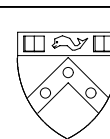


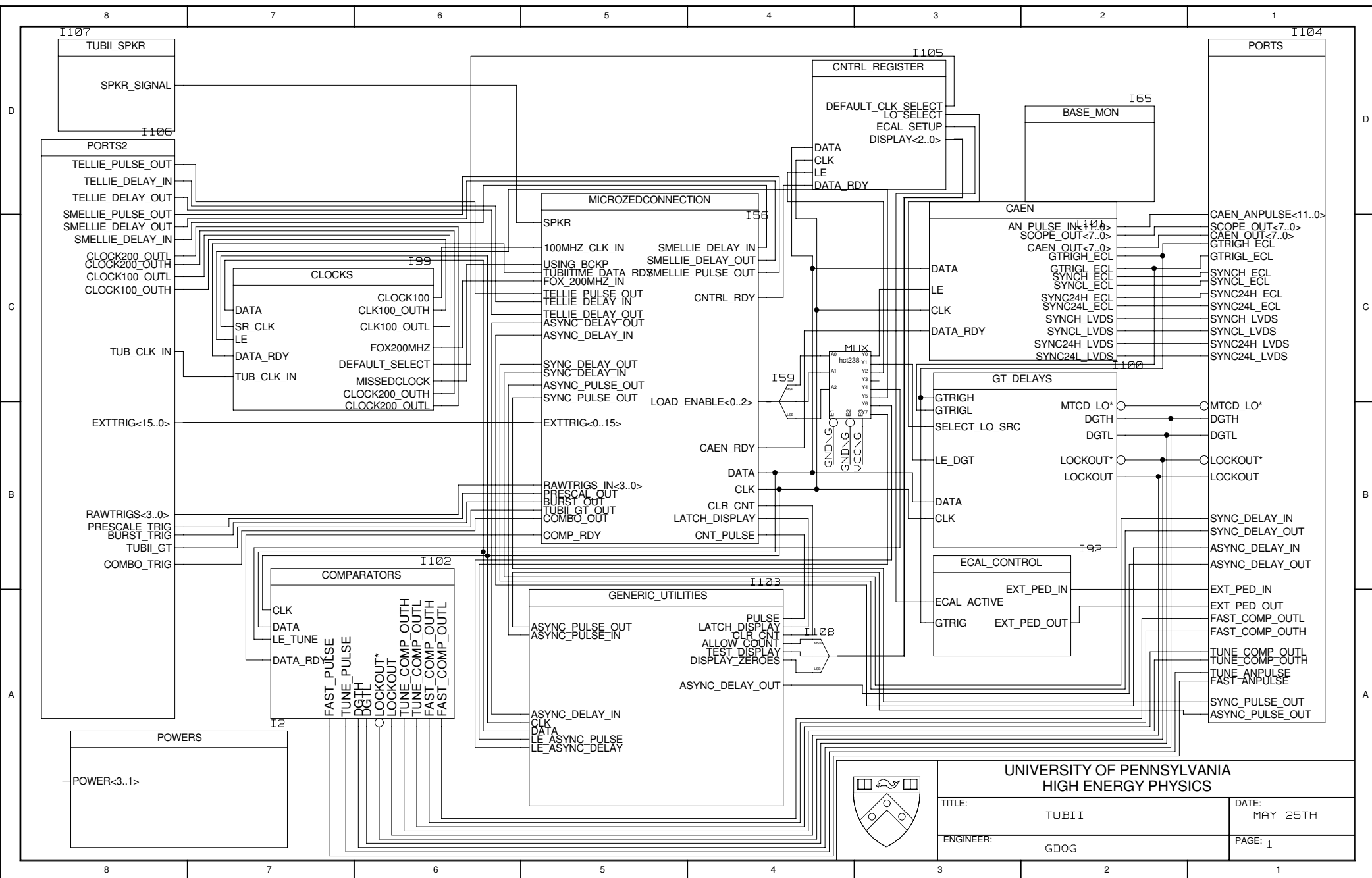
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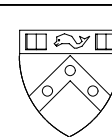
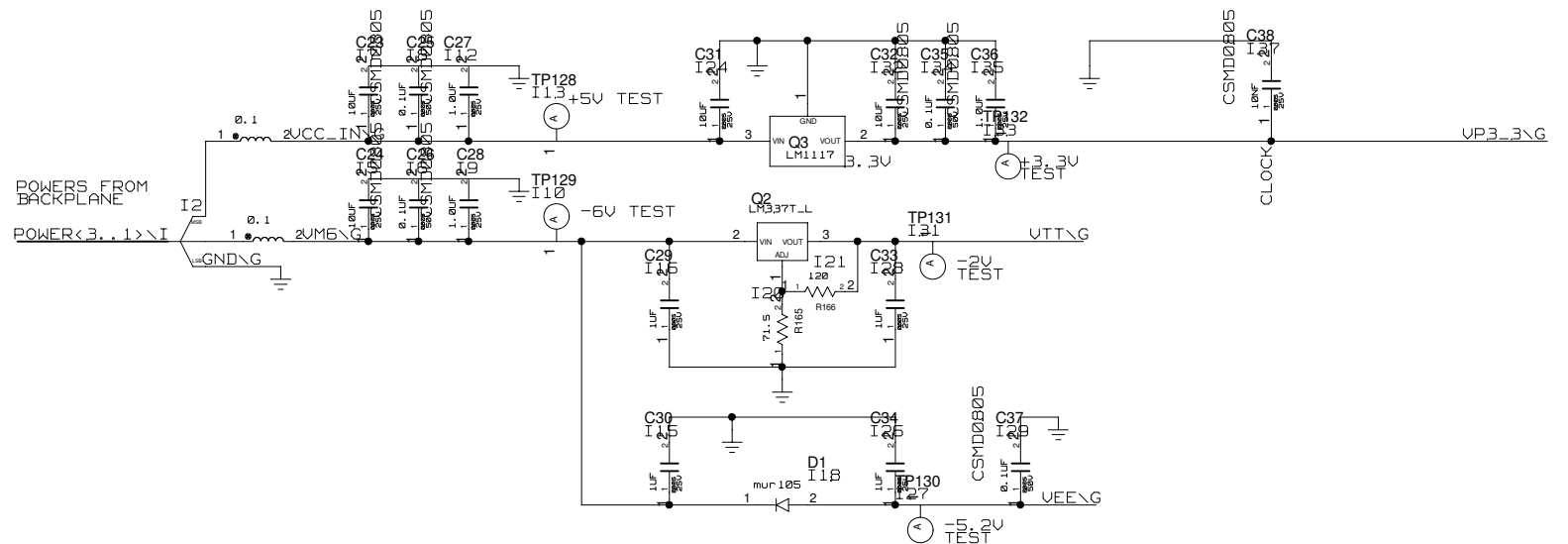


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TITLE:	DATE:
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POWERS



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HIGH ENERGY PHYSICS

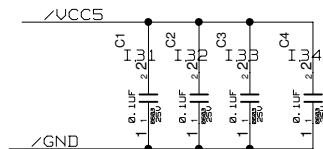
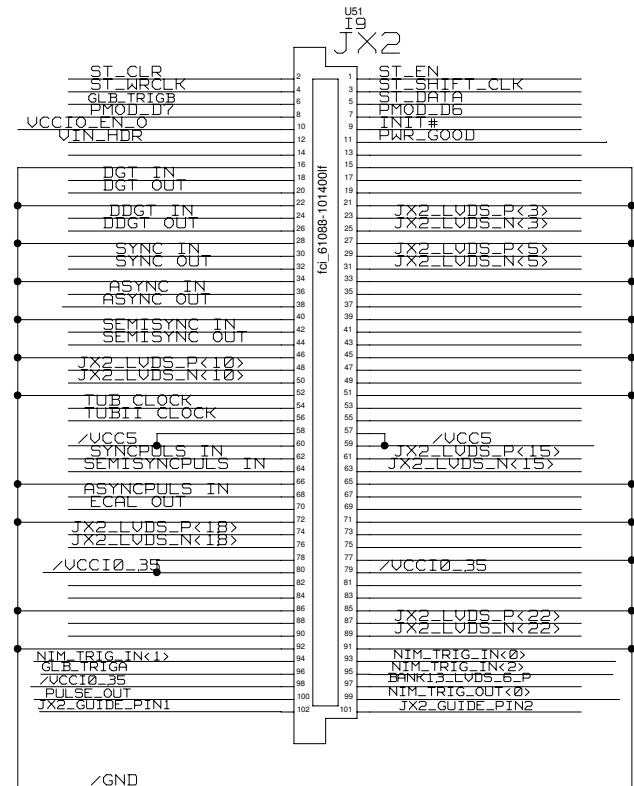
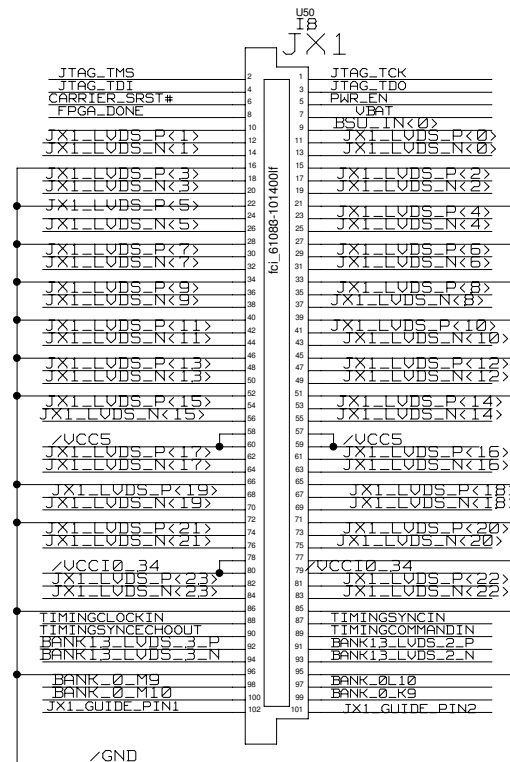
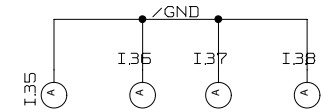
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POWERS


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2

MICROZED CONNECTION

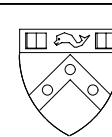
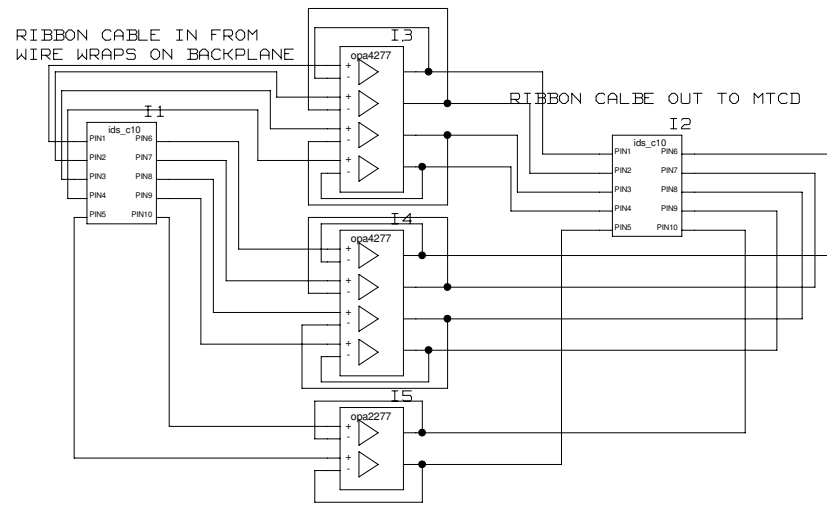


