STATINTL

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April 29, 1963

DECLASS REVIEW by NIMA/DOD

Bolling Air Force Base
Washington , D. C.

Per your request, we are pleased to submit our proposal for a Digitized On
Line Measuring Equipment System. Each system consists of a control panel,
two each bi-directional counter and register, a synchronizer and format output
control unit. The following paragraphs detail the functions and performance of
these units.

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DESCRIPTION OF [ ] #2825A CONTROL PANEL [ ] Dwg. No. 5000-121)

The 2825A Control Panel is designed for remote operation of the 2827A. Synchronizer
and two 2826A or B Bi-Directional Counters. The following controls and indicators

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are provided:

1.1   Display 2 sets of 7 Nixie * indicator tubes (6 numerals 0-9 and ± sign).
         To receive drive power from 2826A or B Counters.

1.2   Preset-reset 2 sets of 7 switches to select remotely preset-reset
         setting of 2826A or B Counters.

1.3.2   Preset-reset command push-button switch for remote operation of
         2826A or B Counter.

1.4.2   Reset to 0 command push-button switch for remote operation of
         2826A or B Counter.

1.5.2   Counting direction selector switches for remote selection of
         counting direction of 2826A or B Counters.

2.1   16 instruction character pushbutton switches to remotely control
         the 2827A Synchronizer (See Para. 4.6 on Synchronizer specification).

2.2   5 readout pushbutton switches to remotely control the 2827A Synchronizer
         (See Para. 4.7 on Synchronizer specification).

*[ ] trademark

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DESCRIPTION OF [ ] 2825A CONTROL PANEL (Continued)

2.3 Ten 11 position rotary switches to generate remotely special characters in the 2827A Synchronizer (See Para. 4.9 of Synchronizer specification).

2.4 1 transmission indicator light, powered by the 2827A Synchronizer.

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DESCRIPTION OF [ ] #2826A BI-DIRECTIONAL COUNTER
[ ] Dwg. No. 5000-119)

The 2826A Bi-Directional Counter is a 6 digit, bi-directional totalizer which will register the algebraic sum of the number of input pulses fed into the inputs A and B.

_ Input requirements, Channel A and B:
Pulse, 5μsec wide, +1V peak amplitude in reference to 0 volts, rise time 1μsec or less.

_ Maximum Counting Rate: 100KC May be expanded to 1MC (Option).

_ Minimum spacing between pulses on either channel: 10μsec.

_ Preset-reset capability: From 000,000 through 999,999 by remote selection, BCD 1-2-4-8 coded switches necessary. Preset voltage supply from counter. Preset command is remote by contact closure.

_ Reset capability: To 000,000, by remote contact closure.

_ Output specifications: BCD 1-2-4-8. Logic 1= -8V±2V; Logic 0=-.5V or less over 6.8K series resistor. BCD output is from built-in register.

_ Storage capability: The counter has a register which will follow the counting decades until a keying command is issued. Upon this command the information contained in the register is being held until removal of the keying command. The keying command is a level change from -6V - -12V to -.5V - +6.0 Volts. The register store BCD coded information, not the 10 line-output to drive the remote readout.

Readout: Remote, 10-line output to drive standard Nixie* tube.

_ Counting direction: Normal or reversed by external contact closure.

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* [ ] trademark

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DESCRIPTION OF ☐ 2826B BI-DIRECTIONAL COUNTER

☐#2826B Bi-Directional Counter has the identical specifications, except for the input specifications.

− 2826B Input requirements: 2 sine − or square waves, 90° out of phase min. amplitude: 90mV Peak-to-Peak.

− Input impedance: 5K ohms shunted by 30pf.

− Power requirements: 115VAC ±10%, 50/60cps, 60 watts.

− Dimensions: Approximately 19" x 5 1/4" x 12 1/2" (without connectors) Rack mount, all connectors on rear panel.
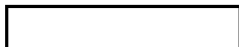
− Weight: Approximately 35 lbs. net.

