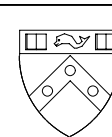


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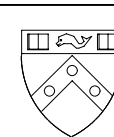
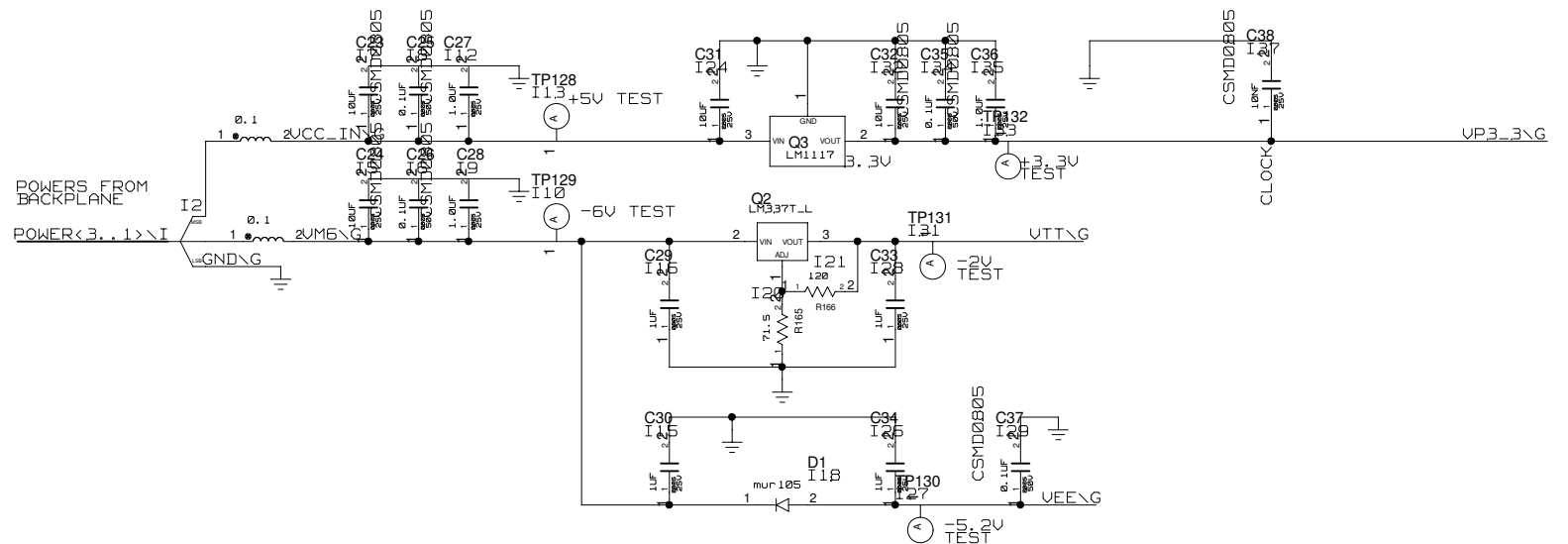
1. TUBII GLOBAL VIEW
2. POWERS
3. MICROZED CONNECTIONS
4. BASELINE MONITORING
5. ECAL CONTROL
6. CLOCKS
  - 6A TUBII TIME
  - 6B TUBII CLOCKS
7. GT DELAYS
  - 7A. SELECT LOCKOUT SOURCE
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  - 9A. CAEN CHAT
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  - 10A. FAST COMP
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  - 11A. GENERIC PULSE
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12. PORTS
  - 12A. NIM-ECL
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  - 14B. TUBII TRIGGERS
  - 14C. ELLIE
  - 14D. ELLIE TALK
15. TUBII SPEAKER



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TITLE:	DATE:
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# POWERS



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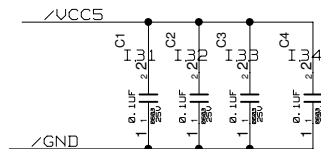
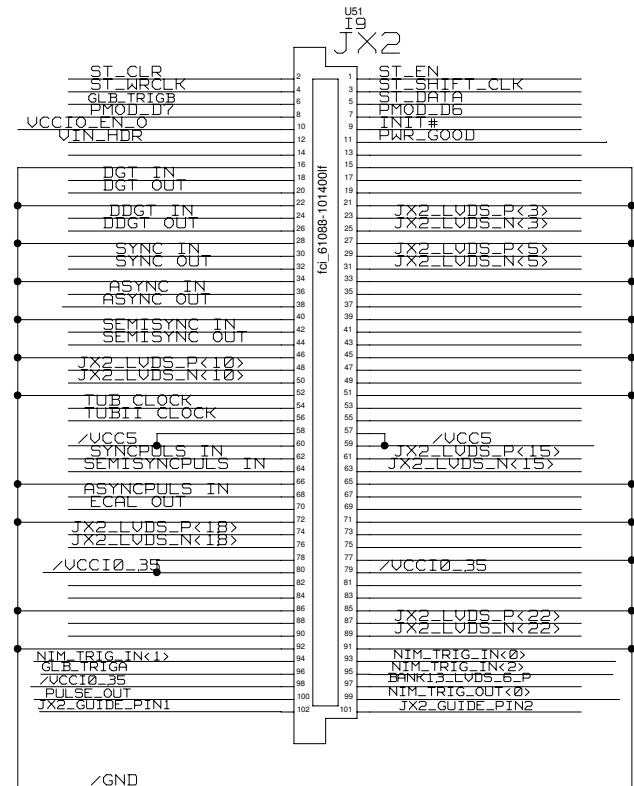
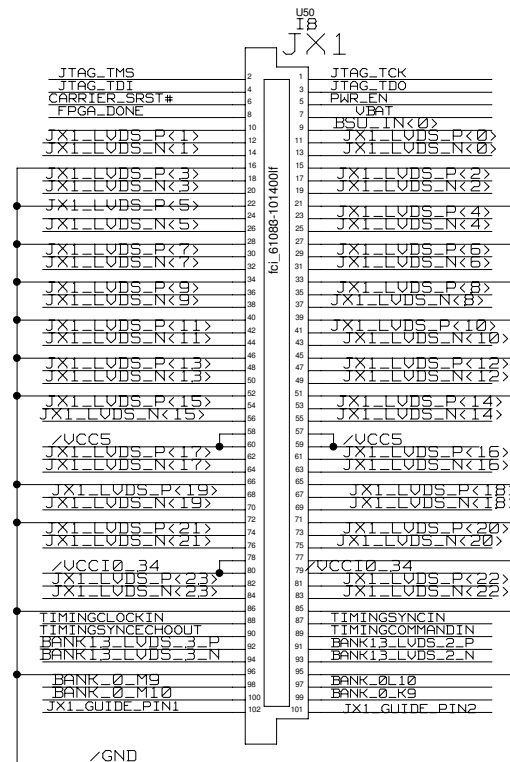
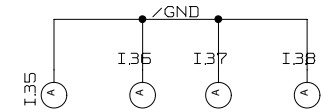
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POWERS


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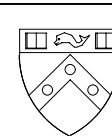
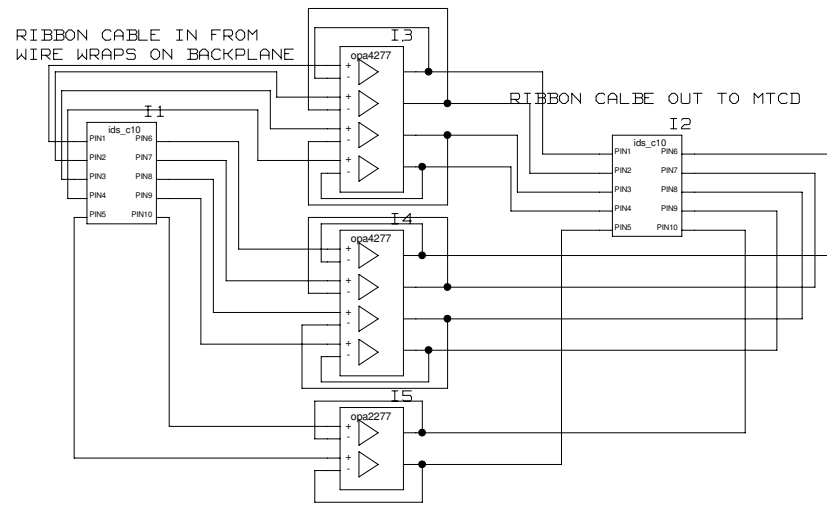
# MICROZED CONNECTION



	UNIVERSITY OF PENNSYLVANIA HIGH ENERGY PHYSICS	
	DRAWING MICROZED_MOD	DATE:
	TITLE: MICROZED_CONNECTION	
LAST MODIFIED: Wed Oct 08 18:25:04 2014	PAGE: 3	

# BASELINE MONITORING

SIMPLY MAKES SURE THERE  
IS A BUFFER BETWEEN THE MTCD  
AND BACKPLANE.  
TO PREVENT NOISE PROPAGATION



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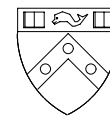
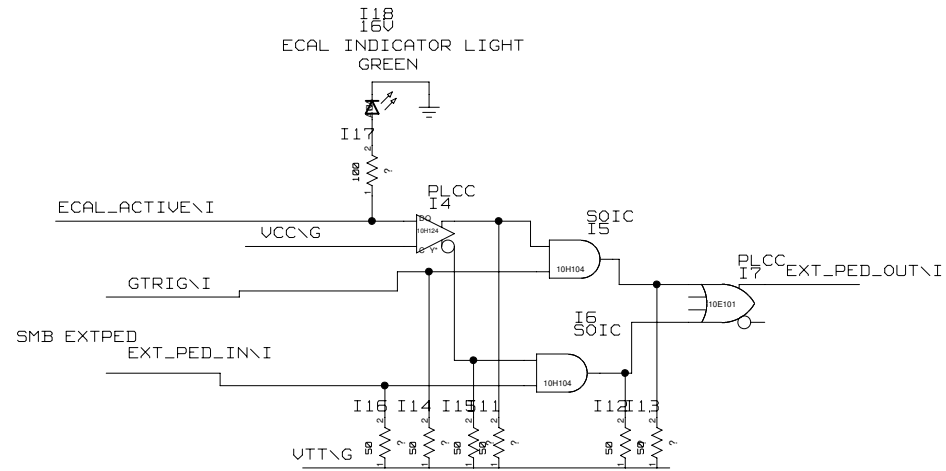
TITLE:  
BASELINE MONITORING

DATE:  
9/8/14

ENGINEER:  
ERIC M

PAGE: 4

WHEN PERFORMING ECALS GTRIG FEEDS INTO THE EXT\_PED  
ON THE MTCO. OTHERWISE THE MTCO'S EXT\_PED COMES FROM  
TUBII'S EXT\_PED