	UNIVERSITY OF PENNSYLVANIA HIGH ENERGY PHYSICS	
	DRAWING MICROZED_MOD	DATE:
	TITLE MICROZED_CONNECTION	PAGE: 3

LAST MODIFIED: Wed Oct 08 18:25:04 2014

BASELINE MONITORING

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



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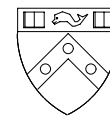
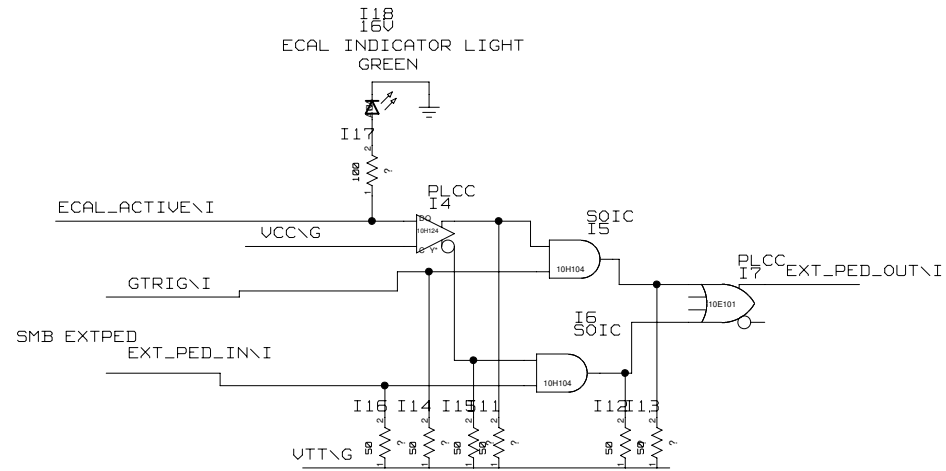
TITLE:
BASELINE MONITORING

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

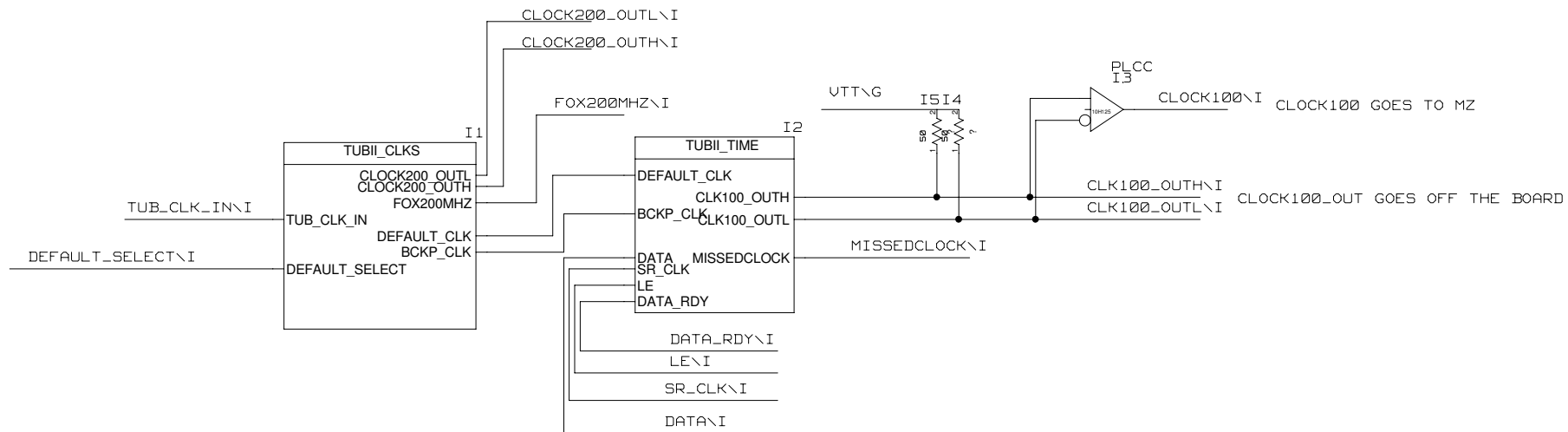
DATE: 9/19/14

ENGINEER: ERIC M

PAGE: 5

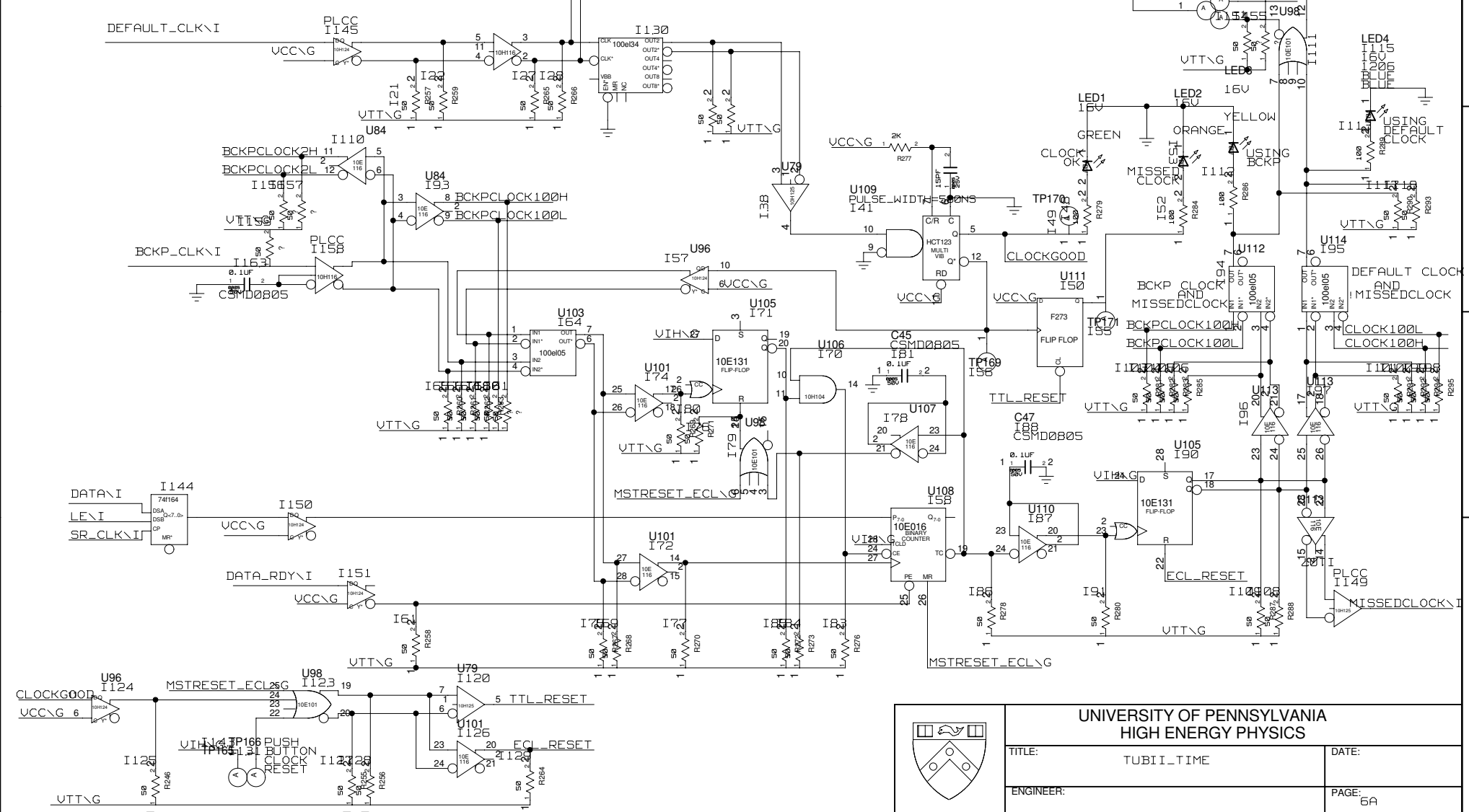
CLOCKS

ALL THINGS CLOCK RELATED

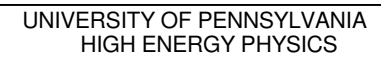
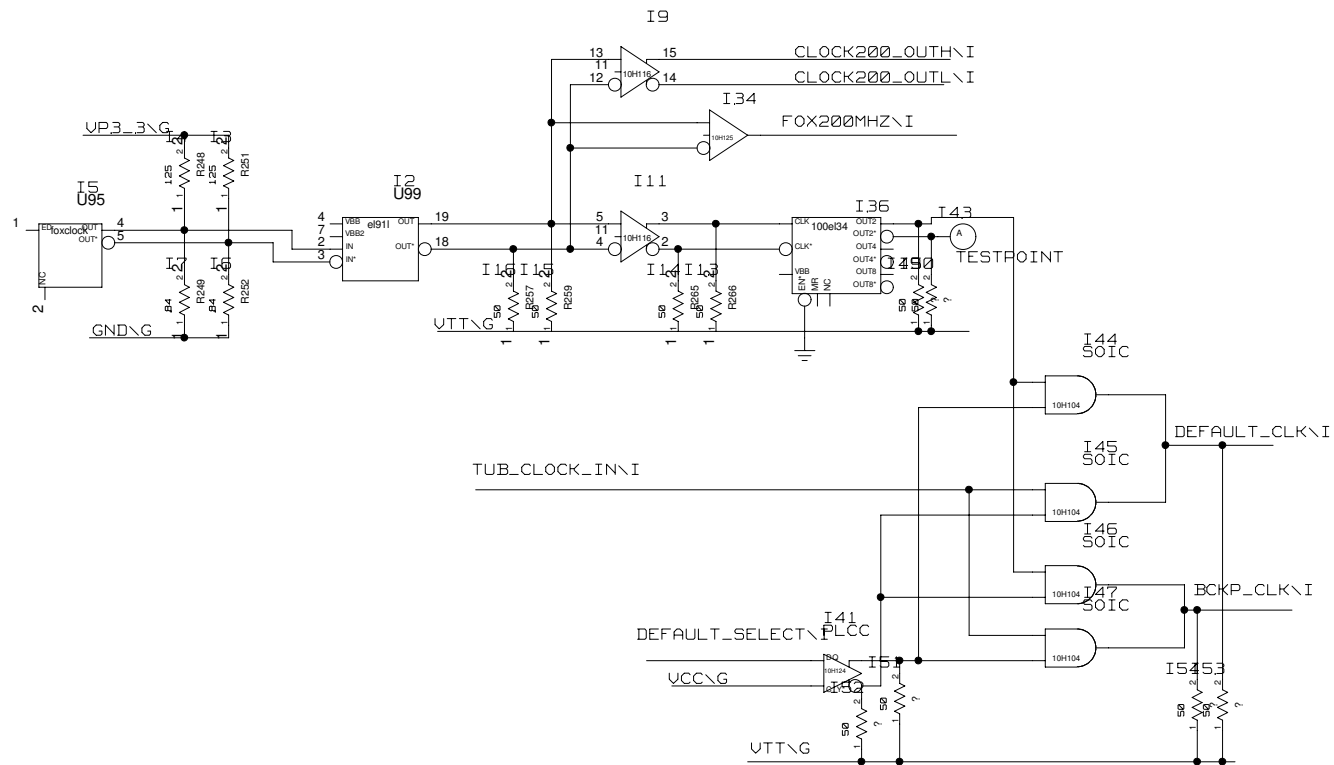


