	SHOP ORDERS	DESIGN JOB NO.	DIFFERENTIAL PULSE HEIGHT ANALYZER	
				X SAW CUT, FLAME CUT, SHEAR	UNLESS OTHERWISE SPECIFIED	JOB NO.	4200-61	ACCELERATOR TYPE	
				ROUGH MACHINE	1. TOLERANCES ON DIMENSIONS -	SERIAL NO.	SHOWN ON	POWER PANEL SCHEMATIC	
				AVERAGE MACHINE	2. BREAK EDGES 1/64 MAX.	DATE ISSUED	6T4831	SCALE	1/4
				SMOOTH MACHINE	3. 30° CHAMFER ENDS OF ALL SCREW THREADS	DATE REQD.	6T5194	DO NOT SCALE THIS DRAWING	
					4. 1½ PITCH THREAD RELIEF WITH ROUND NOSE TOOL ON MACH. CUT SCREW THREADS	NO. REQD.	PIASTER		
Change Letter	Drawn By	Check By	Date	CHANGES		DELIVER TO		DRAWN BY	D. SPROUL
								DATE	3-26-53
								CHECKED BY	JCT. REILAND
								APPR. BY	26. J. J. J.
								6 T4802A	

ZN-798

34

OVERALL DRAWING LIST

[illegible]

NOTE

- (1) STENCIL DESIGNATIONS AS INDICATED
- (2) COMPLETED FROM CLEARANCE AFTER REMOVING CONTROL DISK.

H = 0.25 W = 49 1/2 D = 34 1/2

PARTS LIST

Q#	DESCRIPTION
1	SOLA 250NA 117V
4	PLUG 5751P
1	
2	LIGHTS 60W 120V
2	SWITCHES, INTERLOCK
2	WATER PUMP
1	SOLA 500VA 117V
1	ADVANCE 7300
1	AIR FLOW SWITCH/DURABLOCK
1	ALLIED 1500W 5500
1	CONRAD 250W 117V
1	SOLA 250W 117V 250W 117V

1. <u>NAME</u> 2. <u>DATE</u> 3. <u>TIME</u> 4. <u>PLACE</u> 5. <u>CHARGE</u>		6. <u>PHYSICIAN</u> 7. <u>LAST NAME</u> 8. <u>FIRST NAME</u> 9. <u>INITIALS</u> 10. <u>DEGREE</u> 11. <u>DEPARTMENT</u> 12. <u>CLINICAL</u> 13. <u>TECHNICAL</u> 14. <u>ADMINISTRATIVE</u> 15. <u>OTHER</u> 16. <u>REMARKS</u> 17. <u>DATE</u> 18. <u>TIME</u> 19. <u>PLACE</u> 20. <u>CHARGE</u>	21. <u>PHYSICIAN</u> 22. <u>LAST NAME</u> 23. <u>FIRST NAME</u> 24. <u>INITIALS</u> 25. <u>DEGREE</u> 26. <u>DEPARTMENT</u> 27. <u>CLINICAL</u> 28. <u>TECHNICAL</u> 29. <u>ADMINISTRATIVE</u> 30. <u>OTHER</u> 31. <u>REMARKS</u> 32. <u>DATE</u> 33. <u>TIME</u> 34. <u>PLACE</u> 35. <u>CHARGE</u>	36. <u>PHYSICIAN</u> 37. <u>LAST NAME</u> 38. <u>FIRST NAME</u> 39. <u>INITIALS</u> 40. <u>DEGREE</u> 41. <u>DEPARTMENT</u> 42. <u>CLINICAL</u> 43. <u>TECHNICAL</u> 44. <u>ADMINISTRATIVE</u> 45. <u>OTHER</u> 46. <u>REMARKS</u> 47. <u>DATE</u> 48. <u>TIME</u> 49. <u>PLACE</u> 50. <u>CHARGE</u>	51. <u>PHYSICIAN</u> 52. <u>LAST NAME</u> 53. <u>FIRST NAME</u> 54. <u>INITIALS</u> 55. <u>DEGREE</u> 56. <u>DEPARTMENT</u> 57. <u>CLINICAL</u> 58. <u>TECHNICAL</u> 59. <u>ADMINISTRATIVE</u> 60. <u>OTHER</u> 61. <u>REMARKS</u> 62. <u>DATE</u> 63. <u>TIME</u> 64. <u>PLACE</u> 65. <u>CHARGE</u>	66. <u>PHYSICIAN</u> 67. <u>LAST NAME</u> 68. <u>FIRST NAME</u> 69. <u>INITIALS</u> 70. <u>DEGREE</u> 71. <u>DEPARTMENT</u> 72. <u>CLINICAL</u> 73. <u>TECHNICAL</u> 74. <u>ADMINISTRATIVE</u> 75. <u>OTHER</u> 76. <u>REMARKS</u> 77. <u>DATE</u> 78. <u>TIME</u> 79. <u>PLACE</u> 80. <u>CHARGE</u>	81. <u>PHYSICIAN</u> 82. <u>LAST NAME</u> 83. <u>FIRST NAME</u> 84. <u>INITIALS</u> 85. <u>DEGREE</u> 86. <u>DEPARTMENT</u> 87. <u>CLINICAL</u> 88. <u>TECHNICAL</u> 89. <u>ADMINISTRATIVE</u> 90. <u>OTHER</u> 91. <u>REMARKS</u> 92. <u>DATE</u> 93. <u>TIME</u> 94. <u>PLACE</u> 95. <u>CHARGE</u>	96. <u>PHYSICIAN</u> 97. <u>LAST NAME</u> 98. <u>FIRST NAME</u> 99. <u>INITIALS</u> 100. <u>DEGREE</u> 101. <u>DEPARTMENT</u> 102. <u>CLINICAL</u> 103. <u>TECHNICAL</u> 104. <u>ADMINISTRATIVE</u> 105. <u>OTHER</u> 106. <u>REMARKS</u> 107. <u>DATE</u> 108. <u>TIME</u> 109. <u>PLACE</u> 110. <u>CHARGE</u>	111. <u>PHYSICIAN</u> 112. <u>LAST NAME</u> 113. <u>FIRST NAME</u> 114. <u>INITIALS</u> 115. <u>DEGREE</u> 116. <u>DEPARTMENT</u> 117. <u>CLINICAL</u> 118. <u>TECHNICAL</u> 119. <u>ADMINISTRATIVE</u> 120. <u>OTHER</u> 121. <u>REMARKS</u> 122. <u>DATE</u> 123. <u>TIME</u> 124. <u>PLACE</u> 125. <u>CHARGE</u>	126. <u>PHYSICIAN</u> 127. <u>LAST NAME</u> 128. <u>FIRST NAME</u> 129. <u>INITIALS</u> 130. <u>DEGREE</u> 131. <u>DEPARTMENT</u> 132. <u>CLINICAL</u> 133. <u>TECHNICAL</u> 134. <u>ADMINISTRATIVE</u> 135. <u>OTHER</u> 136. <u>REMARKS</u> 137. <u>DATE</u> 138. <u>TIME</u> 139. <u>PLACE</u> 140. <u>CHARGE</u>	141. <u>PHYSICIAN</u> 142. <u>LAST NAME</u> 143. <u>FIRST NAME</u> 144. <u>INITIALS</u> 145. <u>DEGREE</u> 146. <u>DEPARTMENT</u> 147. <u>CLINICAL</u> 148. <u>TECHNICAL</u> 149. <u>ADMINISTRATIVE</u> 150. <u>OTHER</u> 151. <u>REMARKS</u> 152. <u>DATE</u> 153. <u>TIME</u> 154. <u>PLACE</u> 155. <u>CHARGE</u>	156. <u>PHYSICIAN</u> 157. <u>LAST NAME</u> 158. <u>FIRST NAME</u> 159. <u>INITIALS</u> 160. <u>DEGREE</u> 161. <u>DEPARTMENT</u> 162. <u>CLINICAL</u> 163. <u>TECHNICAL</u> 164. <u>ADMINISTRATIVE</u> 165. <u>OTHER</u> 166. <u>REMARKS</u> 167. <u>DATE</u> 168. <u>TIME</u> 169. <u>PLACE</u> 170. <u>CHARGE</u>	171. <u>PHYSICIAN</u> 172. <u>LAST NAME</u> 173. <u>FIRST NAME</u> 174. <u>INITIALS</u> 175. <u>DEGREE</u> 176. <u>DEPARTMENT</u> 177. <u>CLINICAL</u> 178. <u>TECHNICAL</u> 179. <u>ADMINISTRATIVE</u> 180. <u>OTHER</u> 181. <u>REMARKS</u> 182. <u>DATE</u> 183. <u>TIME</u> 184. <u>PLACE</u> 185. <u>CHARGE</u>	186. <u>PHYSICIAN</u> 187. <u>LAST NAME</u> 188. <u>FIRST NAME</u> 189. <u>INITIALS</u> 190. <u>DEGREE</u> 191. <u>DEPARTMENT</u> 192. <u>CLINICAL</u> 193. <u>TECHNICAL</u> 194. <u>ADMINISTRATIVE</u> 195. <u>OTHER</u> 196. <u>REMARKS</u> 197. <u>DATE</u> 198. <u>TIME</u> 199. <u>PLACE</u> 200. <u>CHARGE</u>	201. <u>PHYSICIAN</u> 202. <u>LAST NAME</u> 203. <u>FIRST NAME</u> 204. <u>INITIALS</u> 205. <u>DEGREE</u> 206. <u>DEPARTMENT</u> 207. <u>CLINICAL</u> 208. <u>TECHNICAL</u> 209. <u>ADMINISTRATIVE</u> 210. <u>OTHER</u> 211. <u>REMARKS</u> 212. <u>DATE</u> 213. <u>TIME</u> 214. <u>PLACE</u> 215. <u>CHARGE</u>	216. <u>PHYSICIAN</u> 217. <u>LAST NAME</u> 218. <u>FIRST NAME</u> 219. <u>INITIALS</u> 220. <u>DEGREE</u> 221. <u>DEPARTMENT</u> 222. <u>CLINICAL</u> 223. <u>TECHNICAL</u> 224. <u>ADMINISTRATIVE</u> 225. <u>OTHER</u> 226. <u>REMARKS</u> 227. <u>DATE</u> 228. <u>TIME</u> 229. <u>PLACE</u> 230. <u>CHARGE</u>	231. <u>PHYSICIAN</u> 232. <u>LAST NAME</u> 233. <u>FIRST NAME</u> 234. <u>INITIALS</u> 235. <u>DEGREE</u> 236. <u>DEPARTMENT</u> 237. <u>CLINICAL</u> 238. <u>TECHNICAL</u>
---	--	---	---	---	---	---	---	--	--	--	--	--	--	--	--	--	---