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DESCRIPTION OF ☐ #2827A SYNCHRONIZER & FORMAT OUTPUT CONTROL
☐ Dwg. No. 5000-120)

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General:

The ☐ #2827A Synchronizer and Format Output Control accepts up to 42 digits or characters in BCD coded form and converts these into serial form.

1.1 Speed: 1200 letters per second ±. 001%.

1.2 Input requirements: Up to 42 1-2-4-8 coded parallel inputs. Logic 1 equals −4.5 to −12 volts, logic 0 equals −.5 volts or less into 3.9K load.

1.3 Receive data lead (RDL): +8 ±2V for space, −8 ±2 for mark into 4.7K load.

1.4 Clear to send (CTS) signal: −8V ±2 for Off, +8 ±2V for On into 4.7K load.

1.5 Interlock to transmission equipment: 0V for Off, +8 ±2 for On into 4.7K load.

1.6 Send Data Lead (SDL): +10 ±2V for space, −10 ±2 V for mark @ 2mA each.

1.7 Request to Send (RTS) signal: −8V ±2V for Off or Hold; +8 ±2V for On or Transmission.

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DESCRIPTION OF [ ] #2827A SYNCHRONIZER & FORMAT OUTPUT CONTROL
(Continued)

2.1 In addition to the information bits to be transmitted, two pulsing bits are generated for each character. A start pulse is a space or (0) and is the same duration of the other bits. A stop pulse is a mark or (1) and is a minimum of 1.5 bits in length but may be longer.

3.1 CODE: The code generated will meet the following requirements:

3.2 Code to be used is Field Data Code, consisting of a 6-bit character plus one parity bit. Parity is odd.

3.3 The 2° or least significant information bit is the first bit to be transmitted from each character.

3.4 Parity is to be the 2^6 bit and is the last information bit of each character.

4.1 MESSAGE GENERATED: The message generated by the Synchronizer consists of:

4.2 Digital coordinate values for each axis of the system. This shall normally consist of six decades plus sign per axis.

4.3 A start of message character (SOM).

4.4 An end of transmission character (EOT). (This bit configuration would normally be a parity error).

4.5 A message parity count (MPC). This is the sum of bits of all characters transmitted (including SOM and EOT), and is non carry add. Lateral parity is odd. Longitudinal parity is even. The parity bit is to be the sum of the longitudinal bits.

4.6 Four special instruction characters, each generated by four operator controlled push on, push off back lit switches, two dummy bits (mark or 1), and a parity bit generated by the equipment based on the condition of the four switches. The fixed dummy bits occupy the 2^4 and 2^5 bit positions.

4.7 A special readout character generated by five momentary contact push button switches and two fixed dummy bits occupying the 2^5 and 2^6 bit positions. The dummy bits are spaces or 0's. It is understood that the parity (2^6) is to be fixed at 0 so that if two of the five switches are pressed at the same time, a parity error will be detected. The five switches are understood as readout switches and also control the request to send, SOM and text as later described.

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[   ]

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STATINTL   DESCRIPTION OF [   ] # 2827A SYNCHRONIZER & FORMAT OUTPUT CONTROL
(Continued)

4.8   Three rotary switches are provided for machine identification purposes.
These switches are to have the capability to create 0 to 9 and are placed
at the rear panel of the synchronizer so that only the maintenance engineers
have the capability to change them.

4.9   10 special characters, generated by remote switch setting. These switches
have the capability of producing 0 to 9, minus (-).

5.1   SPECIAL CIRCUITS: There is to be no character by character acknowledge
signal received by the digitizer output circuit. However, there is to be a
message acknowledge or error signal received on the basis of the total
message transmitted. The reply consists of SOM, A or E, EOT, and
MPC. In addition, a timer in incorporated in the equipment to trigger an
alarm if the reply is not received in a time of 3 seconds to be specified
by the customer. The output is to be held in the digitizer buffer until an
acknowledge is received or the timer alarm is triggered. If an error
signal is received due to a bad transmission, the timer is reset and
another attempt at transmission is made. If, after a set number of attempts
of retransmission (under computer control), an acknowledge or error
signal is not returned, the timer will time out. If a read-out is initiated
but no acknowledge or error signal is received, the timer will also time
out, warning the operator that the transmission is not taking place.