TUBII TIME

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



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

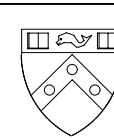
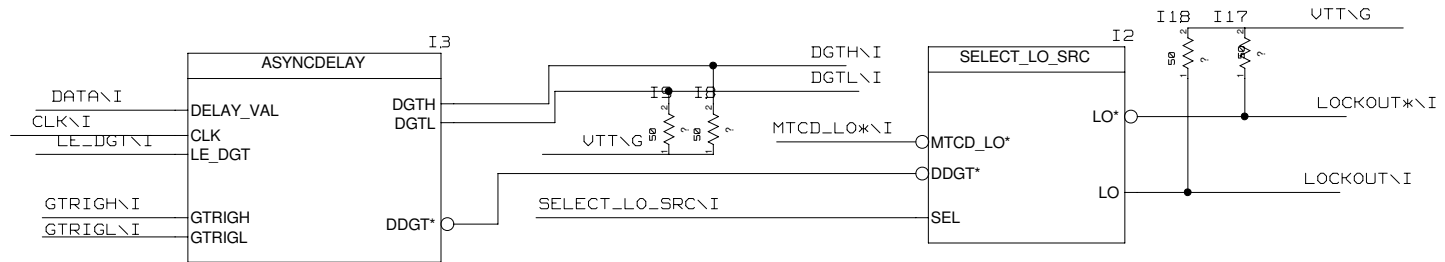


DATE:
9/15/14

PAGE: 6B

GT DELAYS

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

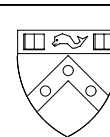
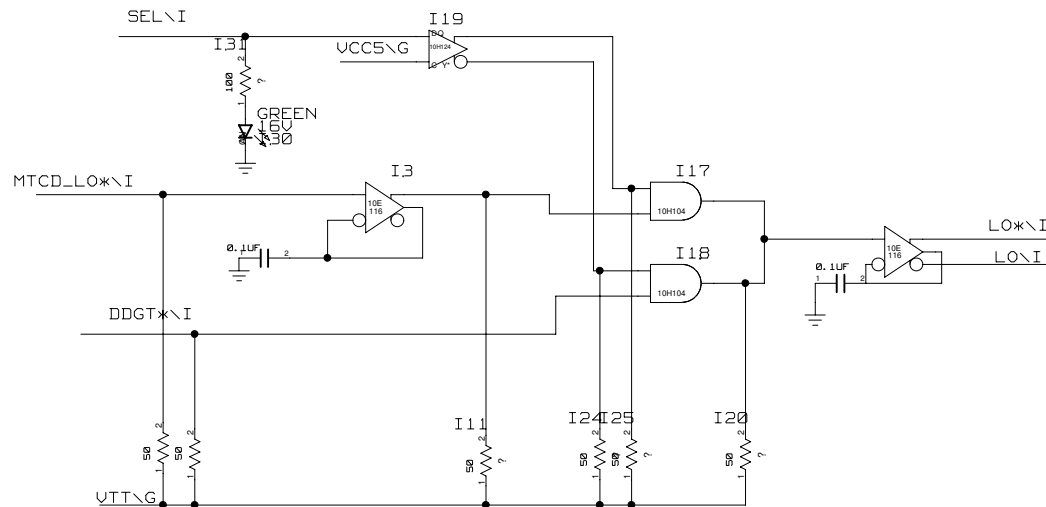
ENGINEER:
ERIC M

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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ASYNCHRONOUS DELAY

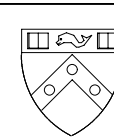
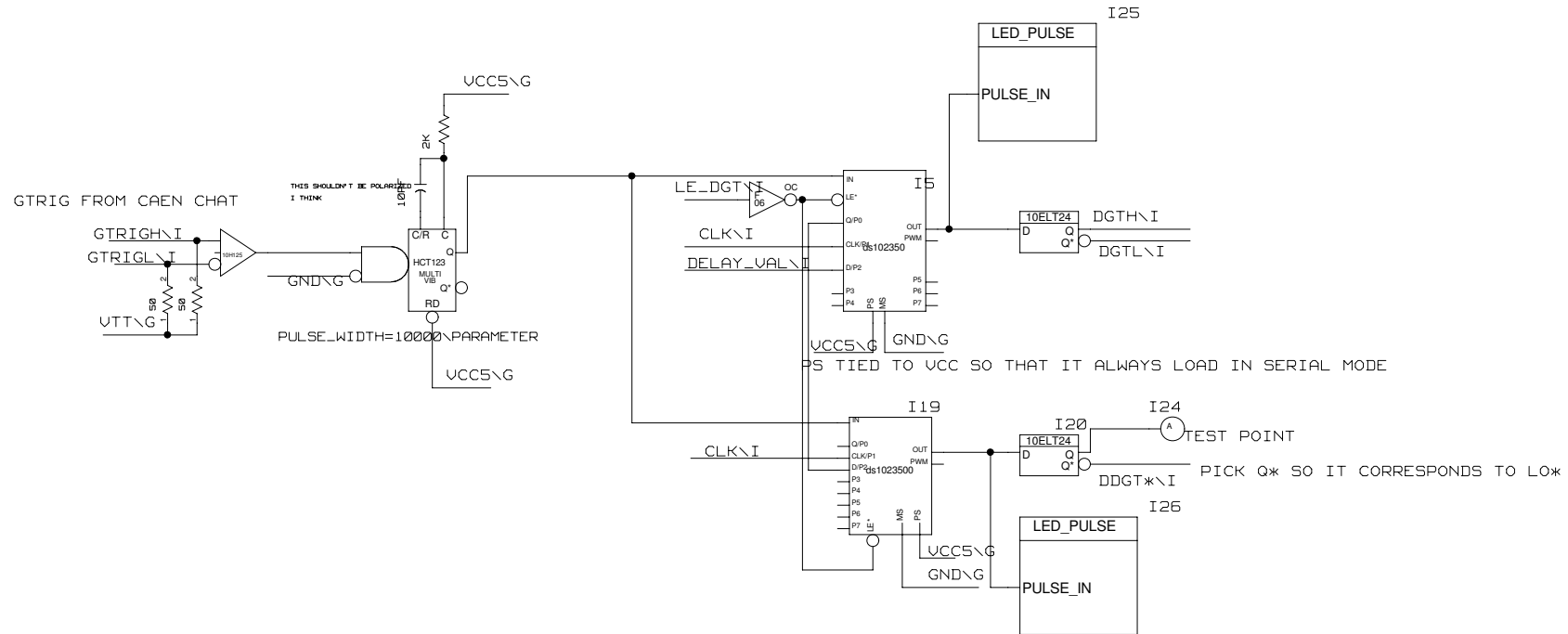
0 - 127.5 NS DELAY

IN 0.5NS STEPS

AND 0 - 1275 NS DELAY

IN 5 NS STEPS

THE TWO DELAYS ARE DAISY CHAINED TOGETHER
SO THEY'RE PROGRAMMED LIKE ONE 16 BIT REGISTER

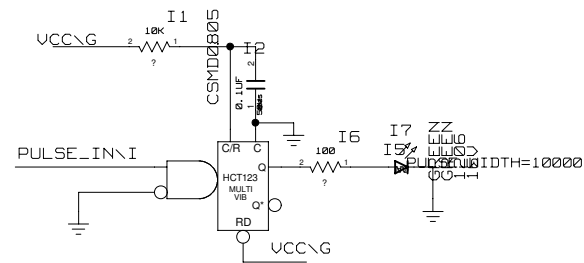



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TITLE:	ASYNCH DELAY	DATE:
ENGINEER:		PAGE: 7B

LED PULSE

TAKES AN INPUT PULSE
STRETCHES IT AND FLASHES AN LED

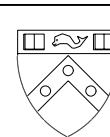
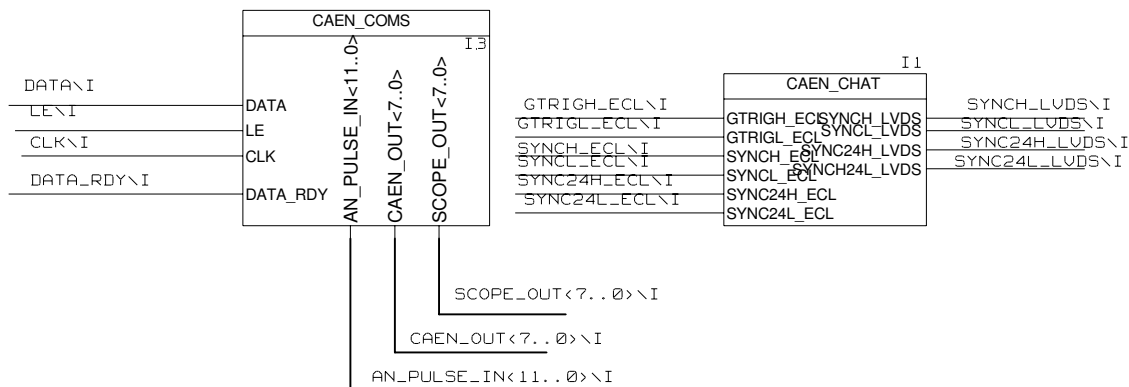


	UNIVERSITY OF PENNSYLVANIA HIGH ENERGY PHYSICS	
	TITLE: LED PULSE	DATE: 10/7/14
	ENGINEER: ERIC M	PAGE: B

CAEN

HANDLES COMMUNICATION WITH THE CAEN DIGITISER
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

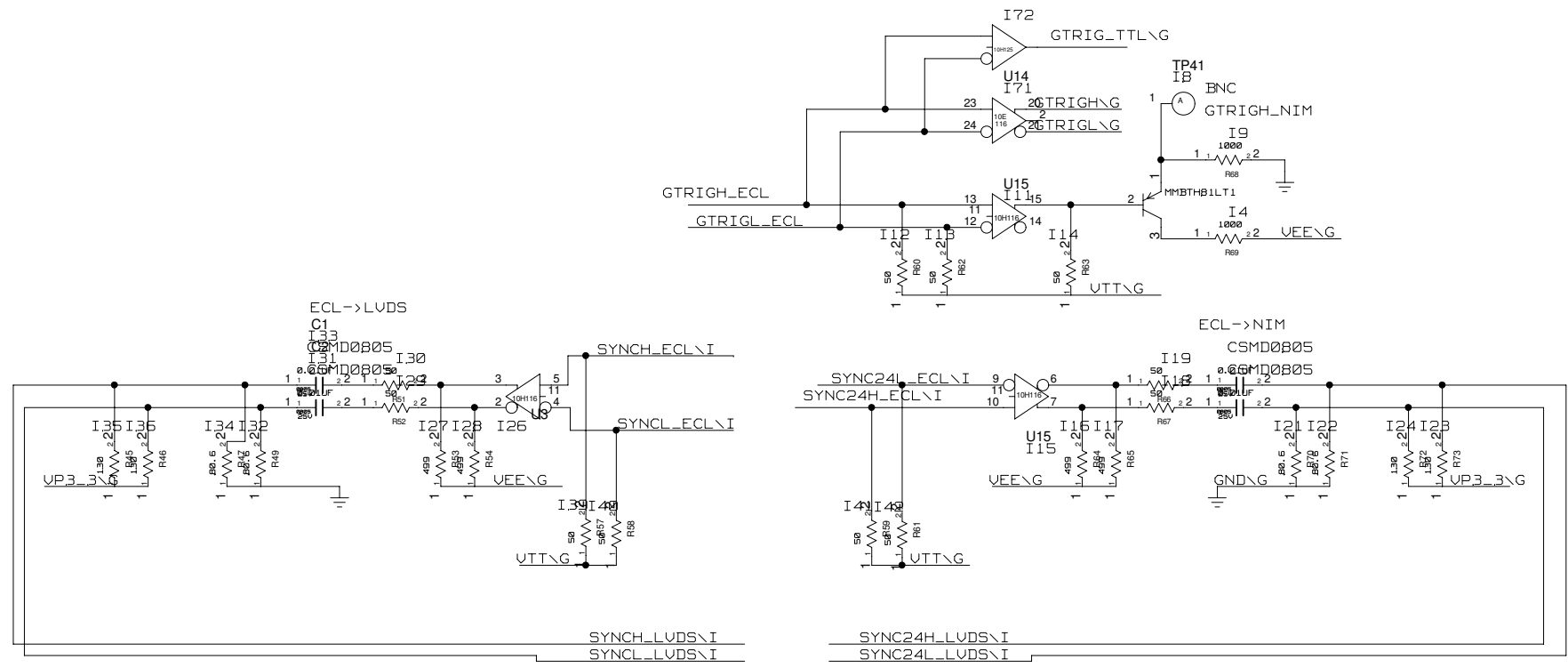


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TITLE: CAEN		DATE: 9/25/14
ENGINEER: ERIC M		PAGE: 9