36

2

LIST OF MATERIAL

ITEM OR PART NUMBER	DESCRIPTION

PARTS LIST

DESIG.	QUAN.	DESCRIPTION
T-1,2,3,4,5	5	FIL. TRANSFORMER STANCOR P-6309 107, 117V / 6.3 CT 20 A.
TS-1,2,3,4,5	5	JONES TERMINAL STRIP TYPE 142 6PT 30A.

DRAWING LIST

6T 5202	--	SCHEMATIC & PARTS LIST (THIS)
6T 5214	1	FILAMENT TRANSF. CHASSIS

I
II 64
III 4 FARN'S

				FINISHES	SHOP NOTES	SHOP ORDERS	DESIGN JOB NO.	DIFFERENTIAL PULSE HEIGHT ANALYZER	
				* SAW CUT, FLAME CUT, SHEAR	UNLESS OTHERWISE SPECIFIED	JOB NO.	4200-61	ACCELERATOR TYPE . FILAMENT PWR SUPPLY	
				ROUGH MACHINE	1. TOLERANCES ON DIMENSIONS ±	SERIAL NO.	SHOWN ON	SCHEMATIC & P.L.	
				AVERAGE MACHINE	2. BREAK EDGES 1/32 MAX.	DATE ISSUED	6T5214 CHASSIS	SCALE	
				SMOOTH MACHINE	3. 30° CHAMFER ENDS OF ALL SCREW THREADS	DATE REQD.	MASTER	DO NOT SCALE THIS DRAWING	
					4. 11½ PITCH THREAD RELIEF WITH ROUND NOSE TOOL ON MACH. CUT SCREW THREADS	NO. REQD.		RADIATION LABORATORY	
Change Letter	Drawn By	Check By	Date	CHANGES		DELIVER TO		UNIVERSITY OF CALIFORNIA-BERKELEY	
								DRAWN BY	E. J. H.
								CHECKED BY	JCT
								DATE	4-3-53
								APPR BY	REHLL
									6T5202

ZN-795

UCRL-2430

Change Letter	Drawn By	Check By	Date	CHANGES	WIRE	JUNCTION	UNIT	TERMINATION	JUNCTION	UNIT	TERMINATION	NO. ON	ACCT NO.	SEQ. NO.	DATE ISSUED	DATE REQ'D	NO. REQ'D	MATERIAL	DELIVER TO	
A	J.A.				CABLE A #14 Solid 600V ins.															
					A1	TS1-1	6T4802	Spade lug	H1	6T4782	spade lug									
					A2	TS1-2	"	"	CT12	"	"									
					A3	TS1-3	"	"	H2	"	"									
					A4	TS1-4	"	"	CT23	"	"									
					A5	TS1-5	"	"	H3	"	"									
					A6	TS1-6	"	"	CT31	"	"									
					A7															
					CABLE B #14 Solid 600V ins.															
					*B1	TS1-7	6T4802	spade lug	PG1-13	6T4194	26-190-24									
					*B2	TS1-8	"	"	PG1-14	"	"									
					B3	TS1-7	"	"												
					B4	TS1-8	"	"	PS1	Rack	PS									
					B5	TS1-8	"	"	PS2	"	"									
					B6	TS1-9	"	"												
					B7	TS1-9	"	"												
					B8	TS1-10	"	"												
					B9	TS1-10	"	"												
					B10	TS1-11	"	"												
					B11	TS1-11	"	"												
					B12	TS1-12	"	"												
					B13	TS1-12	"	"												
					B14	TS1-13	"	"												
					*B15	TS1-14	"	"	PG1-19	6T4194	26-190-24									
					*B16	TS1-15	"	"	PG1-20	"	"									
					**B17	TS1-12	"	"	PG1-16	6T6881	26-190-16									
					**B18	TS1-13	"	"	PG1-15	"	"									
					**B25	TS1-14	6T4802	Spade lug												
					**B26	PG1-4 in	Scaler Comp't	26-190-16	Fan in rack											
					**B27	TS1-15	6T4802	spade lug	PG1-5 in	Scaler Comp't	26-190-16									
					**B28	PG1-7 in	Scaler Comp't	26-190-16	Air Flow Switch	on Rack	Fan									
					**B29	PG1-8	"	"	"	"	"									
					CABLE C #16 2 Cond. Tyrex															
					C1, C2	Sola #1	Output Rack	Sola	PS3 & PS5	Rack	PS									
					CABLE D #16 2 cond. Tyrex															
					D1, D2	Sola #2	output Rack	Sola	PG1	Rack	PG									
					CABLE E #18 2 Cond. Tyrex															
					E1	PG1-1	5T7852	Hubb. 7468	PG1-17	6T4194	26-190-24									
					E2	PG1-2	"	"	PG1-18	"	"									
					CABLE F #20 Stranded 600V ins.															
					F1	PG1-1-6	6T4204	26-190-16	TS1-1&2	5T7852	spade lug									
					F2	PG1-1-16	"	"	TS1-3&4	"	"									
					F3	PG1-2-6	"	"	TS1-5&6	"	"									
					* #16 stranded 1KV ins.															
					** #16 solid 600V ins.															
					ZN-781															