TITLE:  
ECAL CONTROL

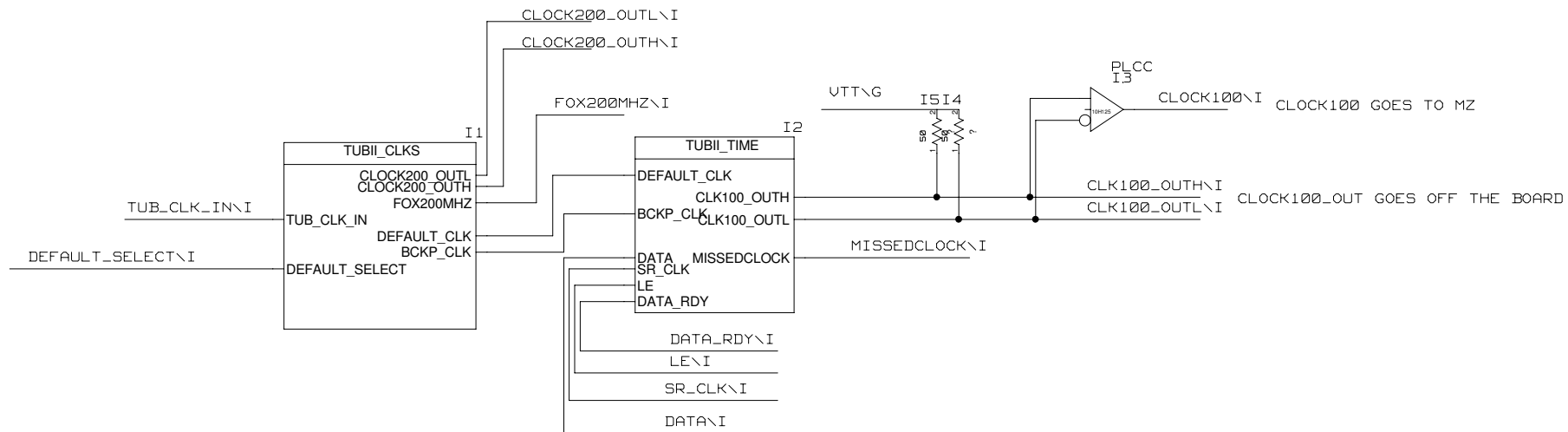
ENGINEER: ERIC M

DATE: 9/19/14

PAGE: 5

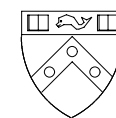
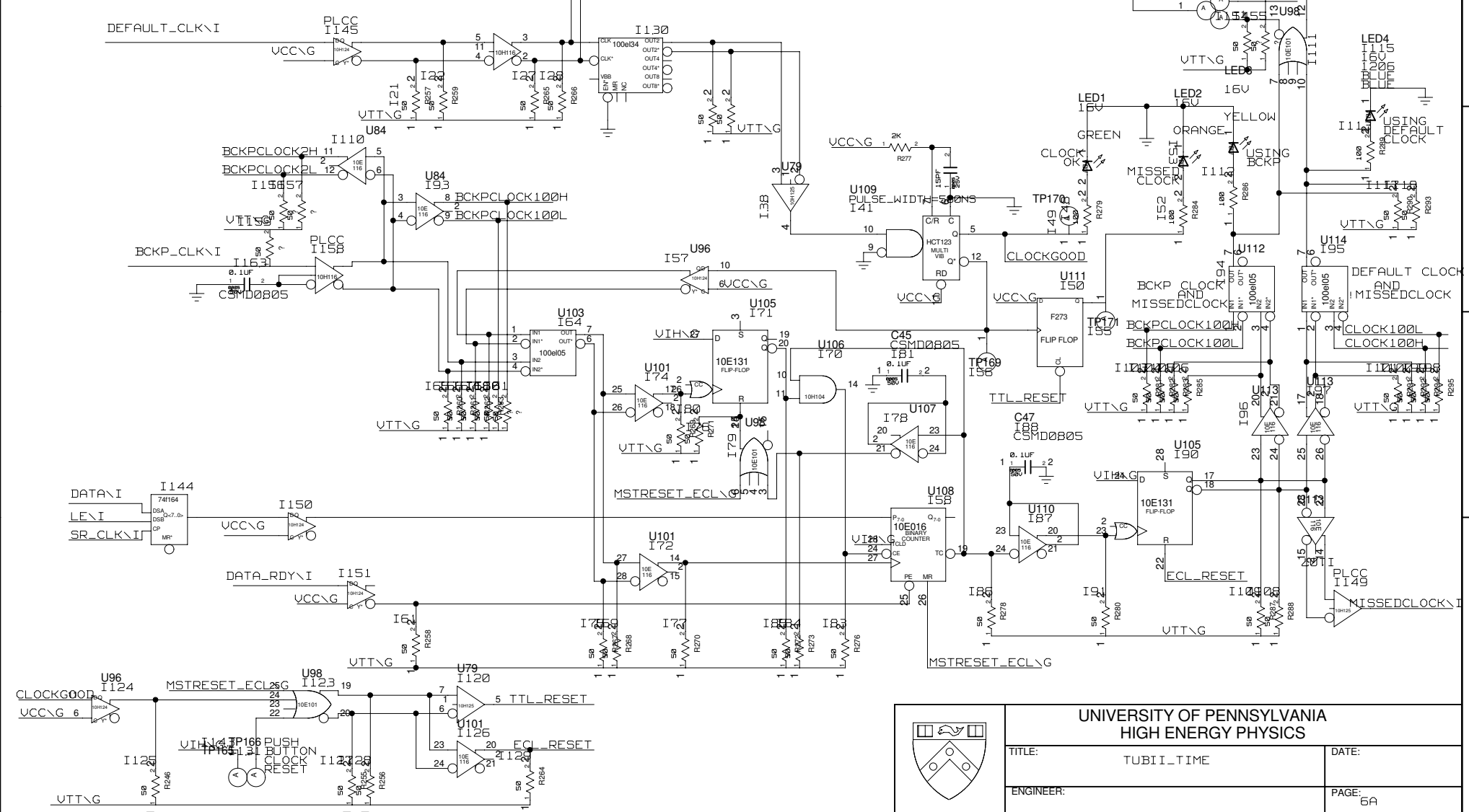
# CLOCKS

## ALL THINGS CLOCK RELATED



# TUBII TIME

TAKES TWO CLOCKS AND OUTPUTS ONE OF THEM  
 OUTPUTS DEFAULT\_CLK UNLESS IT MISSES N CLOCK TICKS  
 (N IS SET BY MZ)  
 IN WHICH CASE BCKP\_CLK IS USED.  
 A SIGNAL IS SENT OUT TO MZ SAYING BCKP\_CLK IS IN USE

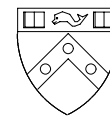
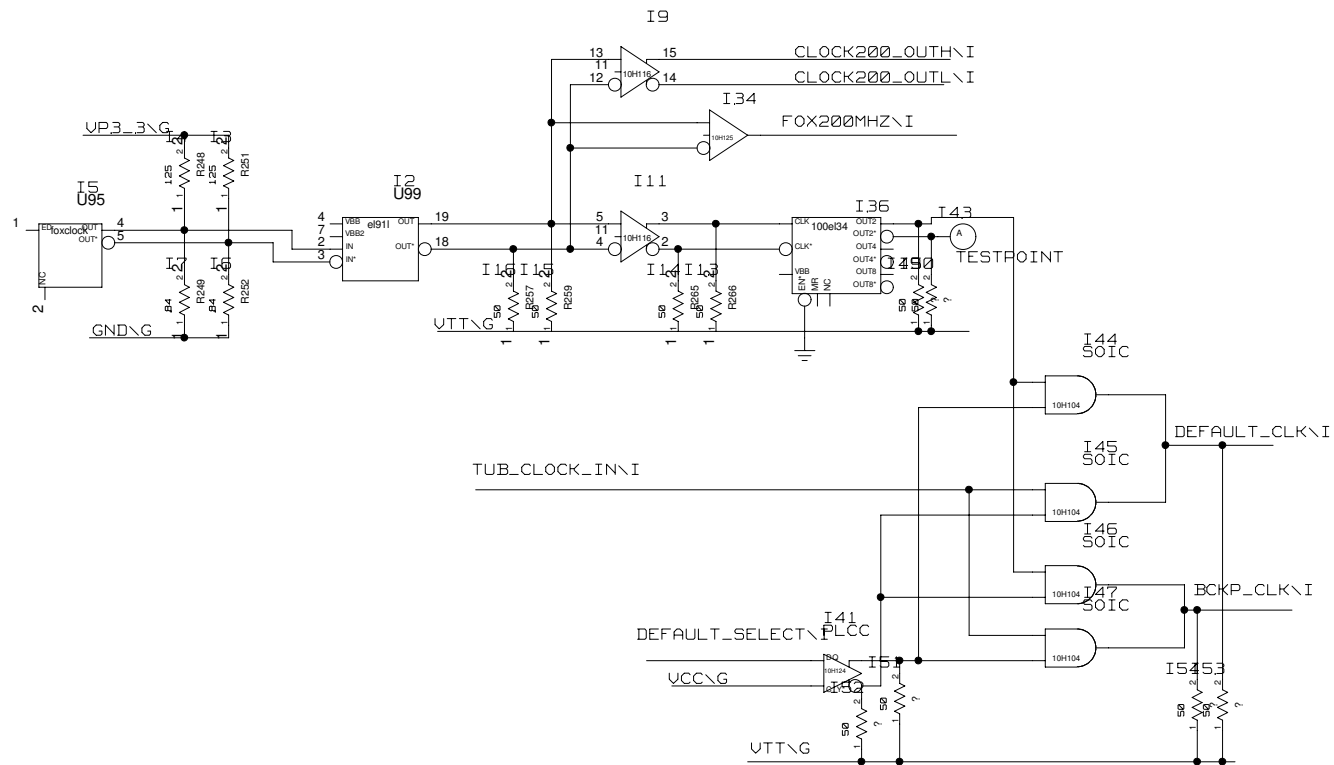


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TITLE:	TUBII TIME	DATE:
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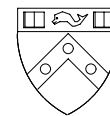
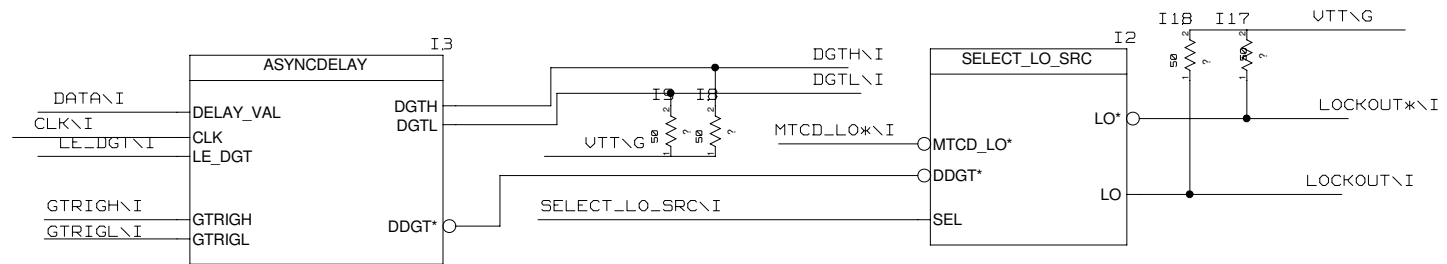