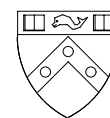
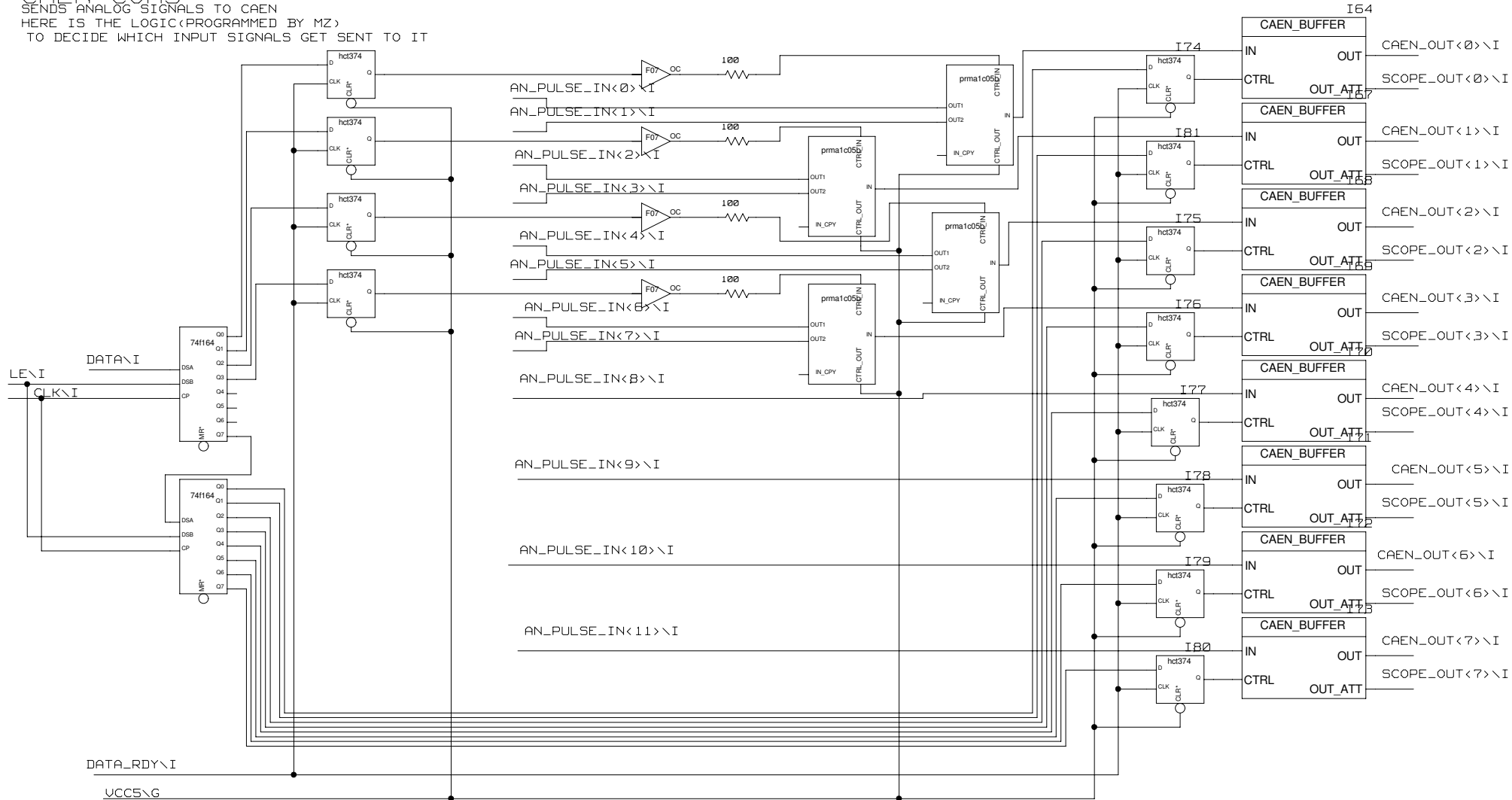
CAEN CHAT

SENDS DIGITAL SIGNALS TO CAEN
AFTER TRANSLATING THEM APPROPRIATELY



CAEN_COMS

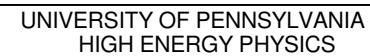
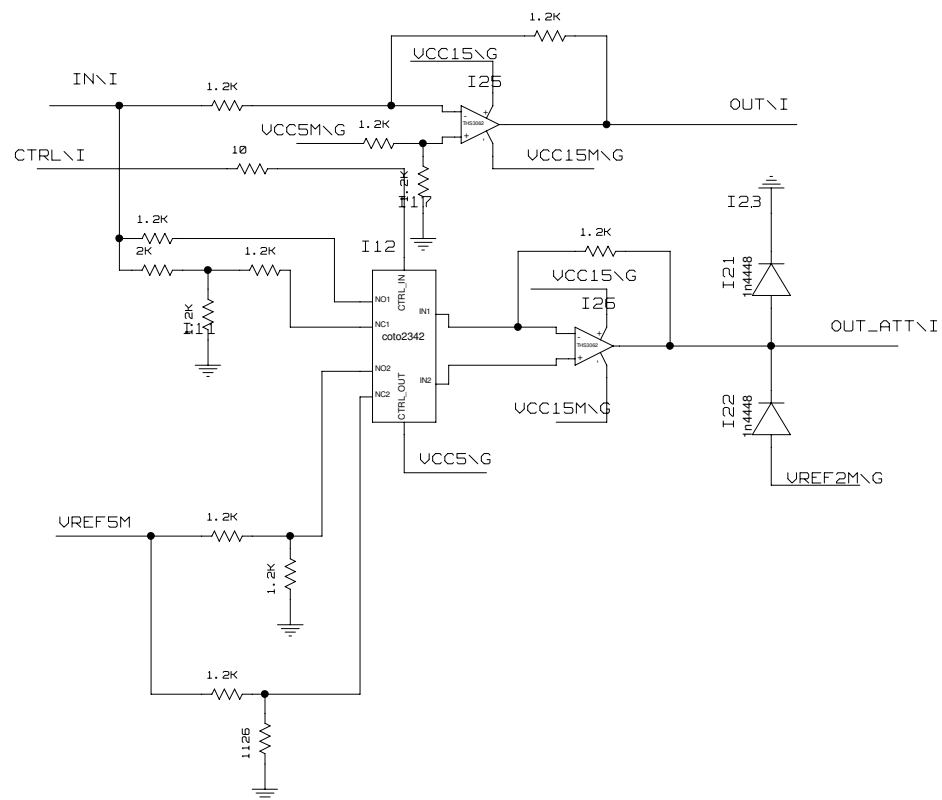
SENDS ANALOG SIGNALS TO CAEN
HERE IS THE LOGIC (PROGRAMMED BY MZ)
TO DECIDE WHICH INPUT SIGNALS GET SENT TO IT



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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

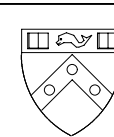
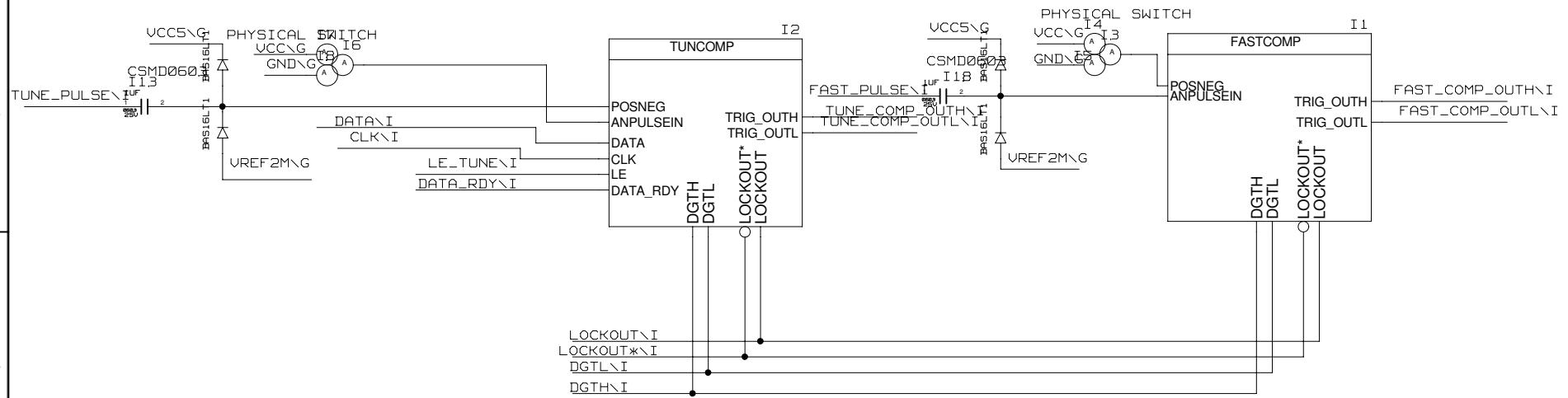