In addition, an indicator light is to be placed on the control panel in close
proximity to the readout switches. On depressing any one of the five
readout switches the light is to turn on and remain on for approximately one
second or until an acknowledge signal is received, which ever is longer.
This will indicate to the operator that a readout has been initiated within
the digitizer.

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The price for the Model 2825A Control Panel is [   ]
The price for the Model 2826A Bi-Directional Counter (2 required) is [   ]
The price for the Model 2826B Bi-Directional Counter (2 required) is [   ]
The price for the Model 2827A Synchronizer is [   ]

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STATINTL   All prices are FOB [   ] Delivery of the first system is
120 days after receipt of order. The second system, 130 days after receipt of
order. Terms are net 30 days.

If further information and/or comment is desired, please do not hesitate to contact
us.

Very truly yours,

STATINTL

Regional Sales Manager

MGS:bg
Enclosures

Tues April 30, 1963

Digital Counter for Measuring Machines.   (proposal)

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As of Tues. April 30, 1963

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[_____] did not get his proposal
finished Friday, it went out Monday. He went into
quite a bit of detail on the specifications of
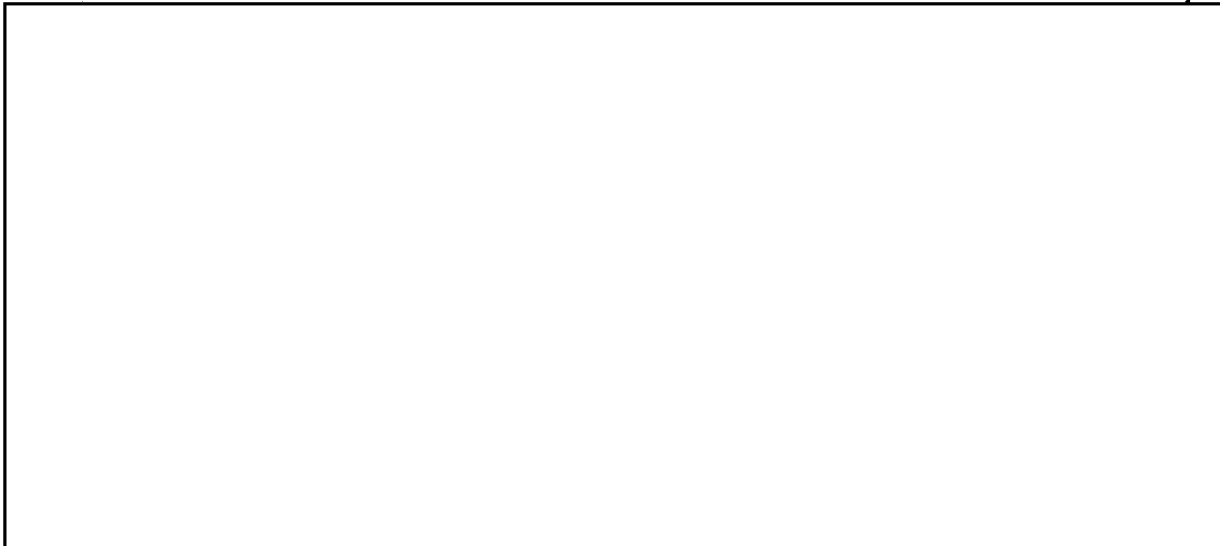each unit involved.