DECIDES WHICH CLOCK (TUB OR FOX) IS  
THE DEFAULT CLOCK AND WHICH IS THE BACKUP



TITLE: TUBII CLOCKS	DATE: 9/15/14
ENGINEER: ERIC M	PAGE: 6B

CIRCUITRY DEALING WITH CREATING DGT AND DDGT FROM GT  
AND ALSO DECIDES WHAT THE SOURCE OF LO\* IS

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TITLE:	GT_DELAYS
--------	-----------

DATE:  
10/3/14

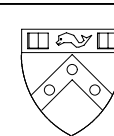
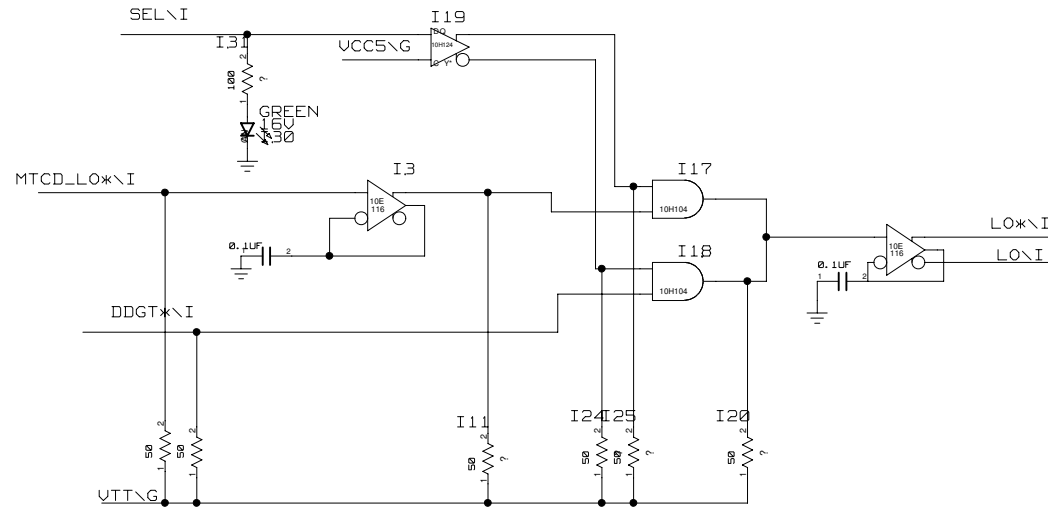
ENGINEER: ERIC M

PAGE: 7

# SELECT LOCKOUT SOURCE

IN THIS BRAVE NEW TUBII WORLD LO\* WILL JUST BE DDGT IN GENERAL  
BUT PERHAPS PEOPLE WILL WANT TO USE THE MTCD'S LO\*

THIS BLOCK PROVIDES USERS WITH THE ABILITY TO SELECT WHERE  
THEIR LO\* COMES FROM,



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TITLE:  
SELECT LOCKOUT SOURCE