Change Letter	Drawn By	Check By	Date	SHOWN ON	ACCT NO.	SER. NO.	DATE ISSUED	DATE REQD.	NO. REQD.	DELIVER TO																																																																																																																																																																																																																					
A	RCK	REH	5-6-53																																																																																																																																																																																																																												
B	J. ACTW		7-1-53																																																																																																																																																																																																																												
Cable 0 added to 6T4204 changed to 6T4194																																																																																																																																																																																																																															
CHANGES																																																																																																																																																																																																																															
* SAW CUT, RAVE CUT, SHEAR * ROUGH MACHINE * AVERAGE MACHINE * SMOOTH MACHINE																																																																																																																																																																																																																															
1. TOLERANCES + 2. BREAK EDGES 1/4 MAX. 3. 30° CHAMFER ENDS 4. 1/16" PITCH THREAD RELIEF WITH ROUND NOSE TOOL ON MACH. CUT SCREW THREADS																																																																																																																																																																																																																															
SCALE None DESIGN ACCT NO. 4200-61 DRAWN BY J.A. CHECK BY C.F.W. DATE 7-1-53																																																																																																																																																																																																																															
DIFFERENTIAL PULSE HEIGHT ANALYZER ACCELERATOR TYPE INTERCONNECT DATA FOR RACK RADIATION LABORATORY UNIVERSITY OF CALIFORNIA Sheet 2 of 4																																																																																																																																																																																																																															
<table border="1"> <thead> <tr> <th>Wire</th> <th>Junction</th> <th>Unit</th> <th>Termination</th> <th>Junction</th> <th>Unit</th> <th>Termination</th> </tr> </thead> <tbody> <tr> <td colspan="7">CABLE F #20 Stranded 600V ins., Cont'd</td> </tr> <tr> <td>F4</td> <td>PG1-2-16</td> <td>6T4204</td> <td>26-190-16</td> <td>TS1-7&8</td> <td>5T7852</td> <td>spade lug</td> </tr> <tr> <td>F5</td> <td>PG1-3-6</td> <td>"</td> <td>"</td> <td>TS1-9&10</td> <td>"</td> <td>"</td> </tr> <tr> <td colspan="7">-----typ.-----typ.-----typ.-----typ.-----</td> </tr> <tr> <td>F49</td> <td>PG1-25-6</td> <td>"</td> <td>"</td> <td>TS2-45&46</td> <td>"</td> <td>"</td> </tr> <tr> <td>F50</td> <td>PG1-25-16</td> <td>"</td> <td>"</td> <td>TS2-47&48</td> <td>"</td> <td>"</td> </tr> <tr> <td>F51</td> <td>PG1-26-16</td> <td>"</td> <td>"</td> <td>TS2-50</td> <td>"</td> <td>"</td> </tr> <tr> <td>F52</td> <td>PG-23</td> <td>6T4194</td> <td>"</td> <td>TS3-6</td> <td>"</td> <td>"</td> </tr> <tr> <td colspan="7">CABLE O #16 Solid 600V ins.</td> </tr> <tr> <td>O1</td> <td>TS1-5</td> <td>6T5094</td> <td>spade lug</td> <td>TS2-49</td> <td>5T7852</td> <td>spade lug</td> </tr> <tr> <td>O2</td> <td>TS1-10</td> <td>"</td> <td>"</td> <td>TS3-4</td> <td>"</td> <td>"</td> </tr> <tr> <td colspan="7">CABLE G #20 Stranded Suprenant</td> </tr> <tr> <td>G1</td> <td>PG1-1-4thru PG1-26-4</td> <td>6T4204</td> <td>26-190-16</td> <td>PG1-23</td> <td>6T4194</td> <td>26-190-24</td> </tr> <tr> <td>G2</td> <td>PG1-1-3thru PG1-26-3</td> <td>"</td> <td>"</td> <td>PG1-10</td> <td>"</td> <td>"</td> </tr> <tr> <td colspan="7">SPECIAL CONNECTIONS FOR PG1-26 6T4204 TERMINATIONS 26-190-16</td> </tr> <tr> <td colspan="7"> </td> </tr> <tr> <td colspan="7">CABLE H #20 Stranded 600v ins.</td> </tr> <tr> <td>H1</td> <td>TS1-6</td> <td>6T5094</td> <td>spade lug</td> <td>PG1-1-5</td> <td>6T4204</td> <td>26-190-16</td> </tr> <tr> <td>H2</td> <td>TS1-8</td> <td>"</td> <td>"</td> <td>PG1-14-5</td> <td>"</td> <td>"</td> </tr> <tr> <td>H3</td> <td>TS1-9</td> <td>"</td> <td>"</td> <td>PG1-1-14thruPG1-26-14</td> <td>6T4204</td> <td>26-190-16</td> </tr> <tr> <td>*H4</td> <td>TS1-10</td> <td>"</td> <td>"</td> <td>PG1-1-12thruPG1-26-12</td> <td>"</td> <td>"</td> </tr> <tr> <td>*H5</td> <td>TS1-7</td> <td>6T5094</td> <td>"</td> <td>PG1-1-2thruPG1-26-2</td> <td>6T4204</td> <td>"</td> </tr> <tr> <td colspan="7">SCALE SWITCH RUN 6T4204 #20 Stranded 600v ins.</td> </tr> <tr> <td colspan="7"> PG1-12 6T4194 to PG1-13-8&PG1-26-8 6T4204, PG1-1-8 toPG1-2-5,PG1-2-8to PG1-3-5-----typ.-----PG1-12-8toPG1-13-5, PG1-14-8to PG1-15-5,PG1-15-8 to PG1-16-5 ----type-----PG1-25-8toPG1-26-5 </td> </tr> <tr> <td colspan="7">CABLE J #16 Stranded 1 KV ins.</td> </tr> <tr> <td>J1</td> <td>TS1-3</td> <td>6T5094</td> <td>spade lug</td> <td>#4 term.</td> <td>6T4782</td> <td>solder</td> </tr> <tr> <td>J2</td> <td>TS1-10</td> <td>"</td> <td>"</td> <td>#5</td> <td>"</td> <td>"</td> </tr> <tr> <td colspan="7">* #18 Rockbestos</td> </tr> </tbody> </table>											Wire	Junction	Unit	Termination	Junction	Unit	Termination	CABLE F #20 Stranded 600V ins., Cont'd							F4	PG1-2-16	6T4204	26-190-16	TS1-7&8	5T7852	spade lug	F5	PG1-3-6	"	"	TS1-9&10	"	"	-----typ.-----typ.-----typ.-----typ.-----							F49	PG1-25-6	"	"	TS2-45&46	"	"	F50	PG1-25-16	"	"	TS2-47&48	"	"	F51	PG1-26-16	"	"	TS2-50	"	"	F52	PG-23	6T4194	"	TS3-6	"	"	CABLE O #16 Solid 600V ins.							O1	TS1-5	6T5094	spade lug	TS2-49	5T7852	spade lug	O2	TS1-10	"	"	TS3-4	"	"	CABLE G #20 Stranded Suprenant							G1	PG1-1-4thru PG1-26-4	6T4204	26-190-16	PG1-23	6T4194	26-190-24	G2	PG1-1-3thru PG1-26-3	"	"	PG1-10	"	"	SPECIAL CONNECTIONS FOR PG1-26 6T4204 TERMINATIONS 26-190-16														CABLE H #20 Stranded 600v ins.							H1	TS1-6	6T5094	spade lug	PG1-1-5	6T4204	26-190-16	H2	TS1-8	"	"	PG1-14-5	"	"	H3	TS1-9	"	"	PG1-1-14thruPG1-26-14	6T4204	26-190-16	*H4	TS1-10	"	"	PG1-1-12thruPG1-26-12	"	"	*H5	TS1-7	6T5094	"	PG1-1-2thruPG1-26-2	6T4204	"	SCALE SWITCH RUN 6T4204 #20 Stranded 600v ins.							PG1-12 6T4194 to PG1-13-8&PG1-26-8 6T4204, PG1-1-8 toPG1-2-5,PG1-2-8to PG1-3-5-----typ.-----PG1-12-8toPG1-13-5, PG1-14-8to PG1-15-5,PG1-15-8 to PG1-16-5 ----type-----PG1-25-8toPG1-26-5							CABLE J #16 Stranded 1 KV ins.							J1	TS1-3	6T5094	spade lug	#4 term.	6T4782	solder	J2	TS1-10	"	"	#5	"	"	* #18 Rockbestos																
Wire	Junction	Unit	Termination	Junction	Unit	Termination																																																																																																																																																																																																																									
CABLE F #20 Stranded 600V ins., Cont'd																																																																																																																																																																																																																															
F4	PG1-2-16	6T4204	26-190-16	TS1-7&8	5T7852	spade lug																																																																																																																																																																																																																									
F5	PG1-3-6	"	"	TS1-9&10	"	"																																																																																																																																																																																																																									
-----typ.-----typ.-----typ.-----typ.-----																																																																																																																																																																																																																															
F49	PG1-25-6	"	"	TS2-45&46	"	"																																																																																																																																																																																																																									
F50	PG1-25-16	"	"	TS2-47&48	"	"																																																																																																																																																																																																																									
F51	PG1-26-16	"	"	TS2-50	"	"																																																																																																																																																																																																																									
F52	PG-23	6T4194	"	TS3-6	"	"																																																																																																																																																																																																																									
CABLE O #16 Solid 600V ins.																																																																																																																																																																																																																															
O1	TS1-5	6T5094	spade lug	TS2-49	5T7852	spade lug																																																																																																																																																																																																																									
O2	TS1-10	"	"	TS3-4	"	"																																																																																																																																																																																																																									
CABLE G #20 Stranded Suprenant																																																																																																																																																																																																																															
G1	PG1-1-4thru PG1-26-4	6T4204	26-190-16	PG1-23	6T4194	26-190-24																																																																																																																																																																																																																									
G2	PG1-1-3thru PG1-26-3	"	"	PG1-10	"	"																																																																																																																																																																																																																									
SPECIAL CONNECTIONS FOR PG1-26 6T4204 TERMINATIONS 26-190-16																																																																																																																																																																																																																															
CABLE H #20 Stranded 600v ins.																																																																																																																																																																																																																															
H1	TS1-6	6T5094	spade lug	PG1-1-5	6T4204	26-190-16																																																																																																																																																																																																																									
H2	TS1-8	"	"	PG1-14-5	"	"																																																																																																																																																																																																																									
H3	TS1-9	"	"	PG1-1-14thruPG1-26-14	6T4204	26-190-16																																																																																																																																																																																																																									
*H4	TS1-10	"	"	PG1-1-12thruPG1-26-12	"	"																																																																																																																																																																																																																									
*H5	TS1-7	6T5094	"	PG1-1-2thruPG1-26-2	6T4204	"																																																																																																																																																																																																																									
SCALE SWITCH RUN 6T4204 #20 Stranded 600v ins.																																																																																																																																																																																																																															
PG1-12 6T4194 to PG1-13-8&PG1-26-8 6T4204, PG1-1-8 toPG1-2-5,PG1-2-8to PG1-3-5-----typ.-----PG1-12-8toPG1-13-5, PG1-14-8to PG1-15-5,PG1-15-8 to PG1-16-5 ----type-----PG1-25-8toPG1-26-5																																																																																																																																																																																																																															
CABLE J #16 Stranded 1 KV ins.																																																																																																																																																																																																																															
J1	TS1-3	6T5094	spade lug	#4 term.	6T4782	solder																																																																																																																																																																																																																									
J2	TS1-10	"	"	#5	"	"																																																																																																																																																																																																																									
* #18 Rockbestos																																																																																																																																																																																																																															