A complete counter consists of the
following:

STATINTL   For an [_____] measuring machine:
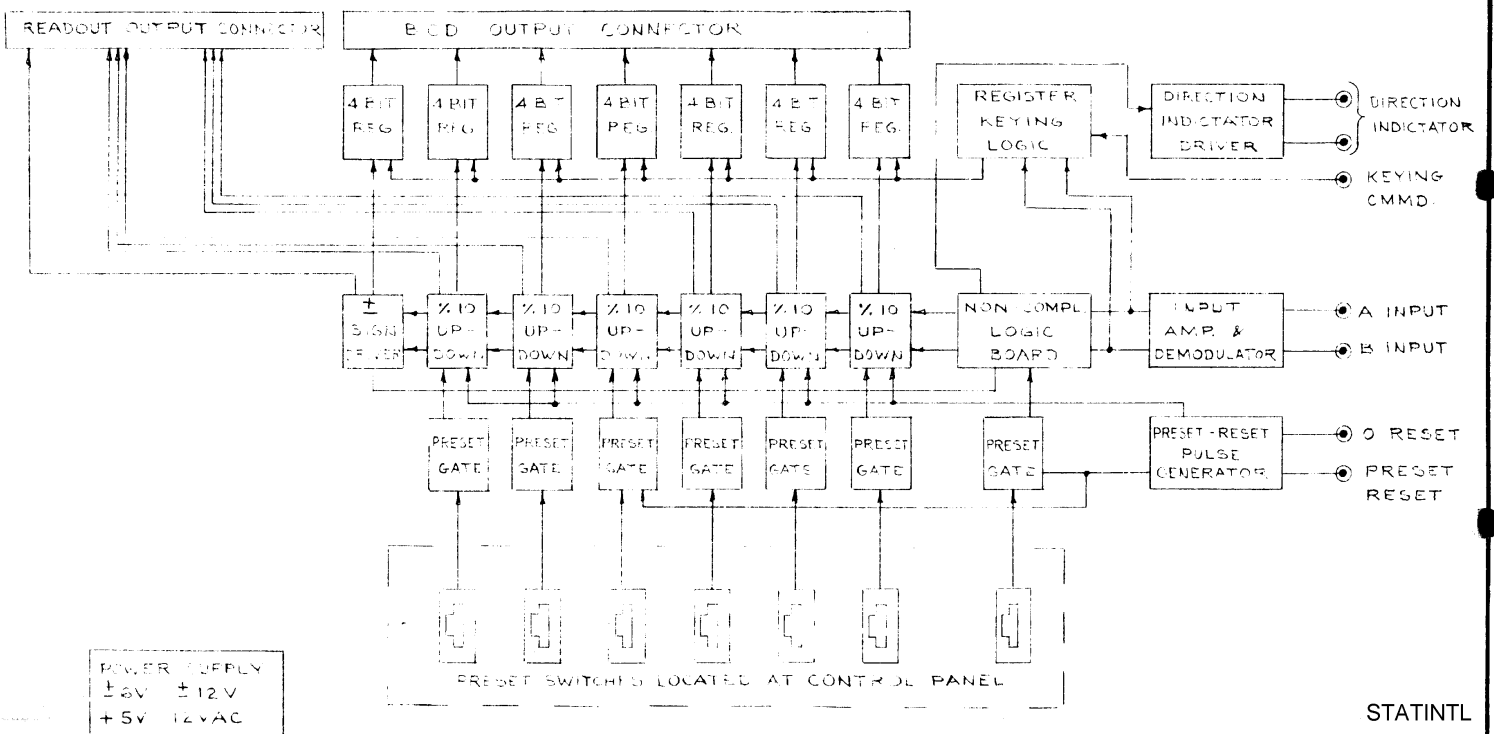
    1 ea Control Panel, Model 2825 A
    2 ea Counter   , Model 2826 A
    1 ea Synchronizer, Model 2827 A

STATINTL   For an [_____] measuring machine:

    1 ea Control Panel, Model 2825 A
    2 ea Counter   , Model 2826 B
    1 ea Synchronizer , Model 2827 A