DATE: 8/18/14

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

PAGE: 10

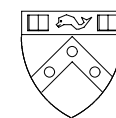
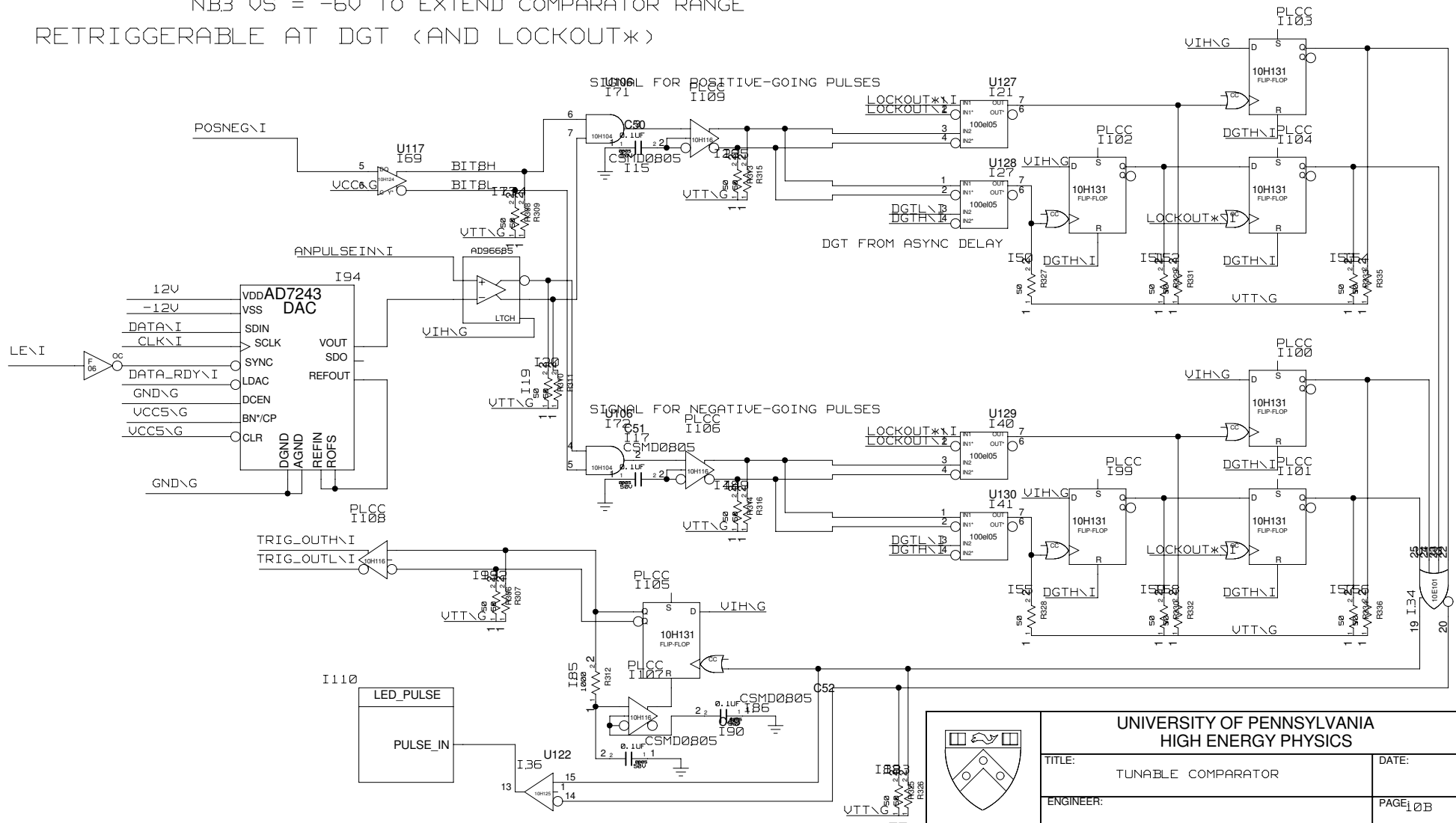
TUNABLE COMPARATOR CIRCUIT

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

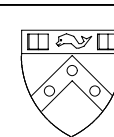
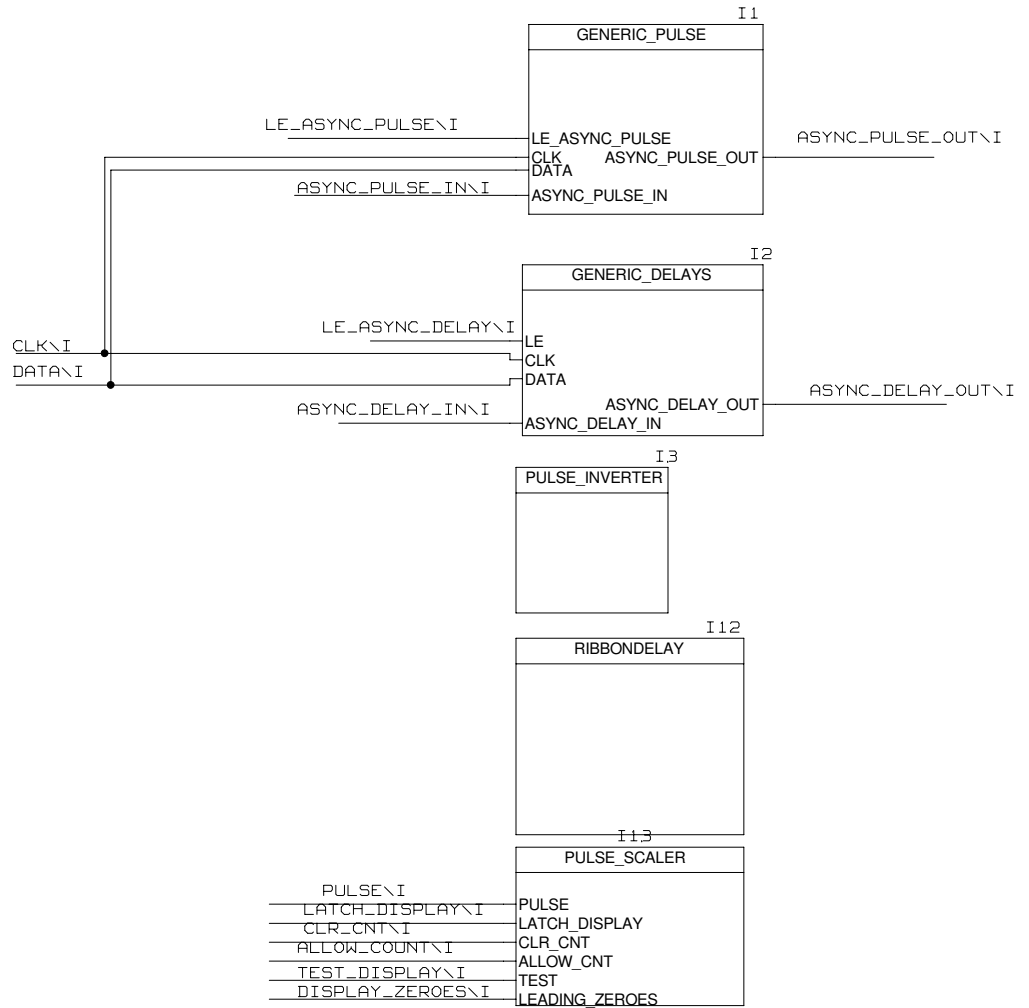


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TITLE:	TUNABLE COMPARATOR	DATE:	
ENGINEER:		PAGE:	10B

GENERIC UTILITIES

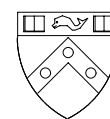
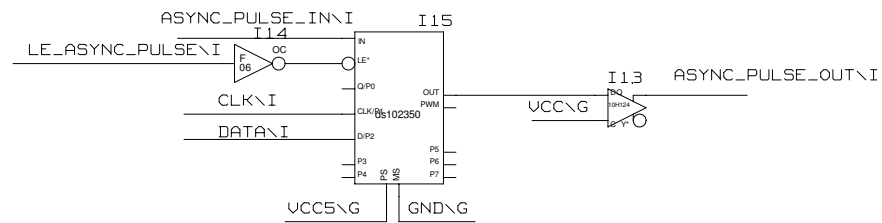
PART OF TUBII'S MISSION IS TO PROVIDE
HELPFUL FUCNTIONALITY TO IT'S USERS.
HERE IS THE HOUSING FOR ALL CIRCUITRY DESIGNED
WITH NO PURPOSE IN MIND EXCEPT FOR THAT
SOMEBODY SOMEDAY MIGHT WANT TO DO SOMETHING



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TITLE:	DATE:
ENGINEER:	PAGE: 11

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

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TITLE:
GENERIC PULSE

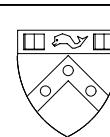
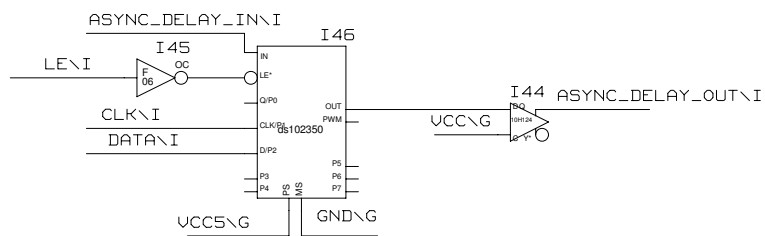
ENGINEER:

DATE:

PAGE: 11A

GENERIC DELAYS

SIMPLY DELAYS AN INCOMING
PULSE BY SOME TUNEABLE
ASYNCHRONOUSE AMOUNT



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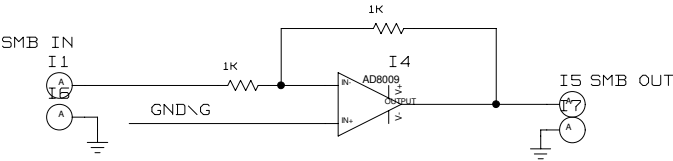
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DATE: 9/24/14