DATE:  
9/11/14

ENGINEER:  
ERIC M

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7A

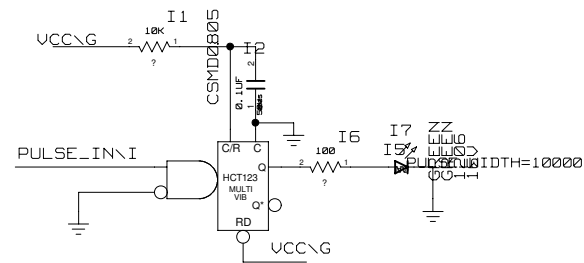
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0 - 127.5 NS DELAY
  IN 0.5NS STEPS
AND 0 - 1275 NS DELAY
  IN 5 NS STEPS

```

# LED PULSE

TAKES AN INPUT PULSE  
STRETCHES IT AND FLASHES AN LED

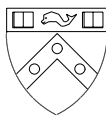
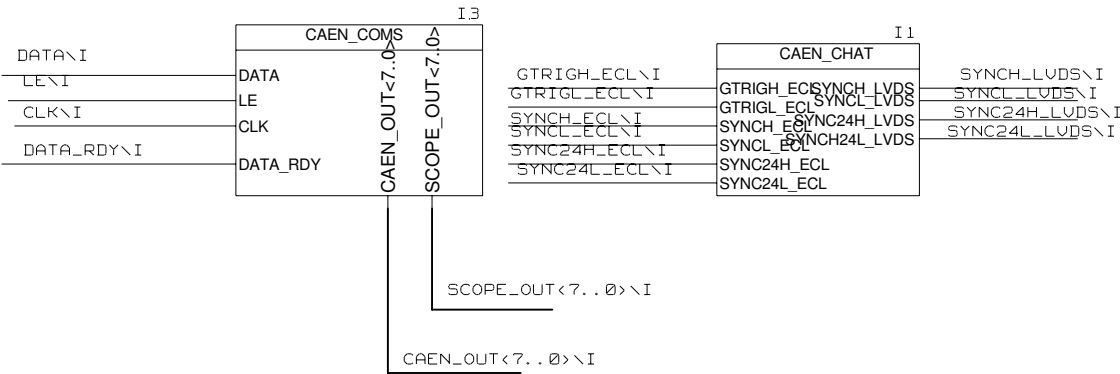


		UNIVERSITY OF PENNSYLVANIA HIGH ENERGY PHYSICS	
TITLE: LED PULSE		DATE: 10/7/14	
ENGINEER: ERIC M		PAGE: B	

# CAEN

HANDLES COMMUNICATION WITH THE CAEN DIGITSER  
DECIDES WHICH ANALOG SIGNALS GET SENT TO CAEN  
AND SENDS SYNC/SYNC24 /GT TO CAEN

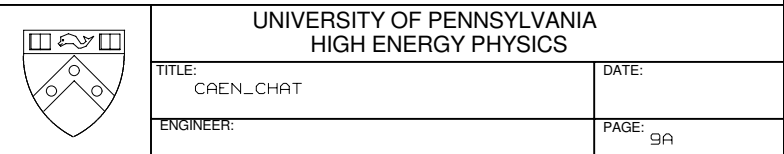
HERE IS WHERE A VARIETY OF  
ANALOG SIGNALS ARE CHOSEN  
TO GO TO THE CAEN



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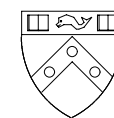
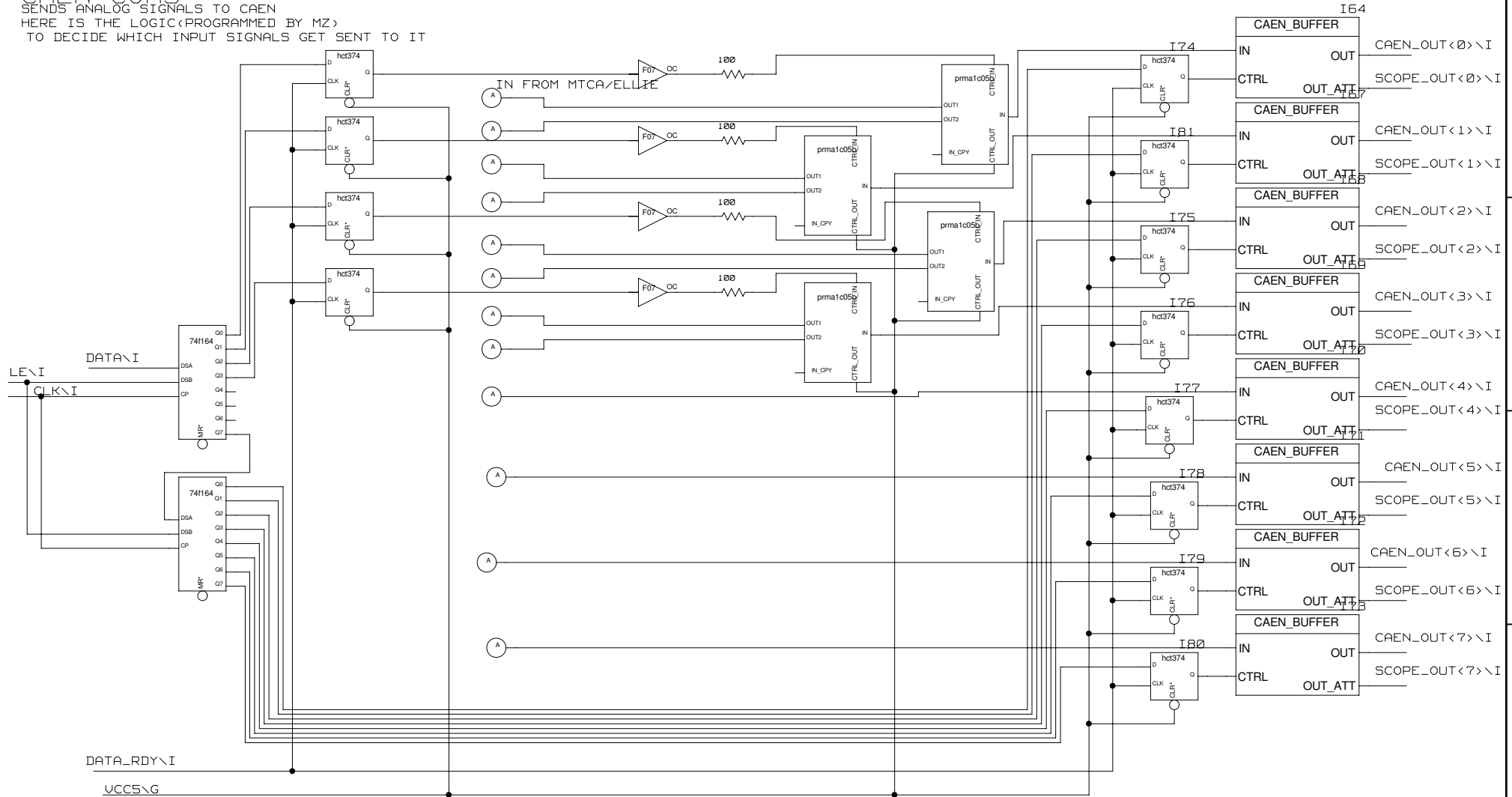
TITLE: CAEN		DATE: 9/25/14
ENGINEER: ERIC M		PAGE: 9

SENDS DIGITAL SIGNALS TO CAEN  
AFTER TRANSLATING THEM APPROPRIATELY



# CAEN\_COMS

SENDS ANALOG SIGNALS TO CAEN  
HERE IS THE LOGIC (PROGRAMMED BY MZ)  
TO DECIDE WHICH INPUT SIGNALS GET SENT TO IT

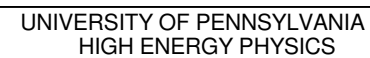