A Z-axis count can be added by adding a counter
(a variation of the model 2826) and a set of
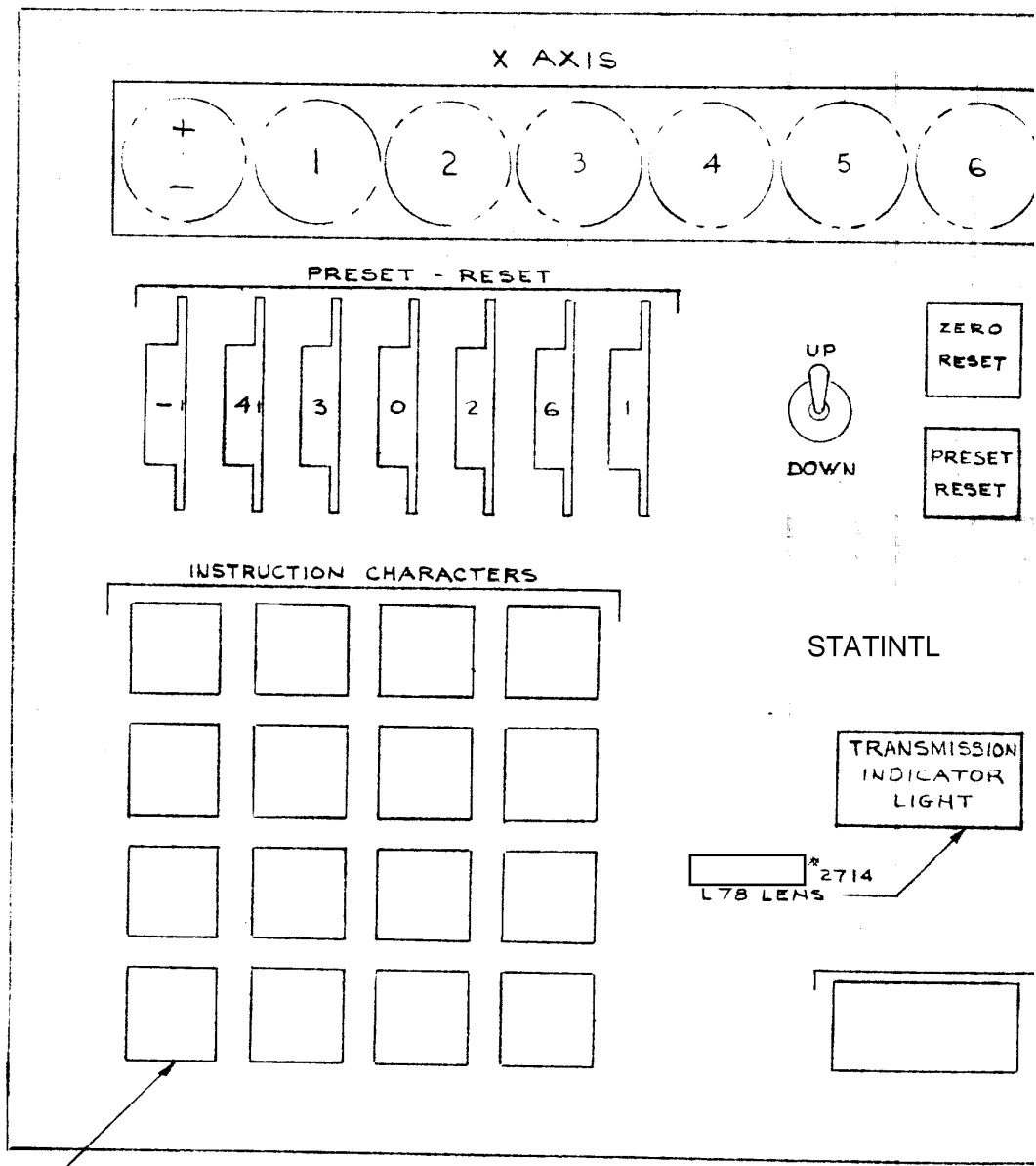6-digit nixies on the control panel or adjacent

STATINTL   to it.