ENGINEER: ERIC M

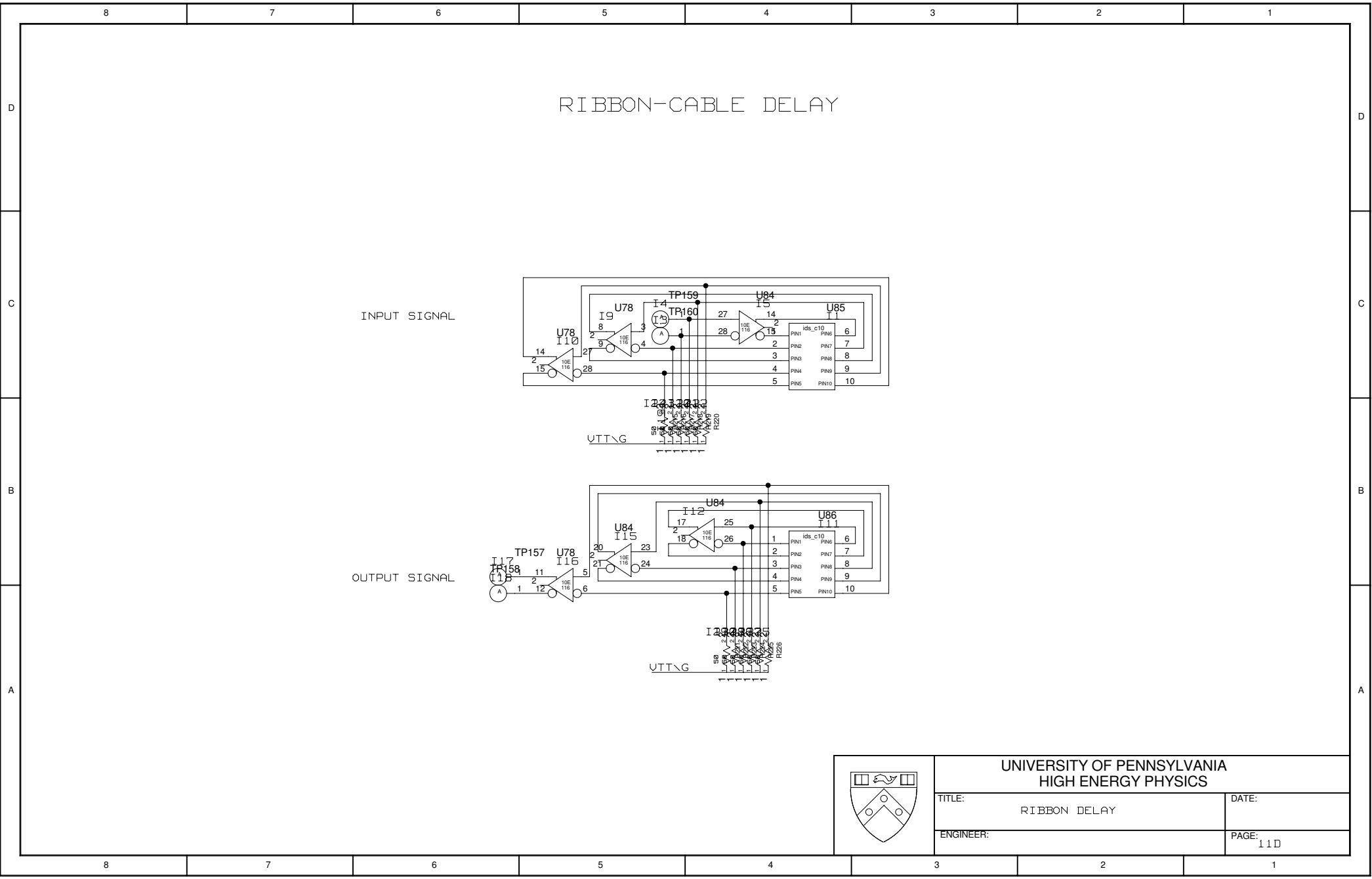
PAGE: 11B

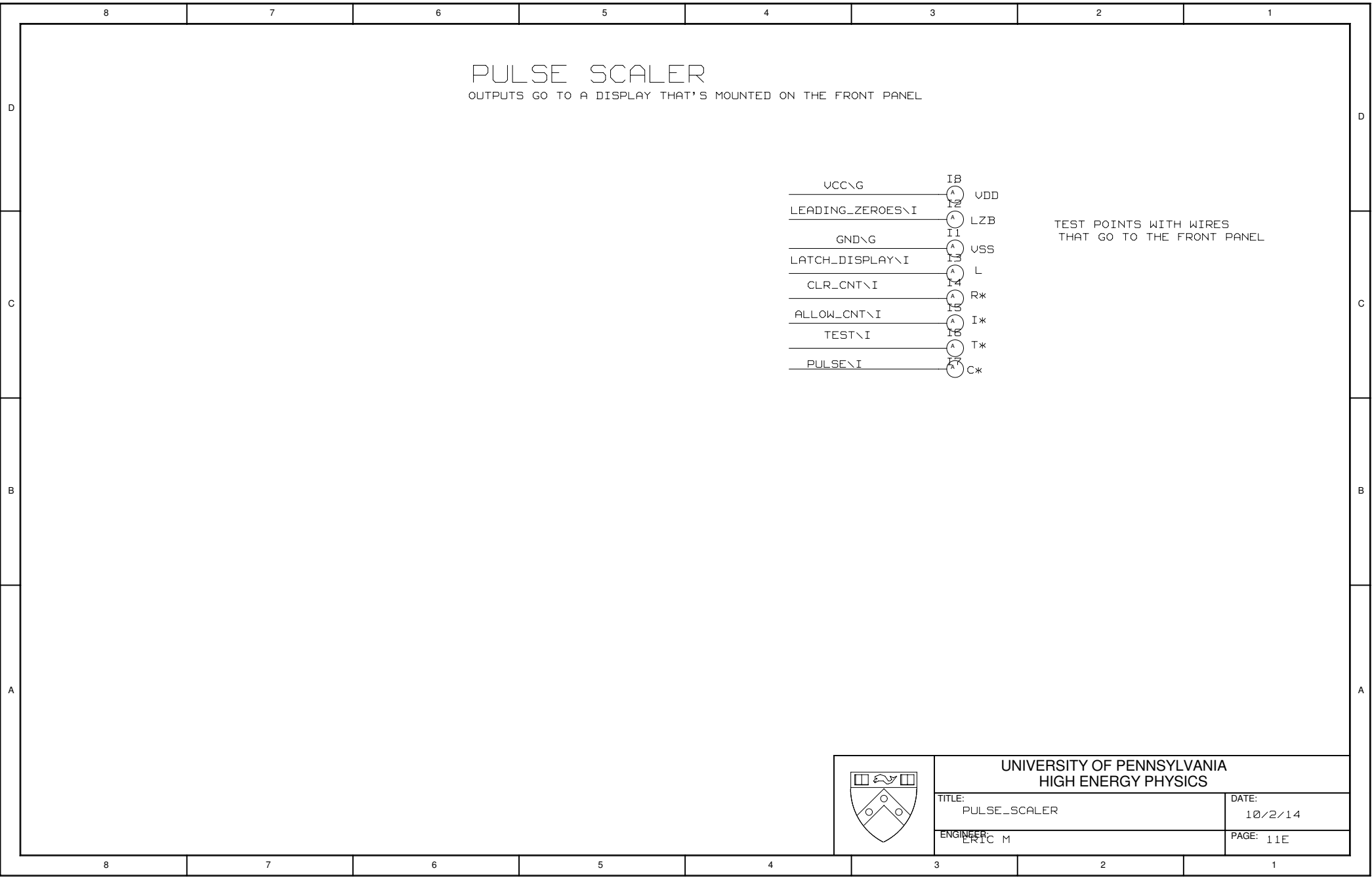
PULSE INVERTER



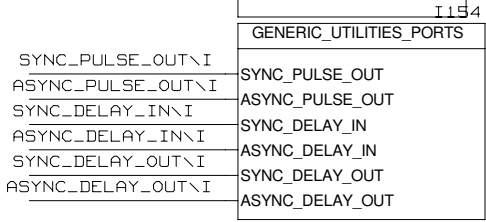
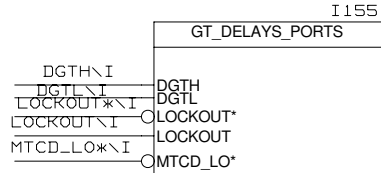
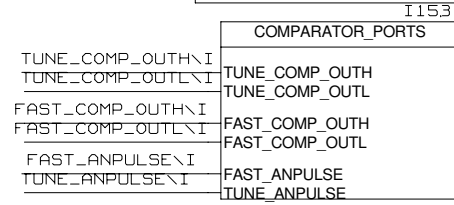
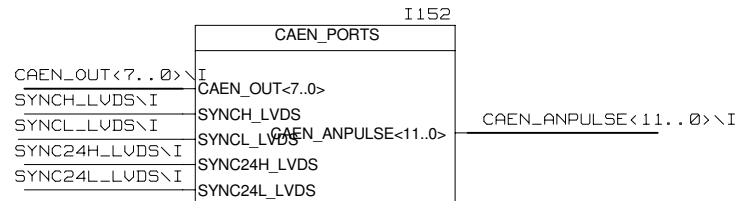
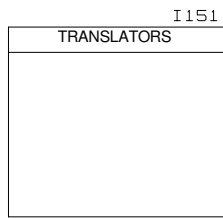
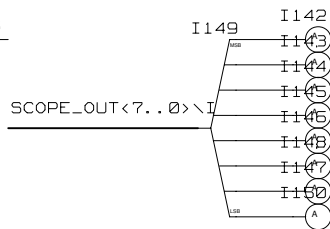
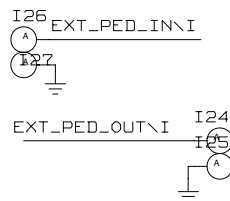
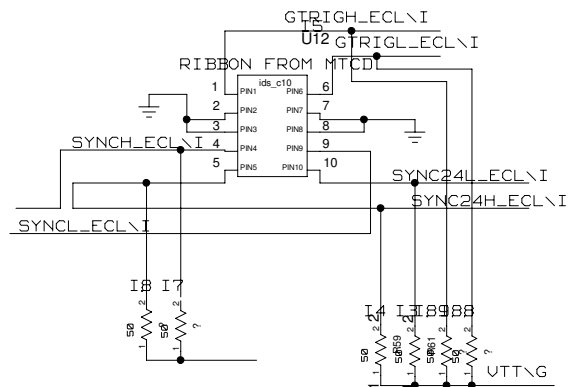
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TITLE: PULSE_INVERTER		DATE: 9/8/14
ENGINEER: ERIC M		PAGE: 11C

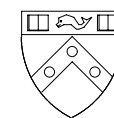
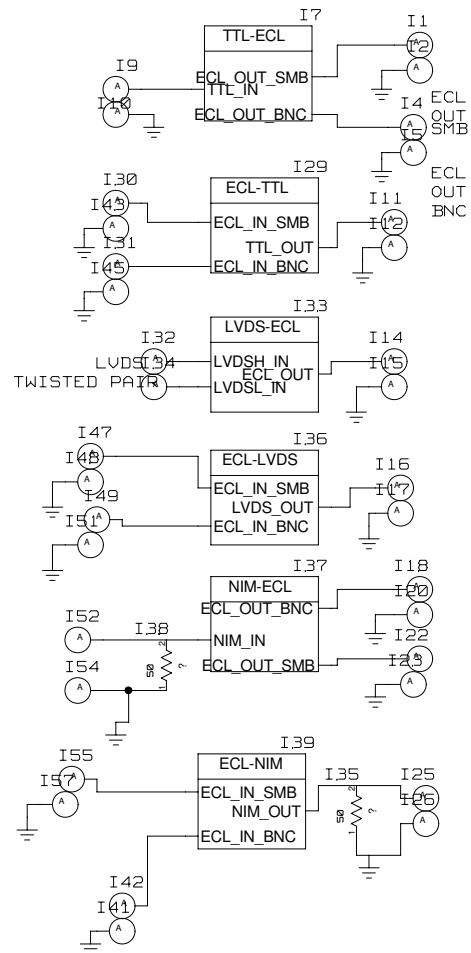




PORTS PORTS IN/OUT OF TUBII



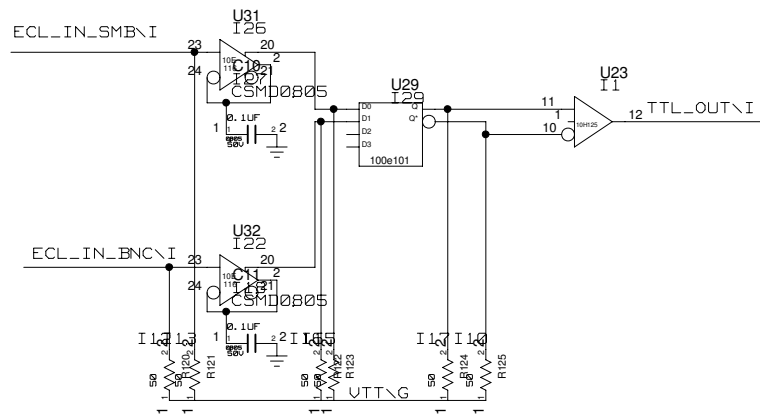
TRANSLATORS



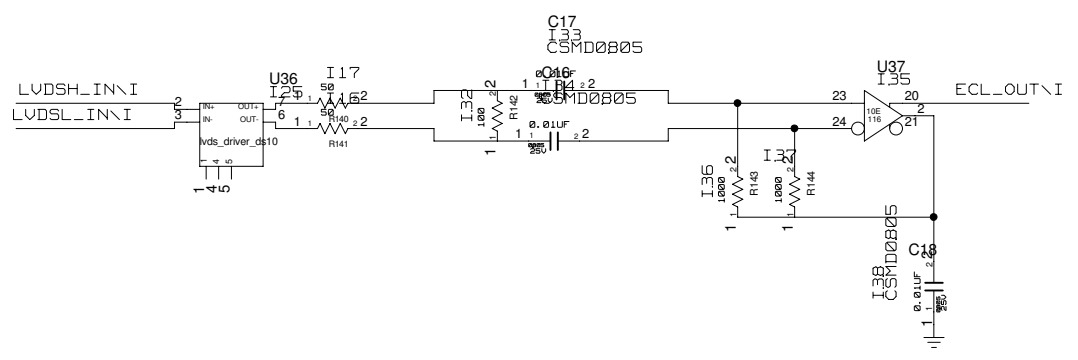
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TITLE: TRANSLATORS	DATE: 10/9/14
ENGINEER: ERIC M	PAGE:

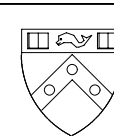
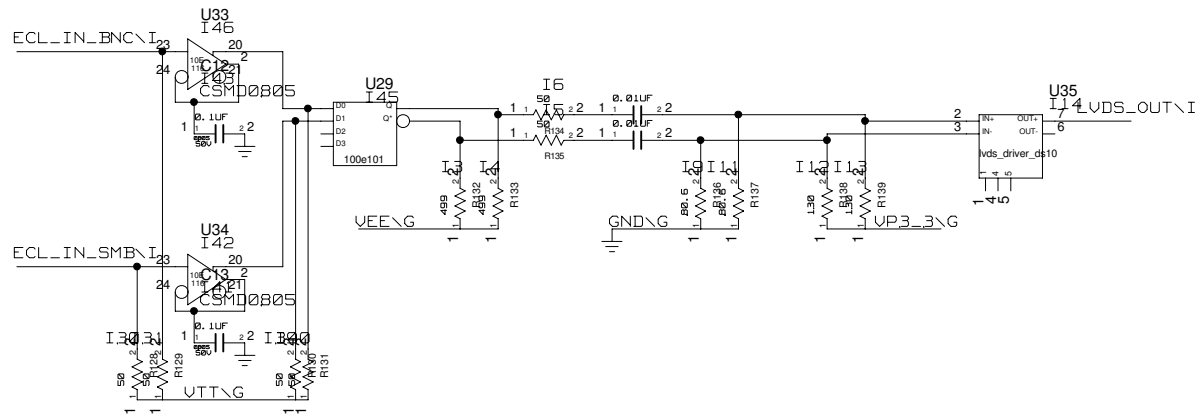
ECL-TTL



LVDS-ECL



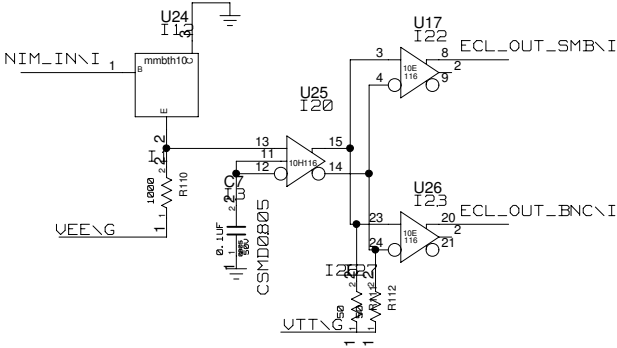
ECL-LVDS



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TITLE: ECL-LVDS CONVERSION		DATE:
ENGINEER:		PAGE: 12C

NIM-ECL



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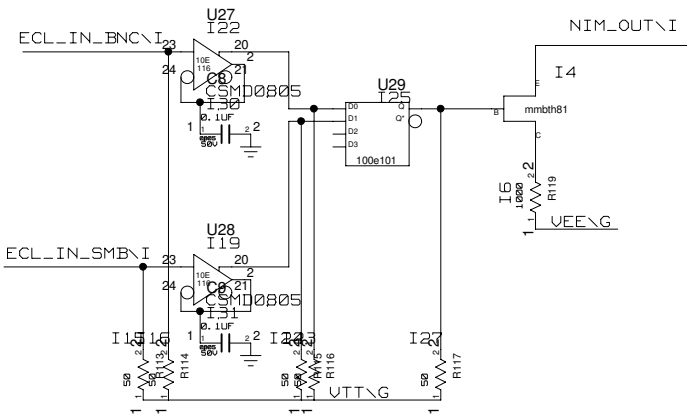
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DATE: _____

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ECL-NIM



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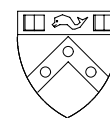
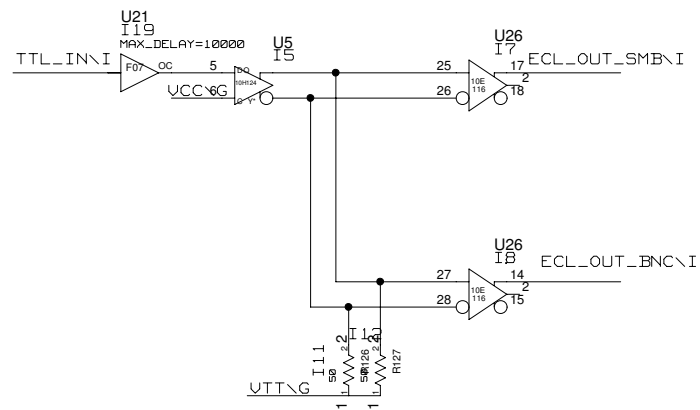
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TTL-ECL

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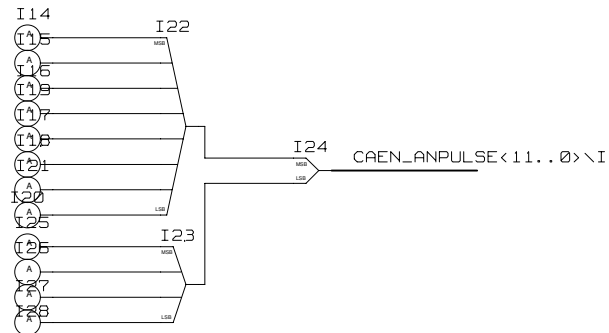
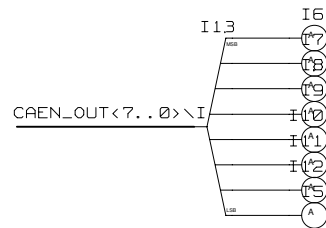
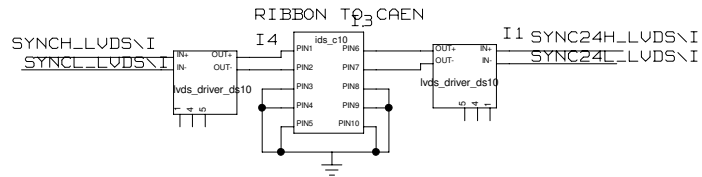
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ENGINEER:

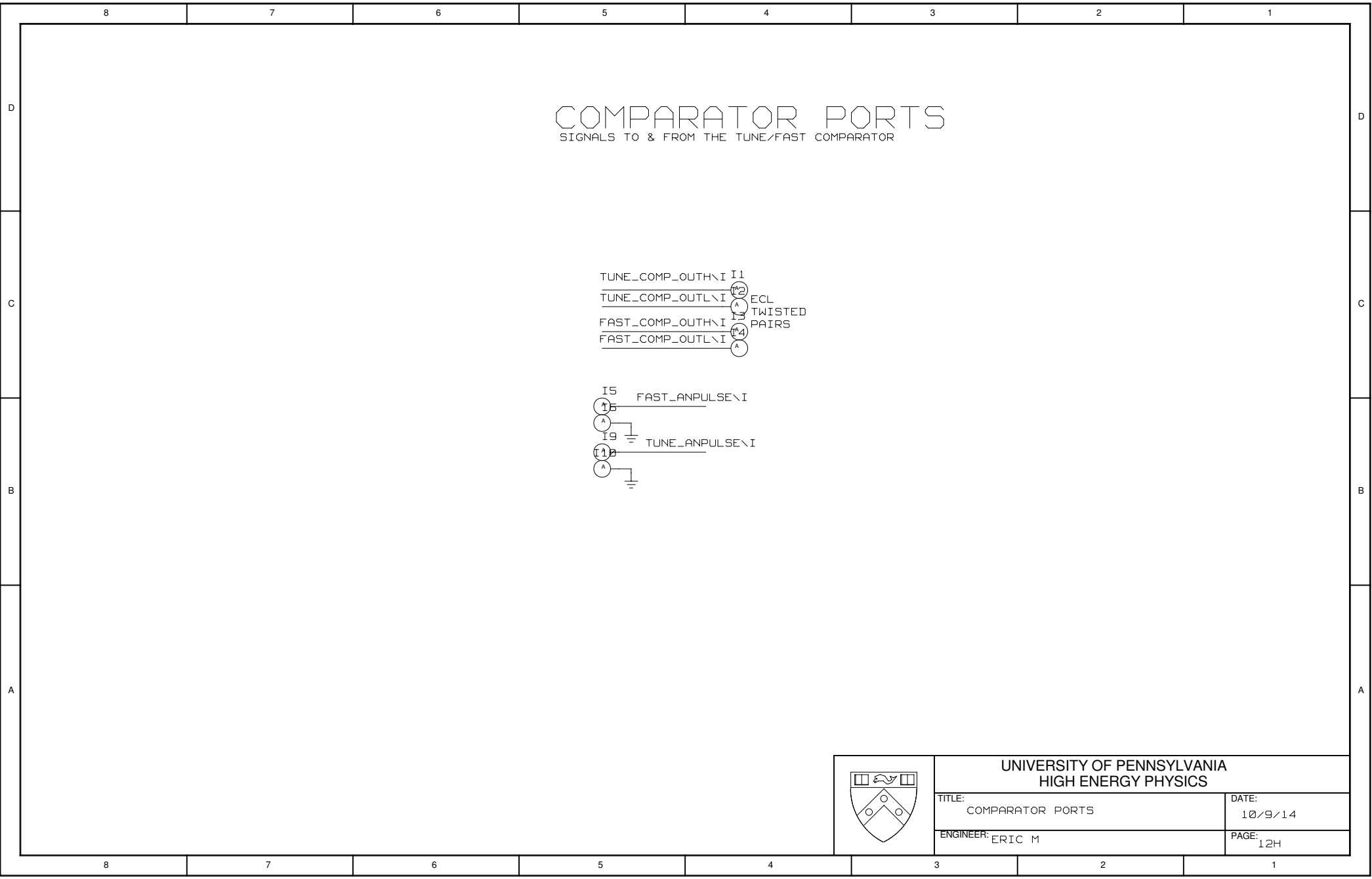
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CAEN PORTS

OUTPUTS THAT GO TO THE CAEN BOARD



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	TITLE: CAEN_PORTS	DATE: 10/9/14
	ENGINEER: ERIC M	PAGE: 12G





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HIGH ENERGY PHYSICS

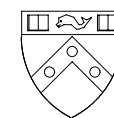
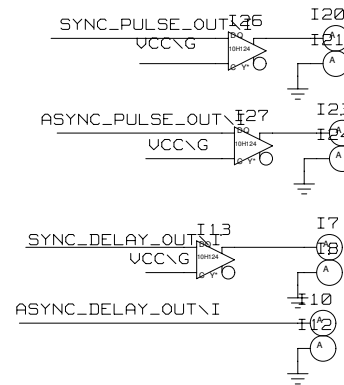
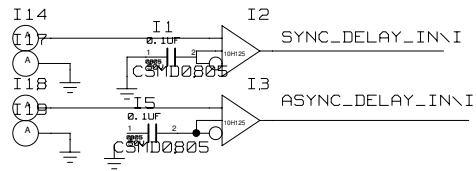
TITLE: COMPARATOR PORTS

ENGINEER: ERIC M

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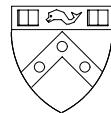
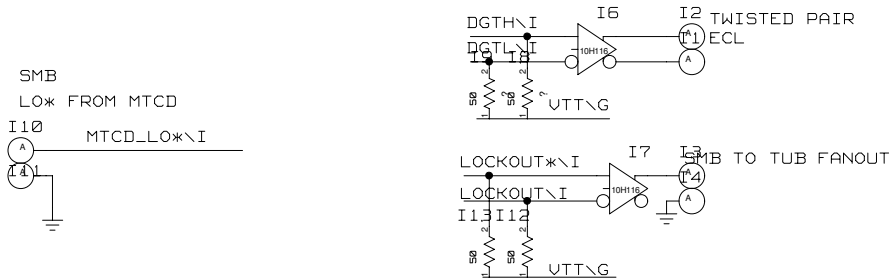
GENERIC UTILITIES PORTS PORTS TO/FROM THE TUBII THAT ARE FOR GENERIC PURPOSES