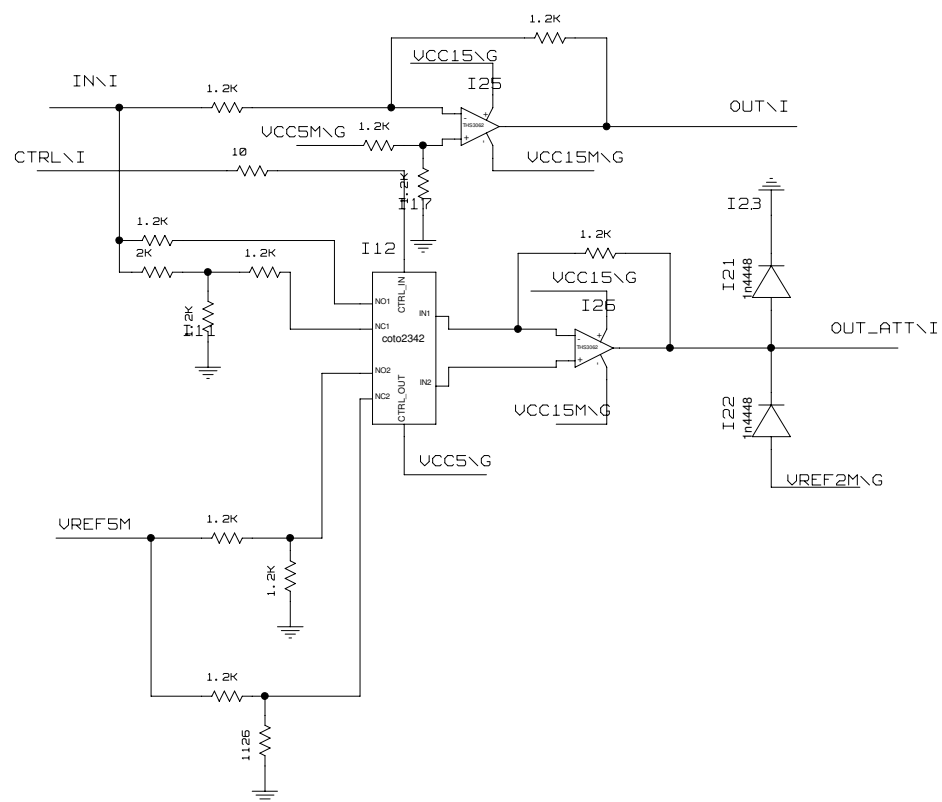


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HIGH ENERGY PHYSICS

TITLE: CAEN_COMS	DATE: 9/4/14
ENGINEER: ERIC M	PAGE: 9B



THE CAEN IS A PICKY BEAST  
THIS CIRCUIT CLIPS A SIGNAL SO THAT IT CAN BE USED BY THE CAEN  
AND BUFFERS IT FOR GOING TO THE SCOPE

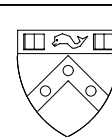
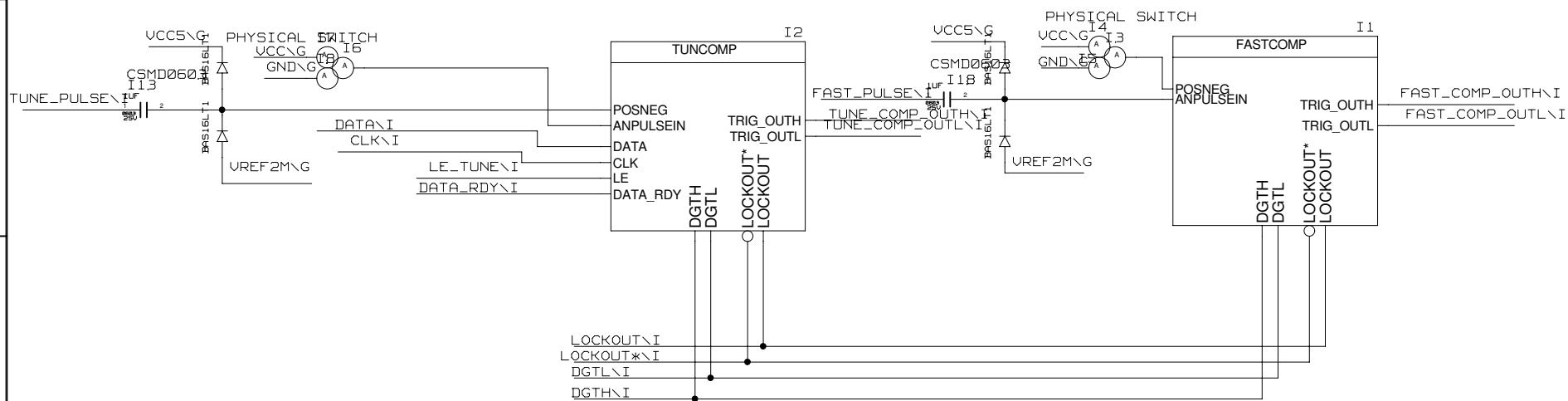


DATE: 8/18/14

PAGE: 9C

# COMPARATORS

THERE ARE TWO COMPARATORS WHICH AN ANALOG SIGNAL CAN BE COMPARED TO A TUNEABLE THRESHOLD. THE DIFFERENCE BETWEEN THE TWO IS ONE IS FASTER AND IT'S THRESHOLD IS SET BY A POT. THE OTHER IS SET BY A DAC



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TITLE: COMPARATORS

DATE: 9/25/14

ENGINEER: ERIC M

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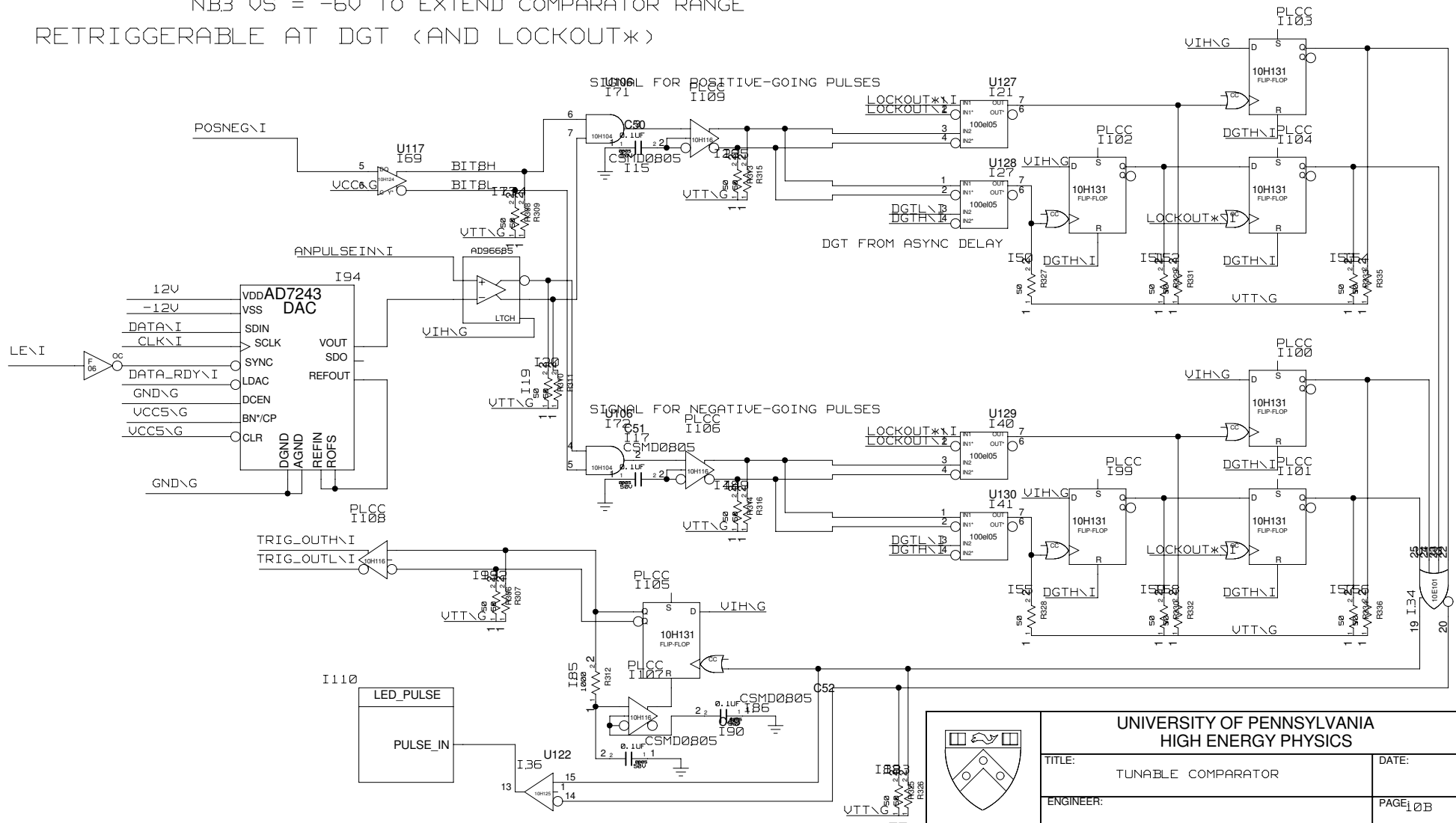
# TUNABLE COMPARATOR CIRCUIT

RANGE: -3.3 TO +5 V;

NB2 VDD = +15V VSS = -15V TO SUPPLY DAC  
NB3 VS = -6V TO EXTEND COMPARATOR RANGE

RETRIGGERABLE AT DGT (AND LOCKOUT\*)

NOTE FROM ERIC:  
THIS IS PROBABLY NO LONGER TRUE  
I CHANGED 10ES TO 10HS

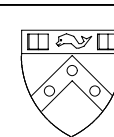
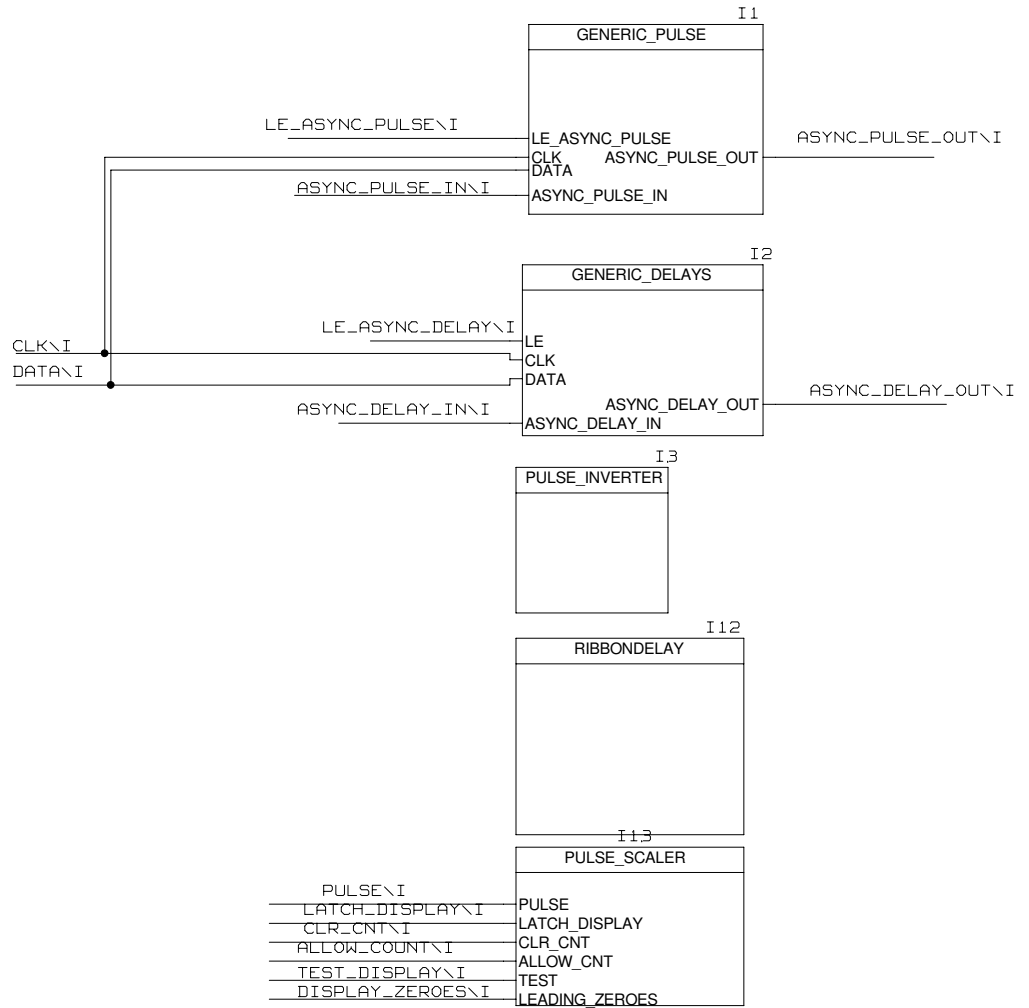


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HIGH ENERGY PHYSICS