	DESCRIPTION		CHECKED	APPROVED

READOUT OUTPUT CONNECTOR

BCD OUTPUT CONNECTOR

| 4 BIT REG | 4 BIT REG | 4 BIT REG | 4 BIT REG | 4 BIT REG | 4 BIT REG | 4 BIT REG |

REGISTER KEYING LOGIC

DIRECTION INDICTATOR DRIVER

DIRECTION INDICTATOR

KEYING CMMD.

| ± SIGN REVER | ÷ 10 UP-DOWN | ÷ 10 UP-DOWN | ÷ 10 UP-DOWN | ÷ 10 UP-DOWN | ÷ 10 UP-DOWN | ÷ 10 UP-DOWN |

NON COMPL LOGIC BOARD

INPUT AMP. & DEMODULATOR

A INPUT

B INPUT

| PRESET GATE | PRESET GATE | PRESET GATE | PRESET GATE | PRESET GATE | PRESET GATE | PRESET GATE |

PRESET-RESET PULSE GENERATOR

O RESET

PRESET RESET

PRESET SWITCHES LOCATED AT CONTROL PANEL

POWER SUPPLY
± 6V   ± 12 V
+ 5V   12 VAC

STATINTL

DIMENSIONS IN INCHES	DRAWN A L	DATE	BOLLING FIELD PROPOSAL
	CHECKED	DATE	UP-DOWN COUNTER
MATERIAL			

ILLEGIB

X AXIS

+
−   1   2   3   4   5   6

PRESET - RESET

−   4   3   0   2   6   1

UP

DOWN

ZERO
RESET

PRESET
RESET

INSTRUCTION CHARACTERS

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TRANSMISSION
INDICATOR
LIGHT