ZN-780

Change Letter	Drawn by	Check by	Date	CHANGES	SAW CUT, FLAME CUT, BRICK	ROUGH MACHINE	AVENAGE MACHINE	SMOOTH MACHINE	UNLESS OTHERWISE SPECIFIED	SCALE	None	DATE	DIFFERENTIAL PULSE HEIGHT ANALYZER	ACCELERATOR TYPE	INTERCONNECT DATA FOR RACK	RADIATION LABORATORY	UNIVERSITY OF CALIFORNIA	Sheet 3 of 4																																																																																																																																																																																																																																																																			
A	RCK	REH	5-6-53	Revised & Redrawn Added 3rd changed to 010091	*	✓	✓	✓	1. TOLERANCES ON DIMENSIONS - 2. BREAK EDGES 1/4 MAX. 3. 30° CHAMFER ENDS OF ALL SCREW THREADS 4. 1 1/2 PITCH THREAD RELIEF WITH ROUND NOSE TOOL ON MACH. CUT SCREW THREADS	DESIGN ACT NO. 200-61	DATE	4-11-53	INTERCONNECT DATA FOR RACK	6T5561B																																																																																																																																																																																																																																																																							
B	JA	CFW	7-1-53																																																																																																																																																																																																																																																																																		
<table border="1"> <thead> <tr> <th>Wire</th> <th>Junction</th> <th>Unit</th> <th>Termination</th> <th>Junction</th> <th>Unit</th> <th>Termination</th> </tr> </thead> <tbody> <tr> <td colspan="7">CABLE K #20 stranded 600v ins.</td> </tr> <tr> <td>K1</td> <td>TS1-1</td> <td>6T3404</td> <td>spade lug</td> <td>PG1-1-1</td> <td>6T4204</td> <td>26-190-16</td> </tr> <tr> <td>K2</td> <td>TS1-2</td> <td>"</td> <td>"</td> <td>PG1-1-11</td> <td>"</td> <td>"</td> </tr> <tr> <td>K3</td> <td>TS1-3</td> <td>"</td> <td>"</td> <td>PG1-2-1</td> <td>"</td> <td>"</td> </tr> <tr> <td colspan="7">-----typ-----typ-----typ-----</td> </tr> <tr> <td>K49</td> <td>TS5-9</td> <td>"</td> <td>"</td> <td>PG1-25-1</td> <td>"</td> <td>"</td> </tr> <tr> <td>K50</td> <td>TS5-10</td> <td>"</td> <td>"</td> <td>PG1-25-11</td> <td>"</td> <td>"</td> </tr> <tr> <td colspan="7">CABLE L #18 Rockbestos</td> </tr> <tr> <td>L1</td> <td>TS1-1</td> <td>6T5394</td> <td>spade-lug</td> <td>PG1-15</td> <td>6T4194</td> <td>26-190-24</td> </tr> <tr> <td>L2</td> <td>TS1-2</td> <td>"</td> <td>"</td> <td>PG1-16</td> <td>"</td> <td>"</td> </tr> <tr> <td colspan="7">CABLE M #18 2 cond. Tyrex</td> </tr> <tr> <td>M1</td> <td>PG1-21</td> <td>6T4194</td> <td>26-190-24</td> <td>Coil of</td> <td></td> <td></td> </tr> <tr> <td>M2</td> <td>PG1-22</td> <td>"</td> <td>"</td> <td>RE-1 in Rack</td> <td></td> <td></td> </tr> <tr> <td colspan="7">CABLE N #16 12 cond. Patch</td> </tr> <tr> <td>N1</td> <td>PG61</td> <td>6T3404</td> <td>NK-12-21C3/4</td> <td>PG1-1</td> <td>6T4194</td> <td>26-190-24</td> </tr> <tr> <td>N2</td> <td>PG6-2</td> <td>"</td> <td>"</td> <td>PG1-2</td> <td>"</td> <td>"</td> </tr> <tr> <td>N3</td> <td>PG6-3</td> <td>"</td> <td>"</td> <td>PG1-3</td> <td>"</td> <td>"</td> </tr> <tr> <td>N4</td> <td>PG6-4</td> <td>"</td> <td>"</td> <td>PG1-4</td> <td>"</td> <td>"</td> </tr> <tr> <td>N5</td> <td>PG6-5</td> <td>"</td> <td>"</td> <td>PG1-5</td> <td>"</td> <td>"</td> </tr> <tr> <td>N6</td> <td>PG6-6</td> <td>"</td> <td>"</td> <td>PG1-6</td> <td>"</td> <td>"</td> </tr> <tr> <td>N7</td> <td>PG6-7</td> <td>"</td> <td>"</td> <td>PG1-7</td> <td>"</td> <td>"</td> </tr> <tr> <td>N8</td> <td>PG6-8</td> <td>"</td> <td>"</td> <td>PG1-8</td> <td>"</td> <td>"</td> </tr> <tr> <td>N9</td> <td>PG6-9</td> <td>"</td> <td>"</td> <td>PG1-9</td> <td>"</td> <td>"</td> </tr> <tr> <td>N10</td> <td>PG6-10</td> <td>"</td> <td>"</td> <td>TS1-9</td> <td>6T5094</td> <td>spade lug</td> </tr> <tr> <td>N11</td> <td>PG6-11</td> <td>"</td> <td>"</td> <td>TS1-10</td> <td>"</td> <td>"</td> </tr> <tr> <td>N12</td> <td>PG6-12</td> <td>"</td> <td>"</td> <td>TS1-7</td> <td>"</td> <td>"</td> </tr> <tr> <td>R1</td> <td>TS1-4</td> <td>6T5202</td> <td>spade lug</td> <td>Buss #1</td> <td>6T4204</td> <td>spade lug</td> </tr> <tr> <td>R2</td> <td>TS1-6</td> <td>"</td> <td>"</td> <td>Gnd Buss</td> <td>"</td> <td>"</td> </tr> <tr> <td>R3</td> <td>TS2-4</td> <td>"</td> <td>"</td> <td>Bus #2</td> <td>"</td> <td>"</td> </tr> <tr> <td>R4</td> <td>TS2-6</td> <td>"</td> <td>"</td> <td>Gnd. Bus</td> <td>"</td> <td>"</td> </tr> <tr> <td>R5</td> <td>TS3-4</td> <td>"</td> <td>"</td> <td>Bus #3</td> <td>"</td> <td>"</td> </tr> <tr> <td>R6</td> <td>TS3-6</td> <td>"</td> <td>"</td> <td>Gnd. Bus</td> <td>"</td> <td>"</td> </tr> <tr> <td>R7</td> <td>TS4-4</td> <td>"</td> <td>"</td> <td>Bus #4</td> <td>"</td> <td>"</td> </tr> <tr> <td>R8</td> <td>TS4-6</td> <td>"</td> <td>"</td> <td>Gnd Buss</td> <td>"</td> <td>"</td> </tr> <tr> <td>R9</td> <td>TS5-4</td> <td>"</td> <td>"</td> <td>Buss#5</td> <td>"</td> <td>"</td> </tr> <tr> <td>R10</td> <td>TS5-6</td> <td>"</td> <td>"</td> <td>Gnd Bus</td> <td>"</td> <td>"</td> </tr> </tbody> </table>																			Wire	Junction	Unit	Termination	Junction	Unit	Termination	CABLE K #20 stranded 600v ins.							K1	TS1-1	6T3404	spade lug	PG1-1-1	6T4204	26-190-16	K2	TS1-2	"	"	PG1-1-11	"	"	K3	TS1-3	"	"	PG1-2-1	"	"	-----typ-----typ-----typ-----							K49	TS5-9	"	"	PG1-25-1	"	"	K50	TS5-10	"	"	PG1-25-11	"	"	CABLE L #18 Rockbestos							L1	TS1-1	6T5394	spade-lug	PG1-15	6T4194	26-190-24	L2	TS1-2	"	"	PG1-16	"	"	CABLE M #18 2 cond. Tyrex							M1	PG1-21	6T4194	26-190-24	Coil of			M2	PG1-22	"	"	RE-1 in Rack			CABLE N #16 12 cond. Patch							N1	PG61	6T3404	NK-12-21C3/4	PG1-1	6T4194	26-190-24	N2	PG6-2	"	"	PG1-2	"	"	N3	PG6-3	"	"	PG1-3	"	"	N4	PG6-4	"	"	PG1-4	"	"	N5	PG6-5	"	"	PG1-5	"	"	N6	PG6-6	"	"	PG1-6	"	"	N7	PG6-7	"	"	PG1-7	"	"	N8	PG6-8	"	"	PG1-8	"	"	N9	PG6-9	"	"	PG1-9	"	"	N10	PG6-10	"	"	TS1-9	6T5094	spade lug	N11	PG6-11	"	"	TS1-10	"	"	N12	PG6-12	"	"	TS1-7	"	"	R1	TS1-4	6T5202	spade lug	Buss #1	6T4204	spade lug	R2	TS1-6	"	"	Gnd Buss	"	"	R3	TS2-4	"	"	Bus #2	"	"	R4	TS2-6	"	"	Gnd. Bus	"	"	R5	TS3-4	"	"	Bus #3	"	"	R6	TS3-6	"	"	Gnd. Bus	"	"	R7	TS4-4	"	"	Bus #4	"	"	R8	TS4-6	"	"	Gnd Buss	"	"	R9	TS5-4	"	"	Buss#5	"	"	R10	TS5-6	"	"	Gnd Bus	"	"
Wire	Junction	Unit	Termination	Junction	Unit	Termination																																																																																																																																																																																																																																																																															
CABLE K #20 stranded 600v ins.																																																																																																																																																																																																																																																																																					
K1	TS1-1	6T3404	spade lug	PG1-1-1	6T4204	26-190-16																																																																																																																																																																																																																																																																															
K2	TS1-2	"	"	PG1-1-11	"	"																																																																																																																																																																																																																																																																															
K3	TS1-3	"	"	PG1-2-1	"	"																																																																																																																																																																																																																																																																															
-----typ-----typ-----typ-----																																																																																																																																																																																																																																																																																					
K49	TS5-9	"	"	PG1-25-1	"	"																																																																																																																																																																																																																																																																															
K50	TS5-10	"	"	PG1-25-11	"	"																																																																																																																																																																																																																																																																															
CABLE L #18 Rockbestos																																																																																																																																																																																																																																																																																					
L1	TS1-1	6T5394	spade-lug	PG1-15	6T4194	26-190-24																																																																																																																																																																																																																																																																															
L2	TS1-2	"	"	PG1-16	"	"																																																																																																																																																																																																																																																																															
CABLE M #18 2 cond. Tyrex																																																																																																																																																																																																																																																																																					
M1	PG1-21	6T4194	26-190-24	Coil of																																																																																																																																																																																																																																																																																	
M2	PG1-22	"	"	RE-1 in Rack																																																																																																																																																																																																																																																																																	
CABLE N #16 12 cond. Patch																																																																																																																																																																																																																																																																																					
N1	PG61	6T3404	NK-12-21C3/4	PG1-1	6T4194	26-190-24																																																																																																																																																																																																																																																																															
N2	PG6-2	"	"	PG1-2	"	"																																																																																																																																																																																																																																																																															
N3	PG6-3	"	"	PG1-3	"	"																																																																																																																																																																																																																																																																															
N4	PG6-4	"	"	PG1-4	"	"																																																																																																																																																																																																																																																																															
N5	PG6-5	"	"	PG1-5	"	"																																																																																																																																																																																																																																																																															
N6	PG6-6	"	"	PG1-6	"	"																																																																																																																																																																																																																																																																															
N7	PG6-7	"	"	PG1-7	"	"																																																																																																																																																																																																																																																																															
N8	PG6-8	"	"	PG1-8	"	"																																																																																																																																																																																																																																																																															
N9	PG6-9	"	"	PG1-9	"	"																																																																																																																																																																																																																																																																															
N10	PG6-10	"	"	TS1-9	6T5094	spade lug																																																																																																																																																																																																																																																																															
N11	PG6-11	"	"	TS1-10	"	"																																																																																																																																																																																																																																																																															
N12	PG6-12	"	"	TS1-7	"	"																																																																																																																																																																																																																																																																															
R1	TS1-4	6T5202	spade lug	Buss #1	6T4204	spade lug																																																																																																																																																																																																																																																																															
R2	TS1-6	"	"	Gnd Buss	"	"																																																																																																																																																																																																																																																																															
R3	TS2-4	"	"	Bus #2	"	"																																																																																																																																																																																																																																																																															
R4	TS2-6	"	"	Gnd. Bus	"	"																																																																																																																																																																																																																																																																															
R5	TS3-4	"	"	Bus #3	"	"																																																																																																																																																																																																																																																																															
R6	TS3-6	"	"	Gnd. Bus	"	"																																																																																																																																																																																																																																																																															
R7	TS4-4	"	"	Bus #4	"	"																																																																																																																																																																																																																																																																															
R8	TS4-6	"	"	Gnd Buss	"	"																																																																																																																																																																																																																																																																															
R9	TS5-4	"	"	Buss#5	"	"																																																																																																																																																																																																																																																																															
R10	TS5-6	"	"	Gnd Bus	"	"																																																																																																																																																																																																																																																																															