TITLE:	TUNABLE COMPARATOR	DATE:	
ENGINEER:		PAGE:	10B

# GENERIC UTILITIES

PART OF TUBII'S MISSION IS TO PROVIDE  
HELPFUL FUCNTIONALITY TO IT'S USERS.  
HERE IS THE HOUSING FOR ALL CIRCUITRY DESIGNED  
WITH NO PURPOSE IN MIND EXCEPT FOR THAT  
SOMEBODY SOMEDAY MIGHT WANT TO DO SOMETHING

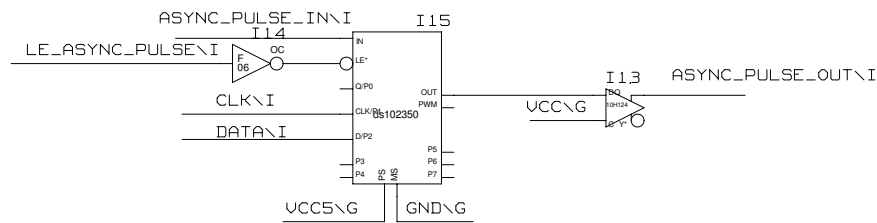



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TITLE:	DATE:
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# GENERIC PULSE

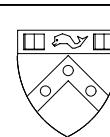
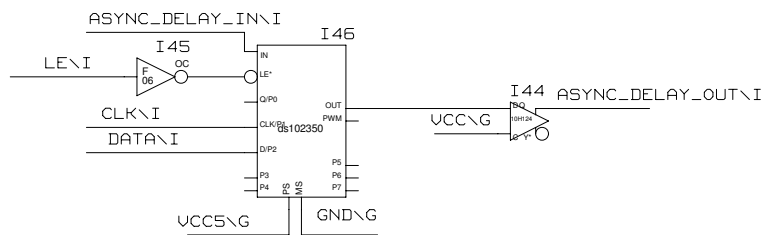
A PULSE COMES FROM THE MZ AT SOME RATE.  
THIS CIRCUIT OFF SETS THAT RATE BY SOME SMALL  
ASYNCHRONOUS AMOUNT.



	UNIVERSITY OF PENNSYLVANIA HIGH ENERGY PHYSICS	
	TITLE: GENERIC PULSE	DATE:
	ENGINEER:	PAGE: 11A

# GENERIC DELAYS

SIMPLY DELAYS AN INCOMING  
PULSE BY SOME TUNEABLE  
ASYNCHRONOUSE AMOUNT



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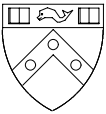
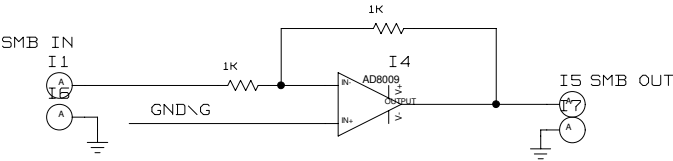
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DATE: 9/24/14

ENGINEER: ERIC M

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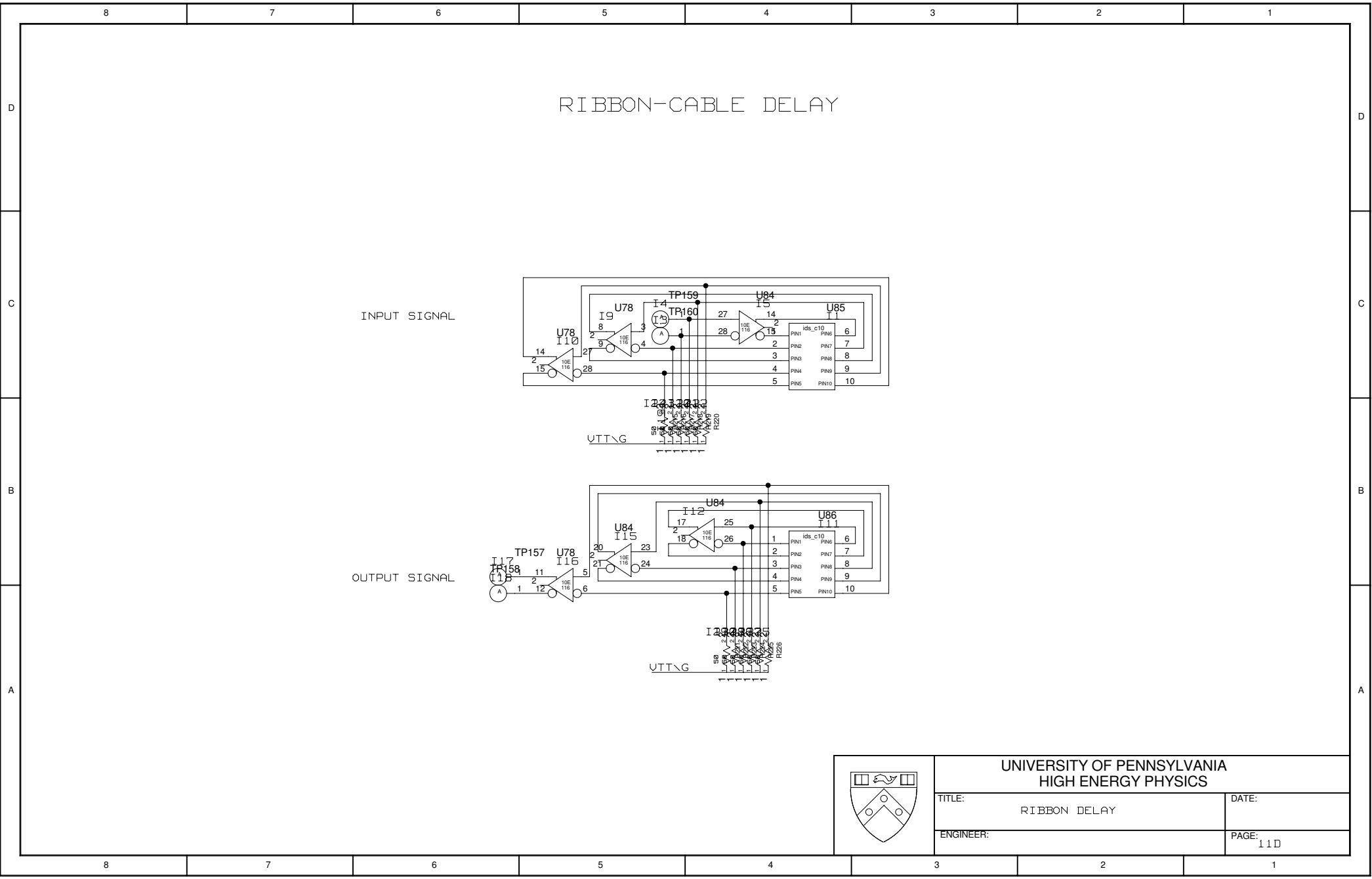
PULSE INVERTER

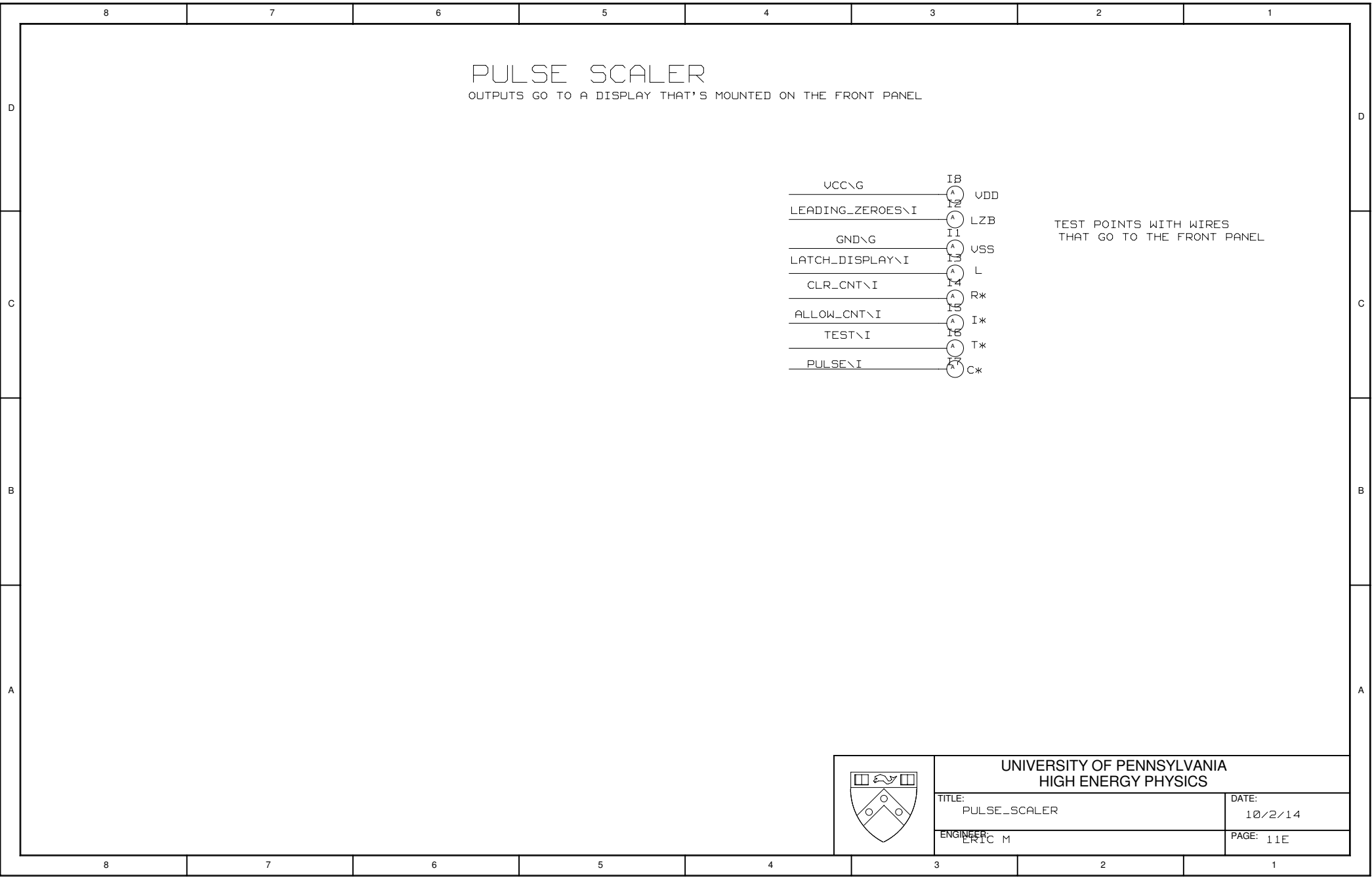