*2714
L78 LENS
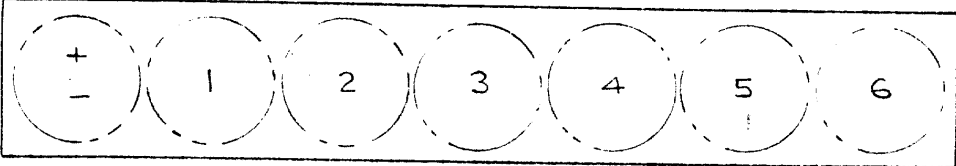
STATINTL

*1226
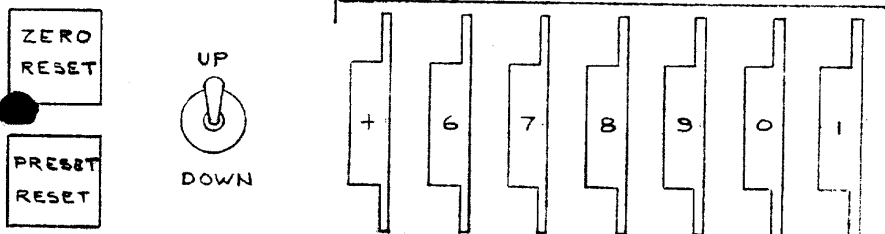L 51 LENS

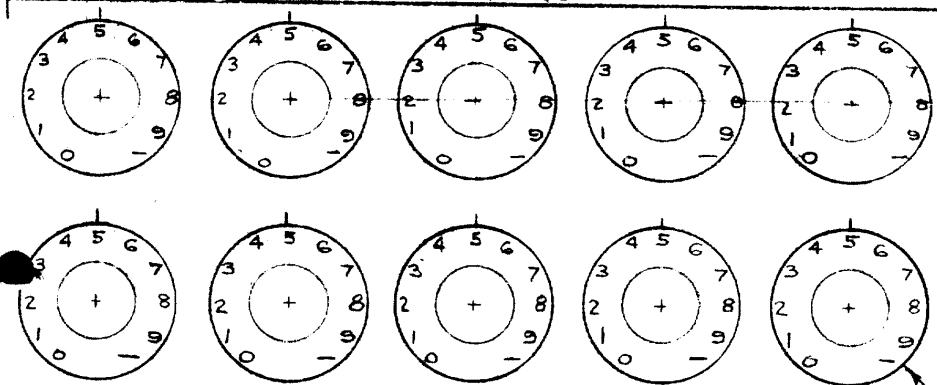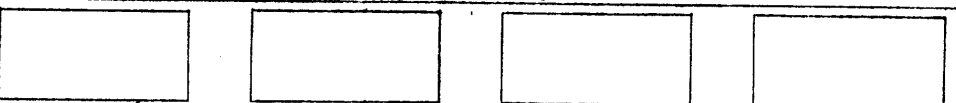| REV.	LOT NO.	DATE	ECO. NO.	DESCRIPTION	CHECKED	APPROVED
A		4-25-63		PROPOSAL CHANGES		

Y AXIS

+
−
1 2 3 4 5 6

PRESET - RESET

ZERO RESET

UP

PRESET RESET

DOWN

+ 6 7 8 9 0 1

SPECIAL CHARACTERS

READOUT CHARACTERS

PA-024
CENTRALAB
OR EQUIV.

STATINTL

*1023
L 78 LENS

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DIMENSIONS IN INCHES TOLERANCES UNLESS SPECIFIED	DRAWN	DATE	TITLE			
.XX ± .03 .XXX ± .015 ANGULAR ± .°°	A.L.	4/23/63	BOLLING FIELD PROPOSAL CONTROL PANEL			
MATERIAL	CHECKED	DATE				
FINISH	APPROVED	DATE	SCALE	JOB NO.	NEXT ASSY.	

SECRET
(When Filled In)

TECHNICAL BACKGROUND PROCUREMENT INFORMATION

I. Contractor
    A. Name and address: 25X1A

    [   ]   25X1A

    B. Evaluation of previous performance: No previous record

II. Brief description of this procurement: Development of a digital readout of

    comparator information for on line use with a Univac 490

                                                Estimated total amt. [   ]   25X1A

    A. Deliverable items: Two each electronic counters.

    B. Is this procurement for other than a standard, "off the shelf" or slightly
        modified commercial item? **YES**   If "yes", is it anticipated that
        any more of this unit will be procured? **YES**   If so, a complete
        set of directly reproducible manufacturing drawings and specifications
        would normally be included in this procurement. Comments:

    C. Will contract cover a period of more than 90 days? **YES**
        If "yes", are progress reports desired? **NO**   If so, indicate fre-
        quency, content and number of copies desired:

        Delivery should be completed within 120 days.

    D. Is any Government-owned property to be provided to the contractor?

        NO   If so, list and indicate its availability (where, when,

    etc.)

SECRET
(When Filled In)

SECRET
(When Filled In)

_____

_____

_____

_____

E. Is any special tooling involved?____**NO**_____

F. Security:
   1. Association with the Sponsor is____**Secret**_____

   2. The specifications and/or drawings are____**Unclassified**_____

   3. The item is____**Unclassified**_____

   4. Contractor personnel known to be aware of this proposed procurement:

25X1A

   5. Other security information____**Preliminary plant inspection**_____

      ____**Completed by security**_____

_____

III. Reasons for selection of this source. If other sources were considered, indicate results. If no other sources were considered, list the reasons why this firm is considered to be uniquely qualified to perform this work.

25X1A

25X1A
25X1A

   Proposals solicited from_____

   _____ **did not reply and the** _____ **unpriced proposal was not** **25X1A**
   considered technically acceptable. In addition, it is felt that [   ] **has the best** **25X1A**
   plant facility and production capability at the lowest unit cost.

25X1A

IV. Technical contact_____
                              Name   Telephone

In the event additional space is required, use the reverse side(s) of this form, with a reference to the item number to which the comment applies.

SECRET
(When Filled In)