ZN-782

Z N-783

42

0.94C

ZN-842

ZN-842

				FINISHES ✕ SAW CUT, FLAME CUT ✕ SBRAR ✕ BOUGH MACHINE ✕ AVERAGE ✕ SHOOTIN MACHINE		SHOP NOTES UNLESS OTHERWISE SPECIFIED 1. TOLERANCES - ON DIMENSIONS - 2. BREAK EDGES 1/64 MAX. 3. 30° CHAMFER ENDS OF ALL SCREW THREADS 4. 1/8" CHAMFER ENDS OF ALL SCREW THREADS 5. SHOOTIN MACHINE		SHOP ORDERS JOB NO. SERIAL NO. DATE ISSUED DATE PAID NO. REWORK DELIVER		DESIGN JOB NO. PULSE HEIGHT ANALYZER #200-22 PLUG-IN SCALER TEST UNIT SCHEMATIC SCALE NONE DO NOT SCALE THIS DRAWING DRAWN BY F WOO CHECKED BY REINOLD		RADIATION LABORATORY UNIVERSITY OF CALIFORNIA - BERKELEY DATE 5-22-53 6T6393	
--	--	--	--	---	--	--	--	--	--	---	--	--	--

ZN-802

Page _____
 Date _____
 Calibration _____

DATA SHEET
 50 CHANNEL PULSE HEIGHT ANALYZER
 ACCELERATOR TYPE
 675194

EXPERIMENT: _____

SCALE FACTOR: _____

	RUN	RUN	RUN	RUN	RUN	RUN
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
16.						
17.						
18.						
19.						
20.						
21.						
22.						
23.						
24.						
25.						
26.						
27.						
28.						
29.						
30.						
31.						
32.						
33.						
34.						
35.						
36.						
37.						
38.						
39.						
40.						
41.						
42.						
43.						
44.						
45.						
46.						
47.						
48.						
49.						
50.						
Total Count	N S	N S	N S	N S	N S	N S
Running Time (Minutes)						

Operator _____
 Date _____

CALIBRATION SHEET
50 CHANNEL PULSE HEIGHT ANALYZER
ACCELERATOR TYPE
6T5194

Page _____
Date _____

CONTROL PANEL SETTINGS

Scale Factor _____
Total Count _____ Squared _____ Normal _____
Channel Width _____ volts
Discriminator _____ volts

LINEAR AMPLIFIER SETTINGS

Coarse Gain _____
Fine Gain _____
Input TC _____ Microseconds
Band Width _____ mc

SIMULATED ALPHA PULSER

Polarity (-) _____
Maximum Amplitude _____
Minimum Amplitude _____
Attenuator _____

Channel Number	Double Pulse Resolution Microseconds	Register Check 15-17 pps	<u>Wall Sharing</u>			<u>Swap</u>		Source #1	Source #2	Source #3
			Counts for Each Channel	Adjacent Chan. Sum	Total Count	Percent Error	Percent Error From TC/50			
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										
33										
34										
35										
36										
37										
38										
39										
40										
41										
42										
43										
44										
45										
46										
47										
48										
49										
50										
Total Count							Sum TC/50			
Running Time Minutes							Diff TC/50			