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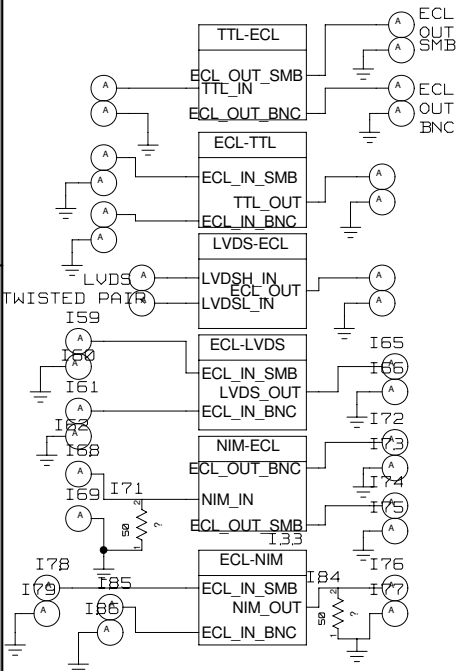
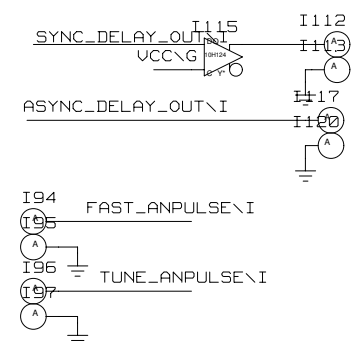
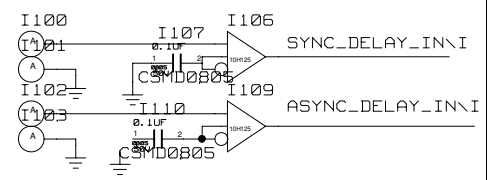
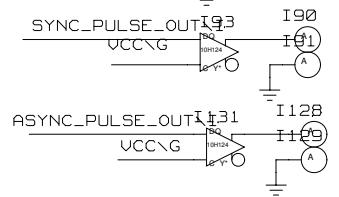
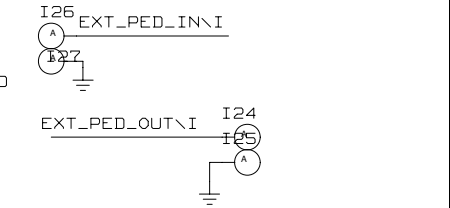
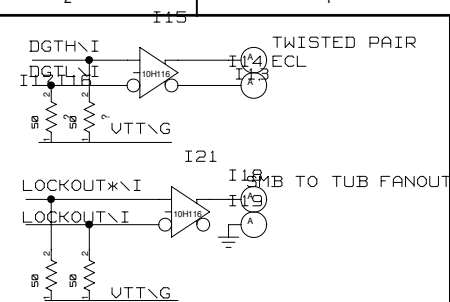
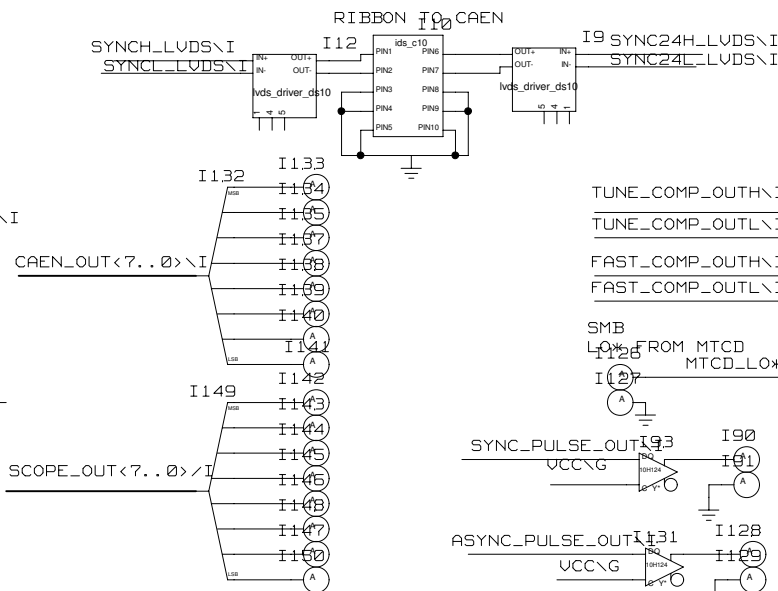
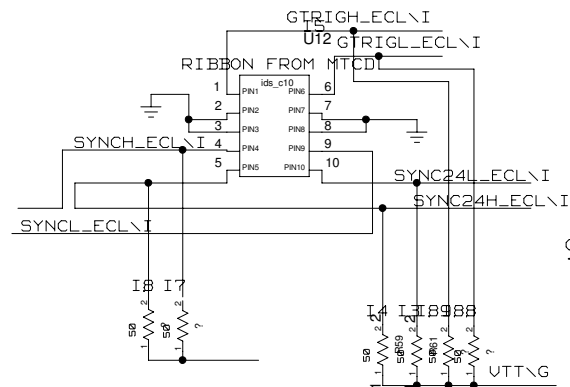
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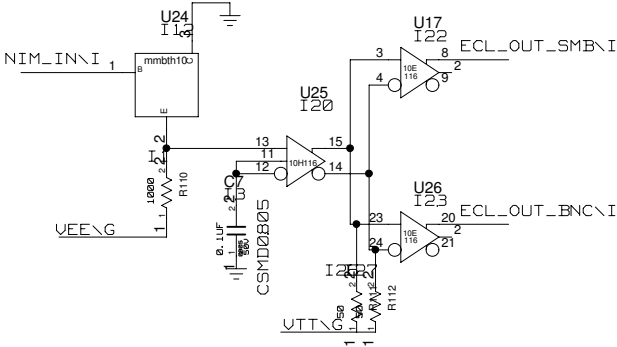




# PORTS PORTS IN/OUT OF TUBII



## NIM-ECL

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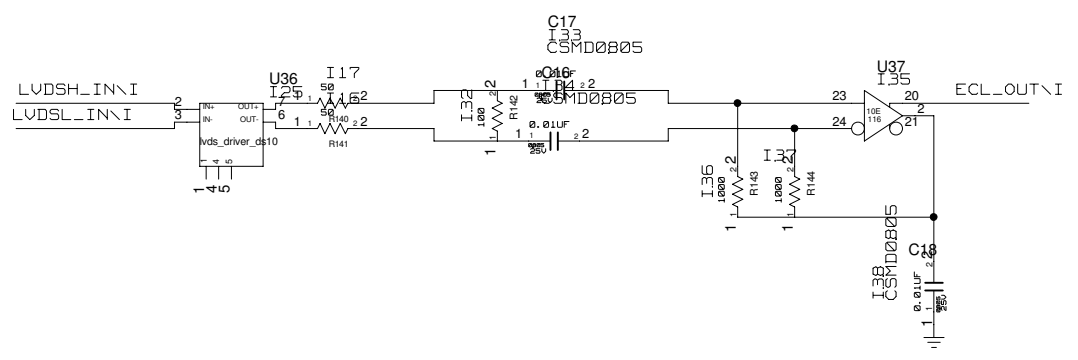
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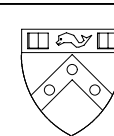
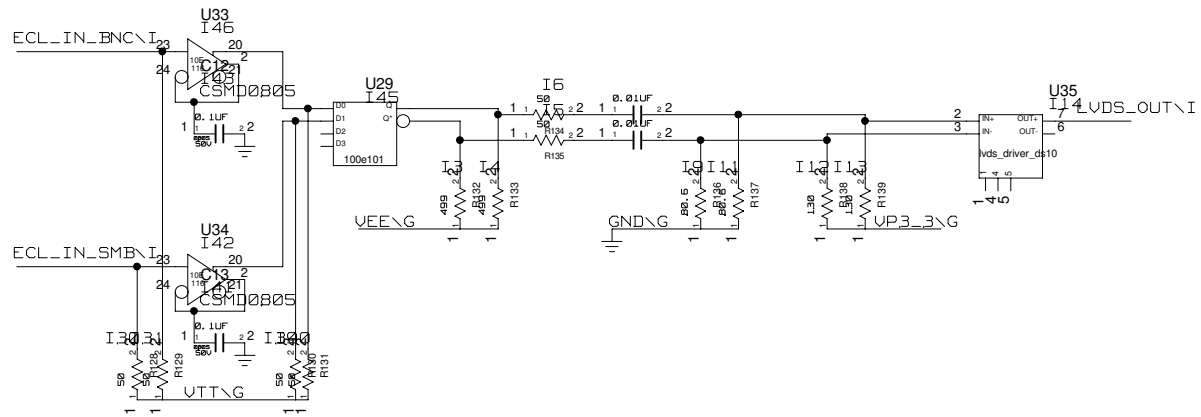
DATE:

PAGE: 12A

# LVDS-ECL



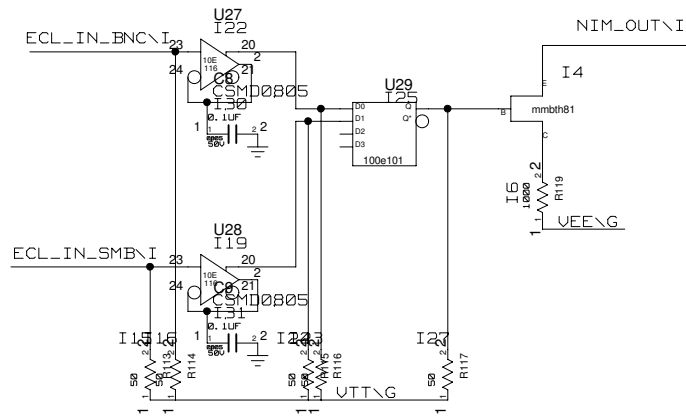
# ECL-LVDS




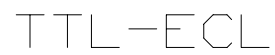
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HIGH ENERGY PHYSICS

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# ECL-NIM

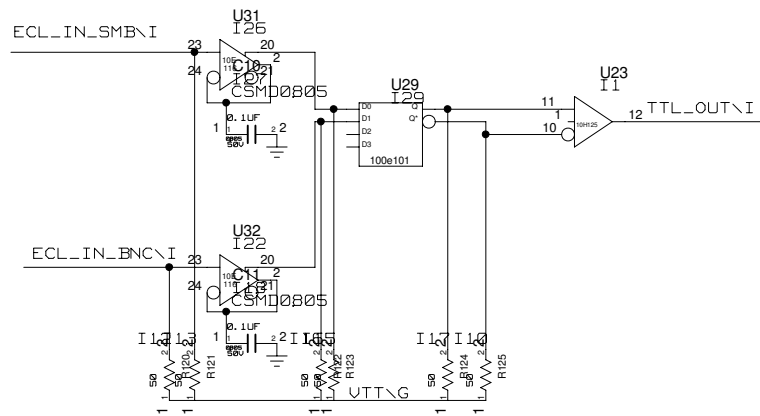


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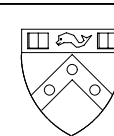
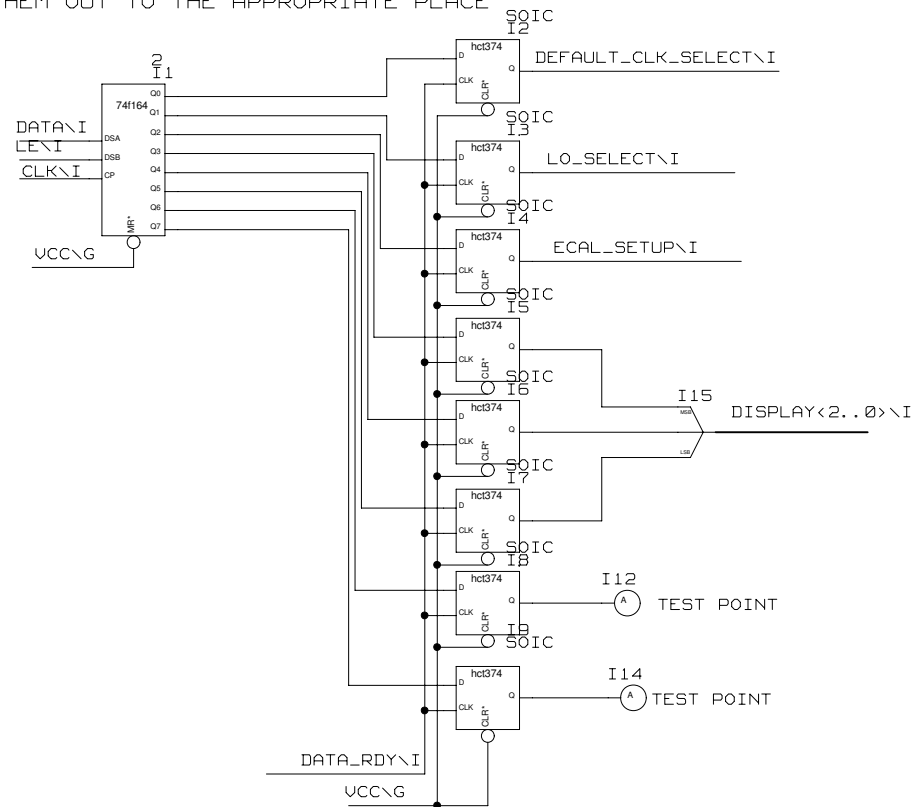


# ECL-TTL



# CNTRL REGISTER

ANY SET-IT-AND-FORGET-IT TYPE SIGNALS  