Data Sheet Reference _____

Analyser Zero _____

Operator _____
Date _____

46

SHOWN ON 6T6901 PL.	6T6194 MASTER	ACC'T NO.	SER. NO.	DATE ISSUED	DATE REQ'D	NO. REQ'D	DELIVER TO	I
MATERIAL

I
II 64
III 4 FARN

				* SAW CUT, PLANE CUT, SHEAR / ROUGH MACHINE - AVERAGE MACHINE // SMOOTH MACHINE	UNLESS OTHERWISE SPECIFIED 1. TOLERANCES + ON DIMENSIONS 2. BREAK EDGES 1/64 MAX. 3. 30° CHAMFER ENDS OF ALL SCREW THREADS 4. 1 1/2 PITCH THREAD RELIEF WITH ROUND NOSE TOOL ON MACH. CUT SCREW THREADS	SCALE <i>H</i>		DIFF. PULSE HEIGHT ANALYZER	
						DESIGN ACC'T NO. 4200-61	DATE	ACC. TYPE PORTABLE REG. RACK	
						DRAWN BY D.P.S.	6-1-53	FAN SCHEMATIC	
						CHECK BY P.V.D.			
Change Letter	Drawn By	Check By	Date	CHANGES		APPR. BY H.D.G. 6-8-53		RADIATION LABORATORY UNIVERSITY OF CALIFORNIA	

6T6881

ZN-794

46

UCRL-2430

47

SPECIFICATIONS:
 1. STANDBY TIME TO 50K μ SEC.
 2. DOUBLE PULSE REST TIME OF INPUT #1
 3. SEC. OF INPUT #2 10. SEC.
 AT TOP SEE 67494A

NOTE:
 (1) STAND TIME TYPICAL OF V. NOS.
 (2) DOUBLE PULSE REST TIME OF CHASSIS.
 PINS 1 & 9 ON 6X4 TO BE
 AT TOP SEE 67494A

ITEM NO.	DESCRIPTION	QTY	UNIT
1	12AU6/5963	1	VACUUM TUBE
2	6X4	1	VACUUM TUBE
3	10K	1	POTENTIOMETER
4	100K	1	POTENTIOMETER
5	100K	1	POTENTIOMETER
6	100K	1	POTENTIOMETER
7	100K	1	POTENTIOMETER
8	100K	1	POTENTIOMETER
9	100K	1	POTENTIOMETER
10	100K	1	POTENTIOMETER
11	100K	1	POTENTIOMETER
12	100K	1	POTENTIOMETER
13	100K	1	POTENTIOMETER
14	100K	1	POTENTIOMETER
15	100K	1	POTENTIOMETER
16	100K	1	POTENTIOMETER
17	100K	1	POTENTIOMETER
18	100K	1	POTENTIOMETER
19	100K	1	POTENTIOMETER
20	100K	1	POTENTIOMETER
21	100K	1	POTENTIOMETER
22	100K	1	POTENTIOMETER
23	100K	1	POTENTIOMETER
24	100K	1	POTENTIOMETER
25	100K	1	POTENTIOMETER
26	100K	1	POTENTIOMETER
27	100K	1	POTENTIOMETER
28	100K	1	POTENTIOMETER
29	100K	1	POTENTIOMETER
30	100K	1	POTENTIOMETER
31	100K	1	POTENTIOMETER
32	100K	1	POTENTIOMETER
33	100K	1	POTENTIOMETER
34	100K	1	POTENTIOMETER
35	100K	1	POTENTIOMETER
36	100K	1	POTENTIOMETER
37	100K	1	POTENTIOMETER
38	100K	1	POTENTIOMETER
39	100K	1	POTENTIOMETER
40	100K	1	POTENTIOMETER
41	100K	1	POTENTIOMETER
42	100K	1	POTENTIOMETER
43	100K	1	POTENTIOMETER
44	100K	1	POTENTIOMETER
45	100K	1	POTENTIOMETER
46	100K	1	POTENTIOMETER
47	100K	1	POTENTIOMETER
48	100K	1	POTENTIOMETER
49	100K	1	POTENTIOMETER
50	100K	1	POTENTIOMETER
51	100K	1	POTENTIOMETER
52	100K	1	POTENTIOMETER
53	100K	1	POTENTIOMETER
54	100K	1	POTENTIOMETER
55	100K	1	POTENTIOMETER
56	100K	1	POTENTIOMETER
57	100K	1	POTENTIOMETER
58	100K	1	POTENTIOMETER
59	100K	1	POTENTIOMETER
60	100K	1	POTENTIOMETER
61	100K	1	POTENTIOMETER
62	100K	1	POTENTIOMETER
63	100K	1	POTENTIOMETER
64	100K	1	POTENTIOMETER
65	100K	1	POTENTIOMETER
66	100K	1	POTENTIOMETER
67	100K	1	POTENTIOMETER
68	100K	1	POTENTIOMETER
69	100K	1	POTENTIOMETER
70	100K	1	POTENTIOMETER
71	100K	1	POTENTIOMETER
72	100K	1	POTENTIOMETER
73	100K	1	POTENTIOMETER
74	100K	1	POTENTIOMETER
75	100K	1	POTENTIOMETER
76	100K	1	POTENTIOMETER
77	100K	1	POTENTIOMETER
78	100K	1	POTENTIOMETER
79	100K	1	POTENTIOMETER
80	100K	1	POTENTIOMETER
81	100K	1	POTENTIOMETER
82	100K	1	POTENTIOMETER
83	100K	1	POTENTIOMETER
84	100K	1	POTENTIOMETER
85	100K	1	POTENTIOMETER
86	100K	1	POTENTIOMETER
87	100K	1	POTENTIOMETER
88	100K	1	POTENTIOMETER
89	100K	1	POTENTIOMETER
90	100K	1	POTENTIOMETER
91	100K	1	POTENTIOMETER
92	100K	1	POTENTIOMETER
93	100K	1	POTENTIOMETER
94	100K	1	POTENTIOMETER
95	100K	1	POTENTIOMETER
96	100K	1	POTENTIOMETER
97	100K	1	POTENTIOMETER
98	100K	1	POTENTIOMETER
99	100K	1	POTENTIOMETER
100	100K	1	POTENTIOMETER

NOTE: 1. ALL WIRES ARE 18" STRAIGHTED SURPRUANT,
EXCEPT WIRE TO KNO 5 & 10 WHICH ARE
#16 R-1000-01

SPARING LIST

QTY	QTY REQ'D	TITLE
1	1	SCHEMATIC
1	1	TOP INSULATING STRIP
1	1	CENTER INSULATING STRIP
1	1	BOTTOM INSULATING STRIP
1	1	TOP LEFT BUSH
1	1	TOP CENTER BUSH
1	1	TOP RIGHT BUSH
1	1	CROSS CONNECT BUS
1	1	CENTER BUSH
1	1	LOWER LEFT BUSH
1	1	LOWER CENTER BUSH
1	1	LOWER RIGHT BUSH
1	1	WIRE
1	1	WIRE BUNDLE EXPLODED ASSEMBLY

DATE	BY	REVISION	DESCRIPTION
10/1/56	W. J. HARRIS	1	INITIAL DESIGN
10/1/56	W. J. HARRIS	2	REVISION
10/1/56	W. J. HARRIS	3	REVISION
10/1/56	W. J. HARRIS	4	REVISION
10/1/56	W. J. HARRIS	5	REVISION
10/1/56	W. J. HARRIS	6	REVISION
10/1/56	W. J. HARRIS	7	REVISION
10/1/56	W. J. HARRIS	8	REVISION
10/1/56	W. J. HARRIS	9	REVISION
10/1/56	W. J. HARRIS	10	REVISION

DATE	BY	REVISION	DESCRIPTION
10/1/56	W. J. HARRIS	1	INITIAL DESIGN
10/1/56	W. J. HARRIS	2	REVISION
10/1/56	W. J. HARRIS	3	REVISION
10/1/56	W. J. HARRIS	4	REVISION
10/1/56	W. J. HARRIS	5	REVISION
10/1/56	W. J. HARRIS	6	REVISION
10/1/56	W. J. HARRIS	7	REVISION
10/1/56	W. J. HARRIS	8	REVISION
10/1/56	W. J. HARRIS	9	REVISION
10/1/56	W. J. HARRIS	10	REVISION

Wire No.	CONNECTION	To	CONNECTION	Wire Size	REMARKS
A-1	0342-1		0350T1-H1	#12	Flaminol
A-2	0342-2		0350T1-CT12	#12	Flaminol
A-3	0342-3		0350T1-H2	#12	Flaminol
A-4	0342-4		0350T1-CT23	#12	Flaminol
A-5	0342-5		0350T1-H3	#12	Flaminol
A-6	0342-6		0350T1-CT31	#12	Flaminol
B-1	0342-7		0238-13	#16	Rockbestos
B-2	0342-8		0238-14	#16	Rockbestos
B-3	0342-7		Plug Strip #1	#14	Flaminol
B-4	0342-8		Plug Strip #1	#14	Flaminol
B-5	0342-8		Plug Strip #2	#14	Flaminol
B-6	0342-9		Plug Strip #2	#14	Flaminol
B-7	0342-9		Plug Strip #4	#14	Flaminol
B-8	0342-10		Plug Strip #4	#14	Flaminol
B-7A	0342-9		Sola #1 Input	#14	Flaminol
B-8A	0342-10		Sola #1 Input	#14	Flaminol
B-9	0342-10		Sola #2 Input	#14	Flaminol
B-10	0342-11		Sola #2 Input	#14	Flaminol
B-11	0342-11		0520-1	#14	Flaminol
B-12	0342-12		0520-3	#14	Flaminol
B-13	0342-12		0526-1	#14	Flaminol
B-14	0342-13		0526-3	#14	Flaminol
B-15	0342-14		0238-19	#16	Rockbestos
B-16	0342-15		0238-20	#16	Rockbestos
B-17	0342-12		0409-16	#16	Flaminol
B-18	0342-13		0409-15	#16	Flaminol

Sheet 1 of 9

Wire Connection Record-1 1/2m-12,50(3544)542

ZN-784

DIFFERENTIAL POISE HEIGHT ANALYZER
 ACCELERATOR TYPE
 INSTALLATION DATA

Wire No.	CONNECTION	To	CONNECTION	Wire Size	REMARKS
B-19	0520-1		0522-1	#14	Flaminol
B-20	0522-1		0524-1	#14	Flaminol
B-21	0520-3		0522-3	#14	Flaminol
B-22	0522-3		0524-3	#14	Flaminol
B-23	0526-1		0528-1	#14	Flaminol
B-24	0526-3		0528-3	#14	Flaminol
B-25	0342-14		0711-1	#16	Flaminol
B-26	0711-4		0409-4	#16	Flaminol
B-27	0342-15		0409-5	#16	Flaminol
B-28	0409-7		0712-1	#16	Flaminol
B-29	0409-8		0712-2	#16	Flaminol
C-1	Sola #1		Plug	#16	2 Cond
C-2	Output		Strip #3		Tyrex
C-3	Sola #1		Plug	#16	2 Cond
C-4	Output		Strip #5		Tyrex
D-1	Sola #2		0635-1	#16	2 Cond
D-2	Output		0635-2		Tyrex
E-1	0227 PG1-1		0238-17	#16	2 Cond
E-2	0227 PG1-2		0238-18		Tyrex
F-1	0411 PG1-6		0222-1	#20	Strand Suprenant
F-2	0411 PG1-16		0222-3	#20	Strand Suprenant
F-3	0411 PG2-6		0222-5	#20	Strand Suprenant
F-4	0411 PG2-16		0222-7	#20	Strand Suprenant
F-5	0411 PG3-6		0222-9	#20	Strand Suprenant
F-6	0411 PG3-16		0222-11	#20	Strand Suprenant
F-7	0411 PG4-6		0222-13	#20	Strand Suprenant

DIFFERENTIAL PULSE HEIGHT ANALYZER
 ACCELERATOR TYPE
 INSTALLATION DATA

Sheet 2 of 9

Wire Connection Record-11m-12,50(8544)542

ZN-785

Wire No.	CONNECTION	To	CONNECTION	Wire Size	REMARKS
F-8	0411 PG4-16		0222-15	#20	Strand Suprenant
F-9	0411 PG5-6		0222-17	#20	Strand Suprenant
F-10	0411 PG5-16		0222-19	#20	Strand Suprenant
F-11	0411 PG6-6		0222-21	#20	Strand Suprenant
F-12	0411 PG6-16		0222-23	#20	Strand Suprenant
F-13	0411 PG7-6		0222-25	#20	Strand Suprenant
F-14	0411 PG7-16		0222-27	#20	Strand Suprenant
F-15	0411 PG8-6		0222-29	#20	Strand Suprenant
F-16	0411 PG8-16		0222-31	#20	Strand Suprenant
F-17	0411 PG9-6		0222-33	#20	Strand Suprenant
F-18	0411 PG9-16		0222-35	#20	Strand Suprenant
F-19	0411 PG10-6		0222-37	#20	Strand Suprenant
F-20	0411 PG10-16		0222-39	#20	Strand Suprenant
F-21	0411 PG11-6		0222-41	#20	Strand Suprenant
F-22	0411 PG11-16		0222-43	#20	Strand Suprenant
F-23	0411 PG12-6		0222-45	#20	Strand Suprenant
F-24	0411 PG12-16		0222-47	#20	Strand Suprenant
F-25	0411 PG13-6		0222-49	#20	Strand Suprenant
F-26	0411 PG13-16		0222-51	#20	Strand Suprenant
F-27	0411 PG14-6		0224-1	#20	Strand Suprenant
F-28	0411 PG14-16		0224-3	#20	Strand Suprenant
F-29	0411 PG15-6		0224-5	#20	Strand Suprenant
F-30	0411 PG15-16		0224-7	#20	Strand Suprenant
F-31	0411 PG16-6		0224-9	#20	Strand Suprenant
F-32	0411 PG16-16		0224-11	#20	Strand Suprenant
F-33	0411 PG17-6		0244-13	#20	Strand Suprenant

DIFFERENTIAL PULSE HEIGHT ANALYZER
 ACCELERATOR TYPE
 INSTALLATION DATA

Sheet 3 of 9

Wire Connection Record-1, w-12, '50 (3544) 542

ZN-786

Wire No.	CONNECTION	To	CONNECTION	Wire Size	REMARKS
F-34	0411 PG17-16		0224-15	#20	Strand Suprenant
F-35	0411 PG18-6		0224-17	#20	Strand Suprenant
F-36	0411 PG18-16		0224-19	#20	Strand Suprenant
F-37	0411 PG19-6		0224-21	#20	Strand Suprenant
F-38	0411 PG19-16		0224-23	#20	Strand Suprenant
F-39	0411 PG20-6		0224-25	#20	Strand Suprenant
F-40	0411 PG20-16		0224-27	#20	Strand Suprenant
F-41	0411 PG21-6		0224-29	#20	Strand Suprenant
F-42	0411 PG21-16		0224-31	#20	Strand Suprenant
F-43	0411 PG22-6		0224-33	#20	Strand Suprenant
F-44	0411 PG22-16		0224-35	#20	Strand Suprenant
F-45	0411 PG23-6		0224-37	#20	Strand Suprenant
F-46	0411 PG23-16		0224-39	#20	Strand Suprenant
F-47	0411 PG24-6		0224-41	#20	Strand Suprenant
F-48	0411 PG24-16		0224-43	#20	Strand Suprenant
F-49	0411 PG25-6		0224-45	#20	Strand Suprenant
F-50	0411 PG25-16		0224-47	#20	Strand Suprenant
F-51	0411 PG26-16		0224-50	#20	Strand Suprenant
F-52	0238-23		0226-6	#20	Strand Suprenant
G-1	0411 PG14-4		0238-23	#20	Strand Suprenant
G-2	0411 PG14-3		0238-10	#20	Strand Suprenant
G-3	0238-11		0411 REL-Coil	#20	Strand Suprenant
G-4	0238-24		0411 REL-Coil	#20	Strand Suprenant
H-1	0145-6		0411 PG14-5	#20	Strand Suprenant
H-2	0145-8		0411 PG14-5	#20	Strand Suprenant
H-3	0145-9		0411 PG14-14	#20	Strand Suprenant

DIFFERENTIAL PULSE HEIGHT ANALYZER
 ACCELERATOR TYPE
 INSTALLATION DATA

Sheet 4 of 9

Wire Connection Record-11m-12,50(3544)542

ZN-787

Wire No.	CONNECTION	To	CONNECTION	Wire Size	REMARKS
H-4	0145-10		0411 Gnd Buss	#18	Rockbestos
H-5	0145-7		0710-1	#18	Rockbestos
H-6	0238-12		0411 PG26-8	#20	Strand Suprenant
H-7	0411 PG26-8		0411 PG13-8	#20	Strand Suprenant
H-8	0710-2		0411 PG14-2	#18	Rockbestos
H-9	0411 PG26-6		0411REL-1 Swinger	#20	Strand Suprenant
H-10	0411 PG26-7		0411REL-2 Swinger	#20	Strand Suprenant
H-11	0411 PG26-11		0411REL-2 N.O. Contact	#20	Strand Suprenant
H-12	0411 PG26-16		0411REL-1 N.C. Contact	#20	Strand Suprenant
K-1	0113-1		0411 PG1-1	#20	Strand Suprenant
K-2	0113-2		0411 PG1-11	#20	Strand Suprenant
K-3	0113-3		0411 PG2-1	#20	Strand Suprenant
K-4	0113-4		0411 PG2-11	#20	Strand Suprenant
K-5	0113-5		0411 PG3-1	#20	Strand Suprenant
K-6	0113-6		0411 PG3-11	#20	Strand Suprenant
K-7	0113-7		0411 PG4-1	#20	Strand Suprenant
K-8	0113-8		0411 PG4-11	#20	Strand Suprenant
K-9	0113-9		0411 PG5-1	#20	Strand Suprenant
K-10	0113-10		0411 PG5-11	#20	Strand Suprenant
K-11	0117-1		0411 PG6-1	#20	Strand Suprenant
K-12	0117-2		0411 PG6-11	#20	Strand Suprenant
K-13	0117-3		0411 PG7-1	#20	Strand Suprenant
K-14	0117-4		0411 PG7-11	#20	Strand Suprenant
K-15	0117-5		0411 PG8-1	#20	Strand Suprenant
K-16	0117-6		0411 PG8-11	#20	Strand Suprenant
K-17	0117-7		0411 PG 9-1	#20	Strand Suprenant