GET LOADED INTO A SHIFT REGISTER WHICH  
SENDS THEM OUT TO THE APPROPRIATE PLACE



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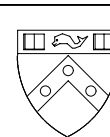
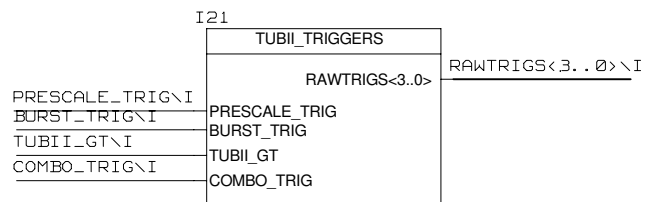
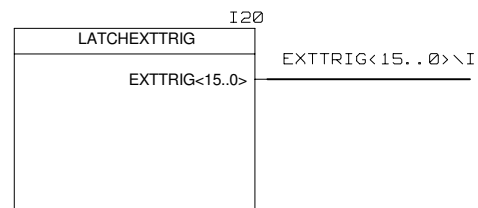
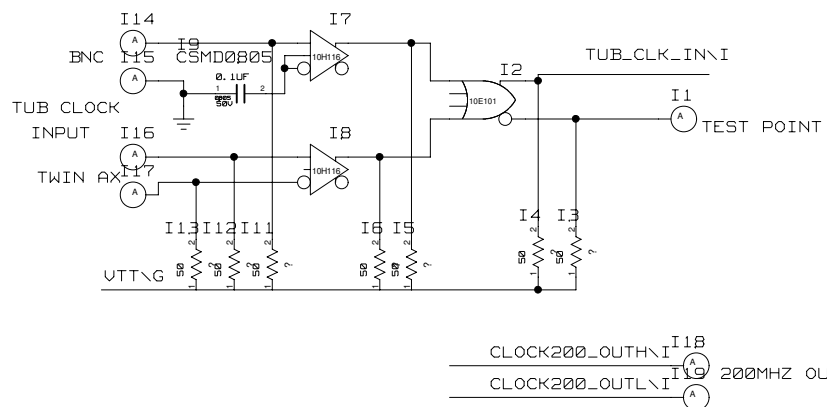
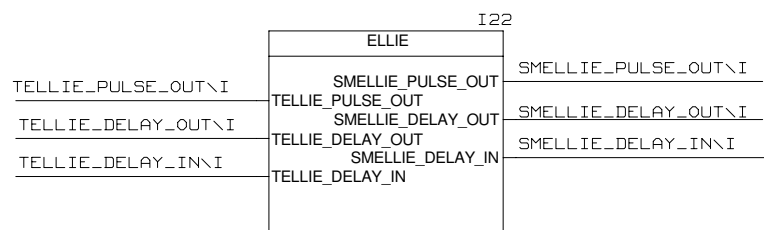
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CNTRL\_REGISTER

DATE:  
9/30/14

ENGINEER  
ERIC M

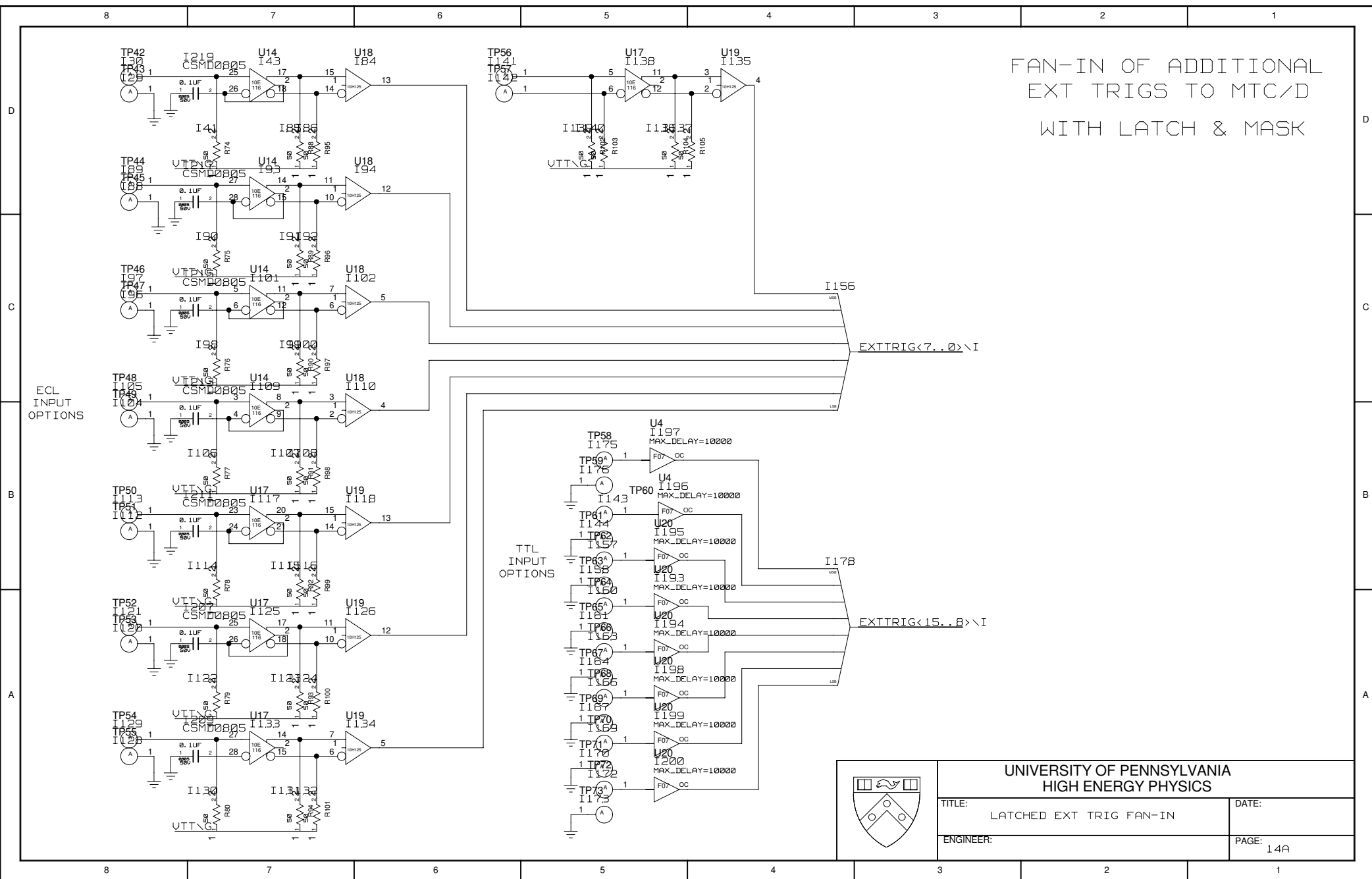
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# PORTS2 PORTS IN TO & OUT OF TUBII

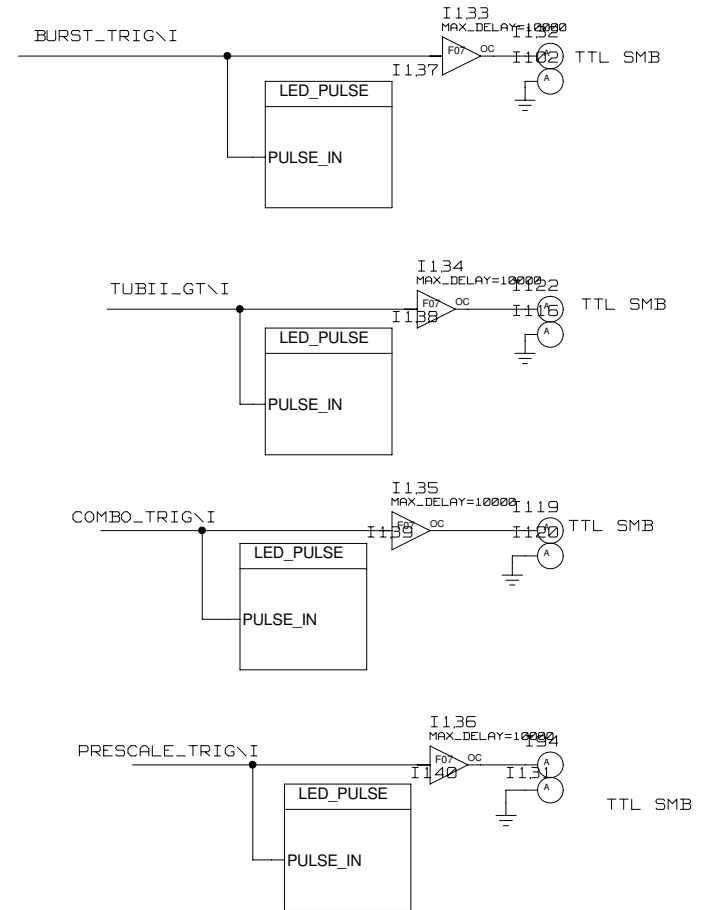
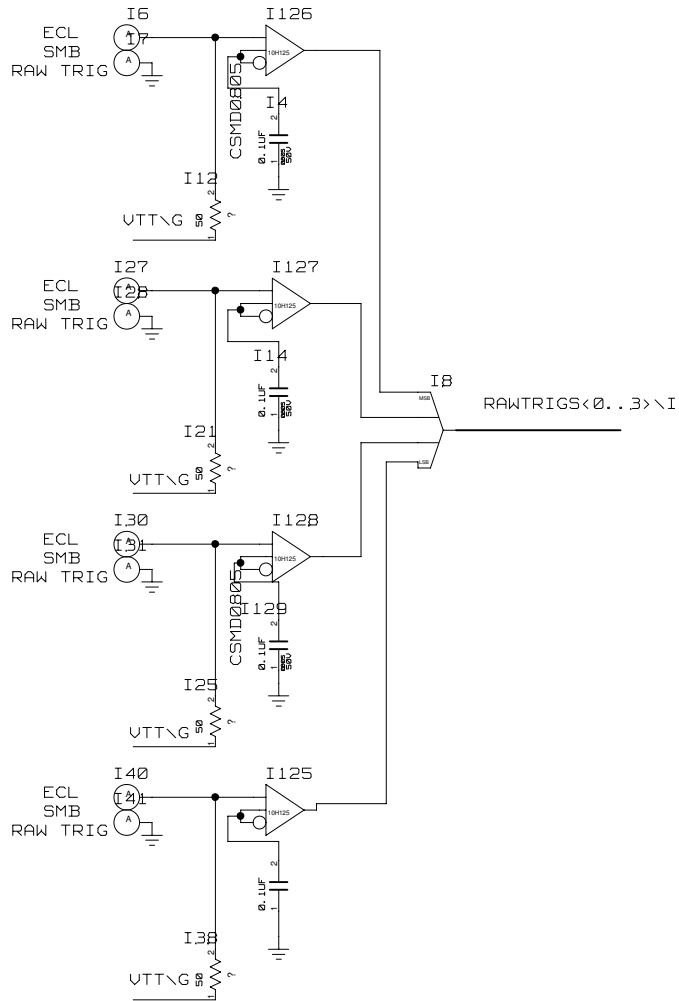


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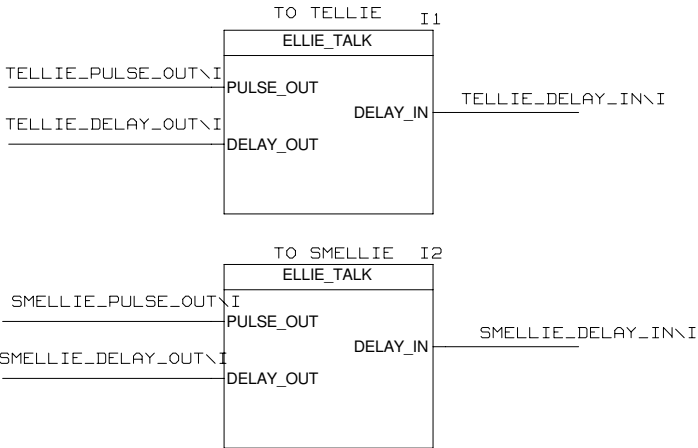


# TUBII TRIGGERS INPUTS AND OUTPUTS TO/FROM MICRO ZED



ELLIE

PORTS FOR COMMUNICATING WITH TELLIE/SMELLIE

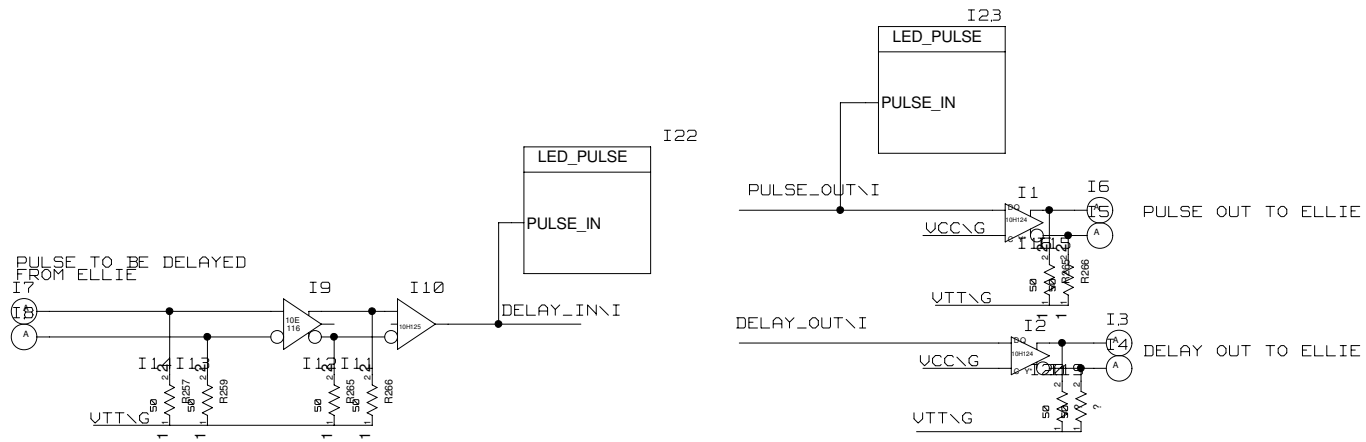


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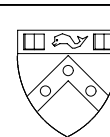
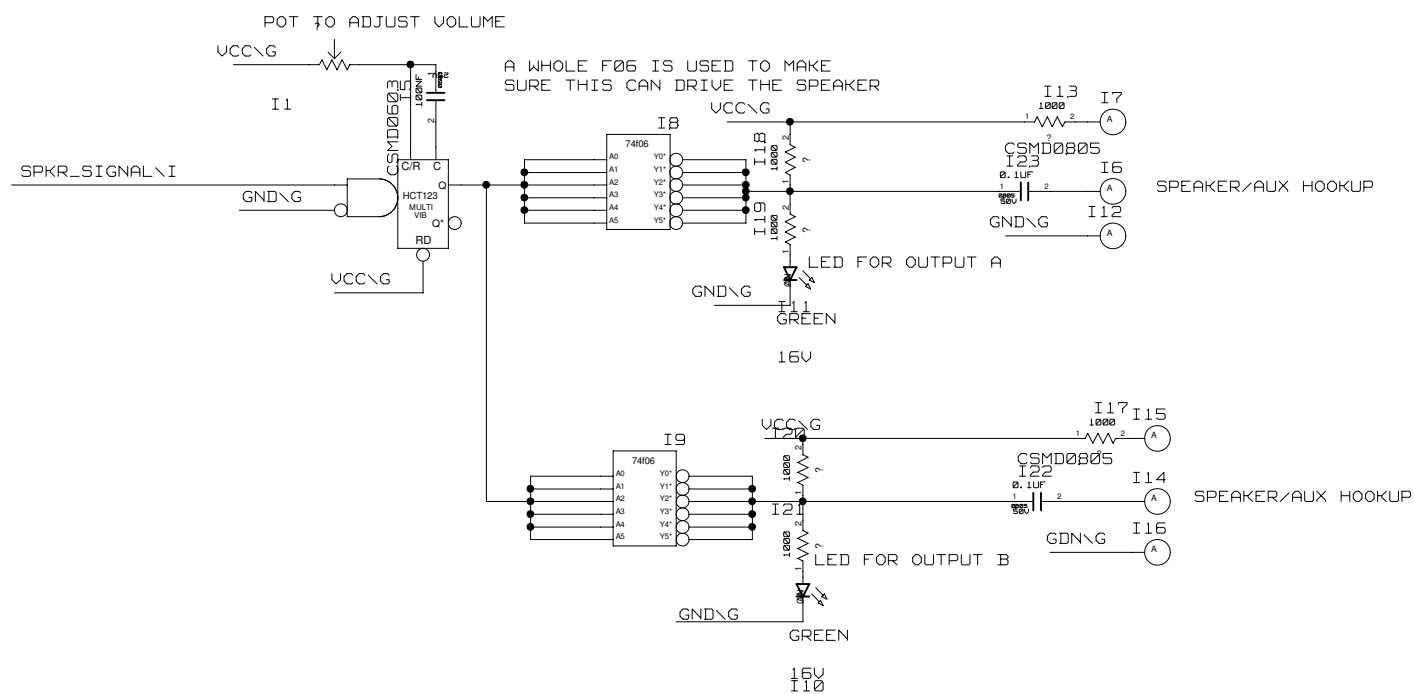
TITLE: ELLIE	DATE: 9/24/14
ENGINEER: ERIC M	PAGE: 14C

# ELLIE TALK

COMMUNICATIONS TO/FROM ELLIE



# TUBII SPEAKER



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