DIFFERENTIAL PULSE HEIGHT ANALYZER
 ACCELERATOR TYPE
 INSTALLATION DATA

Sheet 5 of 9

Wire Connection Record-11m-12,50 (3544)542

ZN-788

Wire No.	CONNECTION	To	CONNECTION	Wire Size	REMARKS
K-18	0117-8		0411 PG9-11	#20	Strand Suprenant
K-19	0117-9		0411 PG10-1	#20	Strand Suprenant
K-20	0117-10		0411 PG10-11	#20	Strand Suprenant
K-21	0121-1		0411 PG11-1	#20	Strand Suprenant
K-22	0121-2		0411 PG11-11	#20	Strand Suprenant
K-23	0121-3		0411 PG12-1	#20	Strand Suprenant
K-24	0121-4		0411 PG12-11	#20	Strand Suprenant
K-25	0121-5		0411 PG13-1	#20	Strand Suprenant
K-26	0121-6		0411 PG13-11	#20	Strand Suprenant
K-27	0121-7		0411 PG14-1	#20	Strand Suprenant
K-28	0121-8		0411 PG14-11	#20	Strand Suprenant
K-29	0121-9		0411 PG15-1	#20	Strand Suprenant
K-30	0121-10		0411 PG15-11	#20	Strand Suprenant
K-31	0125-1		0411 PG16-1	#20	Strand Suprenant
K-32	0125-2		0411 PG16-11	#20	Strand Suprenant
K-33	0125-3		0411 PG17-1	#20	Strand Suprenant
K-34	0125-4		0411 PG17-11	#20	Strand Suprenant
K-35	0125-5		0411 PG18-1	#20	Strand Suprenant
K-36	0125-6		0411 PG18-11	#20	Strand Suprenant
K-37	0125-7		0411 PG19-1	#20	Strand Suprenant
K-38	0125-8		0411 PG19-11	#20	Strand Suprenant
K-39	0125-9		0411 PG20-1	#20	Strand Suprenant
K-40	0125-10		0411 PG20-11	#20	Strand Suprenant
K-41	0129-1		0411 PG21-1	#20	Strand Suprenant
K-42	0129-2		0411 PG21-11	#20	Strand Suprenant
K-43	0129-3		0411 PG22-1	#20	Strand Suprenant

DIFFERENTIAL PULSE HEIGHT ANALYZER
 ACCELERATOR TYPE
 INSTALLATION DATA

Sheet 6 of 9

Wire Connection Record-14m-12,50(3544)542

ZN-789

Wire No.	CONNECTION	To	CONNECTION	Wire Size	REMARKS
K-44	0129-4		0411 PG22-11	#20	Strand Suprenant
K-45	0129-5		0411 PG23-1	#20	Strand Suprenant
K-46	0129-6		0411 PG23-11	#20	Strand Suprenant
K-47	0129-7		0411 PG14-1	#20	Strand Suprenant
K-48	0129-8		0411 PG24-11	#20	Strand Suprenant
K-49	0129-9		0411 PG25-1	#20	Strand Suprenant
K-50	0129-10		0411 PG25-11	#20	Strand Suprenant
L-1	0139-1		0238-15	#18	Rockbestos
L-2	0139-2		0238-16	#18	Rockbestos
M-1	0238-21		0831 REL Coil	#18	2 Cond
M-2	0238-22		0831 REL Coil		Tyrex
N-1	0131PG6-1		0238-1	#16	12 Cond Patch
N-2	0131 PG6-2		0238-2	#16	12 Cond Patch
N-3	0131 PG6-3		0238-3	#16	12 Cond Patch
N-4	0131 PG6-4		0238-4	#16	12 Cond Patch
N-5	0131 PG6-5		0238-5	#16	12 Cond Patch
N-6	0131 PG6-6		0238-6	#16	12 Cond Patch
N-7	0131 PG6-7		0238-7	#16	12 Cond Patch
N-8	0131 PG6-8		0238-8	#16	12 Cond Patch
N-9	0131 PG6-9		0238-9	#16	12 Cond Patch
N-10	0131PG6-10		0145-9	#16	12 Cond Patch
N-11	0131 PG6-11		0145-10	#16	12 Cond Patch
N-12	0131 PG6-12		0145-7	#16	12 Cond Patch
O-1	0145-5		0224-49	#16	Flaminol
O-2	0145-10		0226-4	#16	Flaminol
R-1	0520-4		0411 Buss #1	#12	Flaminol

Sheet 7 of 9

ZN-790

Wire Connection Record-13m-12,50(3544)542

DIFFERENTIAL PULSE HEIGHT ANALYZER
 ACCELERATOR TYPE
 INSTALLATION DATA

DIFFERENTIAL PULSE HEIGHT ANALYZER
ACCELERATOR TYPE
INSTALLATION DATA

CABLE CHART

No.	Junction	Unit	Termination	Junction	Unit	Termination	Cable
AA	PG7	6T3404	RGK-M3-22C7/16	PG3	6T5394	GK-M3-21C7/16	#16 3c Patch
BB	PG3	"	83-1SP	PG6	"	83-1SP	RG-63/U
CC	PG5	"	"	PG7	"	"	"
DD	PG3	6T5094	RNK-D8-22C3/4	PG4	"	NK-D8-21C3/4	#16 8c Patch
EE	PG5	Rack	117v plug	PG5	"	7464	#16 2c Tyrex
FF	PG1	Rack	117v plug	PG1	6T3404	"	#16 2c Tyrex
GG	cc PG1-26-1	6T4204	26-190-16	PG8	"	83-1SP	RG-63/U
	shield Gnd Buss 6T4204						
HH	PG5	2T4404	83-1Sp	PG1	6T5394	83-1SP	RG-63/U
II	PS5	rack	117v plug	PG8	2T4404	7464	#16 2c Tyrex
JJ	PG4	6T5094	RNK-8D-22C3/4	PG3	"	NK-8D-23C3/4	#16 8c Patch
KK	swinger REL	rack	83-1SP	PG1	"	83-1SP	RG-63/U
LL	PG2	6T5094	7464	PS5	Rack	117v plug	#16 2c Tyrex
MM	PG1	"	"	PS4	"	"	"
NN	TS3-1,3	5T7852	spade lug	PS2	"	"	"
OO	PG1	6T6094	7464	PS2	"	"	"
PP	PG3	"	"	PS1	"	"	"
QQ	PG2	"	83-1SP	N.C.Contact REL Rack	X		RG-63/U
RR	Analyzer Input		"	N.O.	"	"	"
SS	PG6	6T6094	RSK-5-22C 1/2	PG1	6T7881	SK-5-21C 1/2	#16 5c Tyrex

RACK LIGHTING CIRCUIT

#16 Solid 600V ins.

DIFFERENTIAL PULSE HEIGHT ANALYZER
 ACCELERATOR TYPE
 INSTALLATION DATA

PARTS LIST

Desig.	Quan.	Description
MTR-1	1	Telechron Synchronous Motor 1 RPM Type B8
PG-1	1	Cannon SK-5-32-SL Male Receptacle
R-1	1	10K 5W $\pm$.05% Linearity (Helipot Corp) To be furnished by R.E. Heller

MISC.

1 1/4 D. x 3-3/4 Long Drill Rod
2 New Departure Ball Bearing Type 77-R-4
2 4-40 x 1" Long Brass Stud

DRAWING LIST

6T 7881	-	Schematic & Parts List (This)
6T 8933	-	Assembly
6T 8943	1	Support Frame
6T 8953	1	Stationary Resistor Mount
6T 8962	1	Swinger
6T 8971	1	Hub
6T 8981	2	Bearing Holder
6T 8991	1	Motor Mounting Bracket
6T 9011	1	Slider Contact Mtg. Bracket
6T 9021	2	Slider Contact
6T 9031	1	Slip Ring Contact Mtg. Bracket
6T 9001	1	Slip Ring
6T 9041	1	Coupling Modification

10Z 9381-1	1	Std. Set Screw Collar
10Z 9381-2	1	" " " "
10Z 1212-164	2	Std. Spacing Bushing
10Z 1212-165	1	" " "
10Z 1212-166	1	" " "

[illegible]

I
II **64**
III **4 FARNS.**

1-58