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TITLE: GENERIC_UTILITIES_PORTS	DATE: 10/9/14
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GT_DELAYS_PORTS
PORTS TO/FROM TUBII THAT ARE USED BY
THE GT DELAYS SYSTEM



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TITLE:	GT DELAYS PORTS
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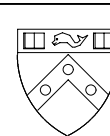
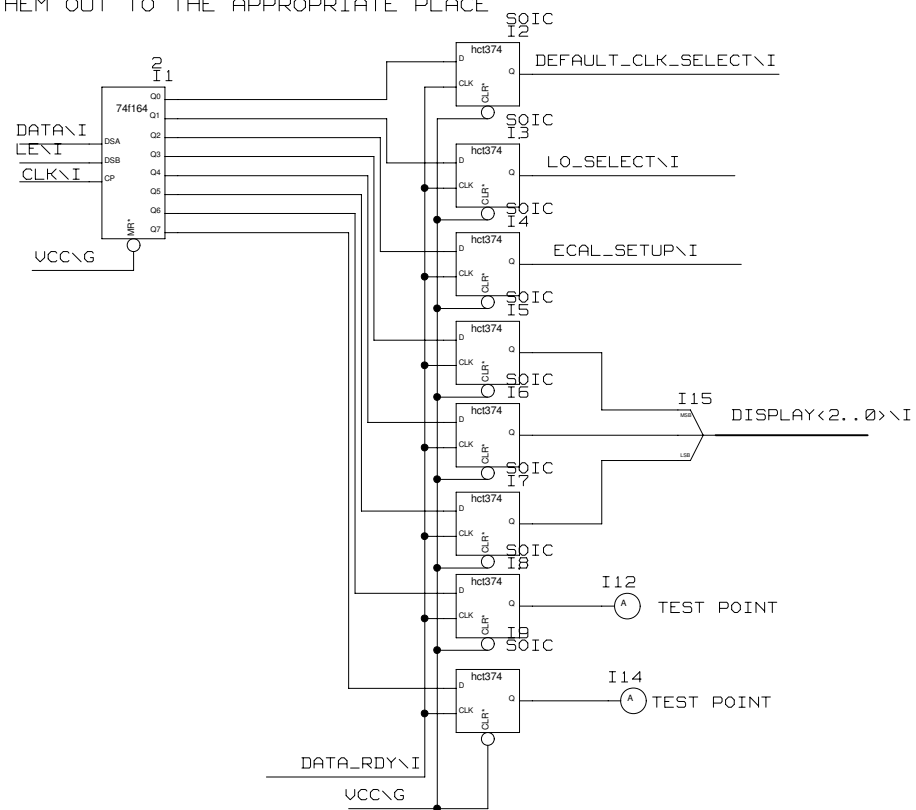
ENGINEER: ERIC M

DATE: 10/9/14

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CNTRL REGISTER

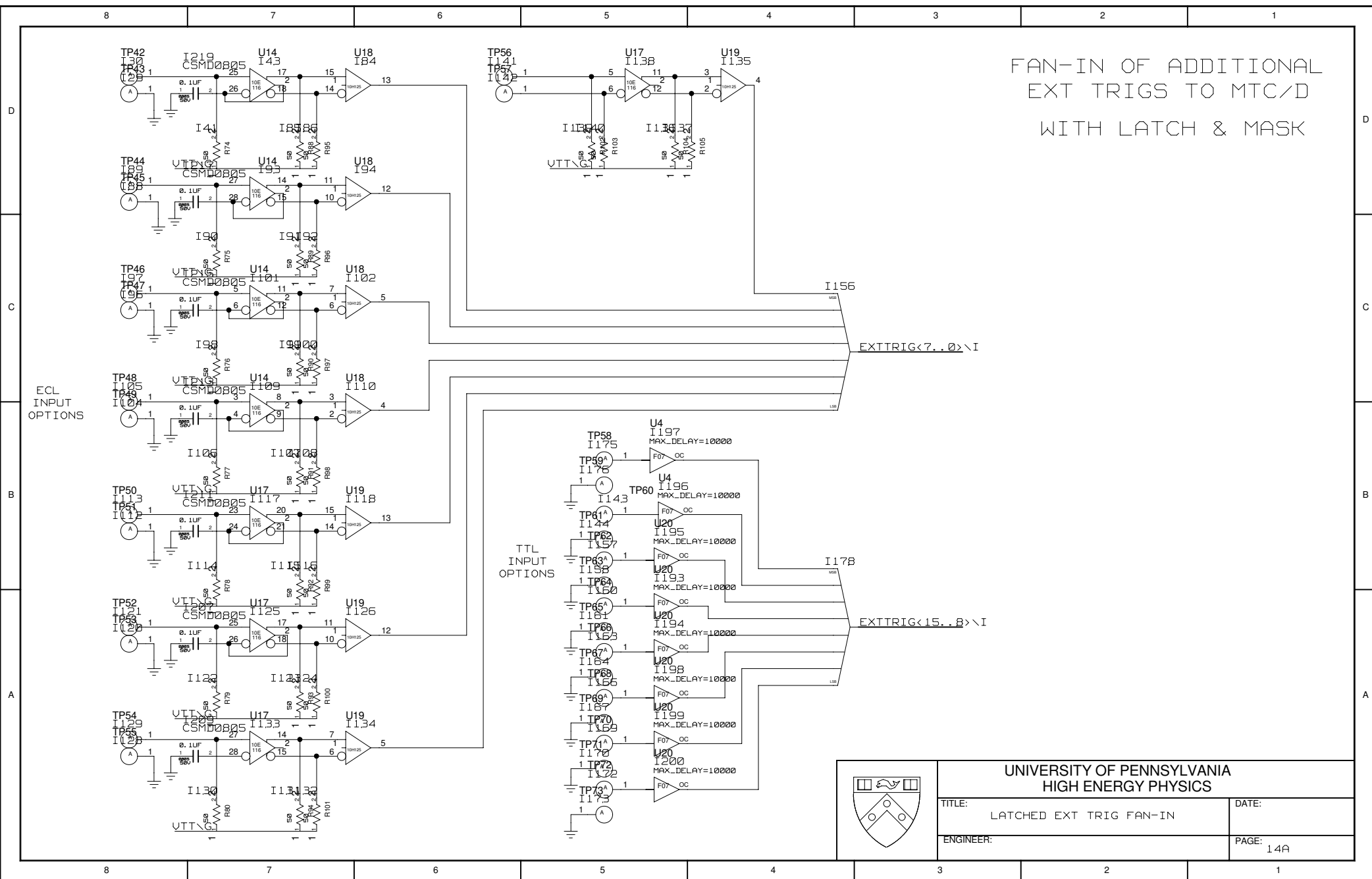
ANY SET-IT-AND-FORGET-IT TYPE SIGNALS
GET LOADED INTO A SHIFT REGISTER WHICH
SENDS THEM OUT TO THE APPROPRIATE PLACE



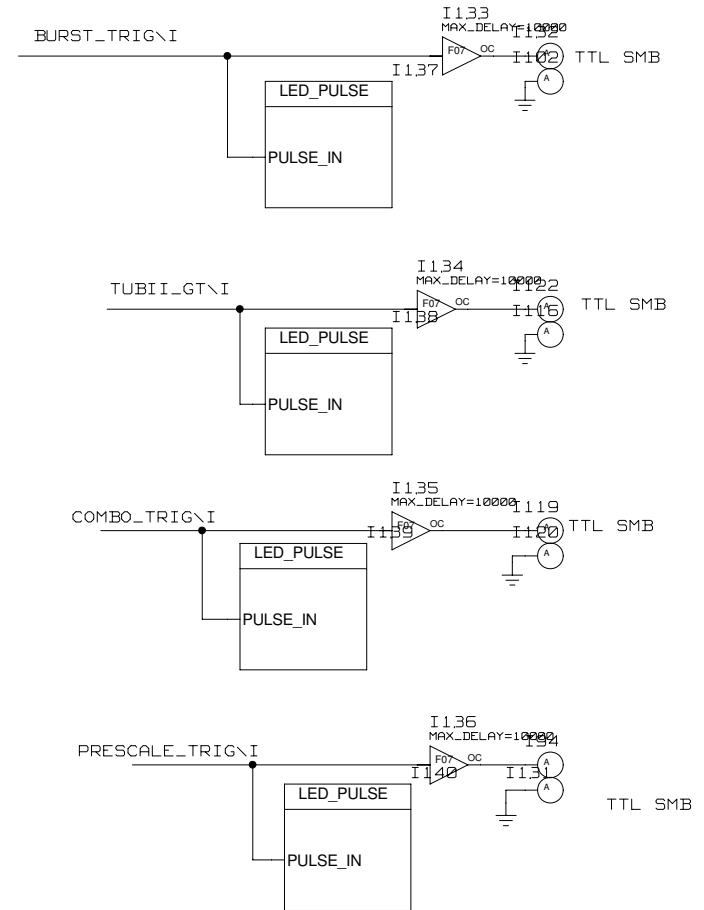
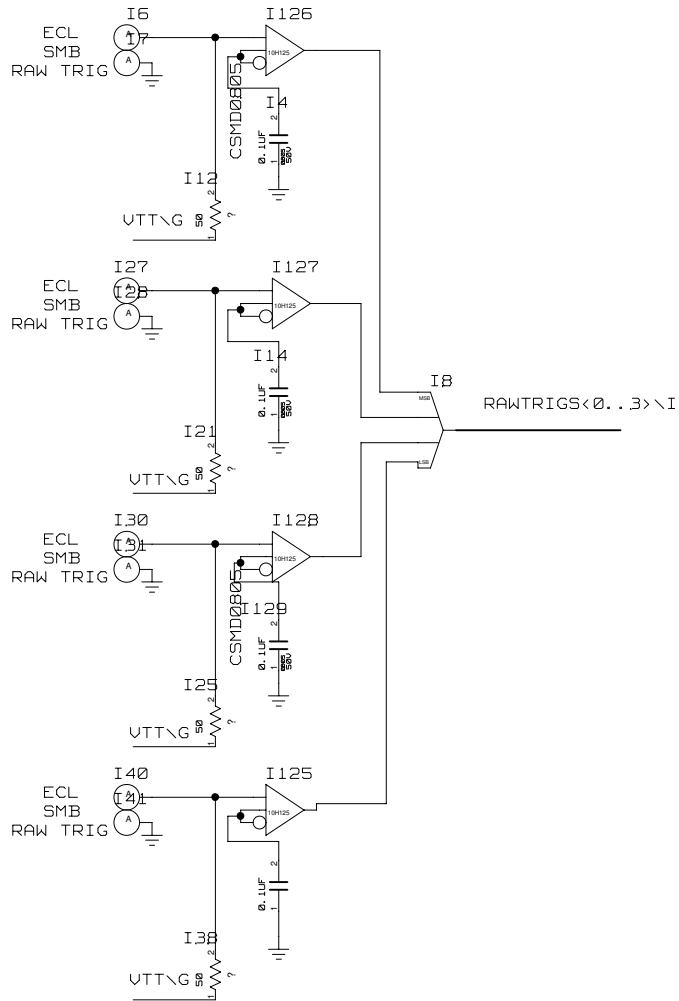
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HIGH ENERGY PHYSICS

TITLE: CNTRL_REGISTER	DATE: 9/30/14
ENGINEER ERIC M	PAGE: 13

A

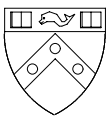
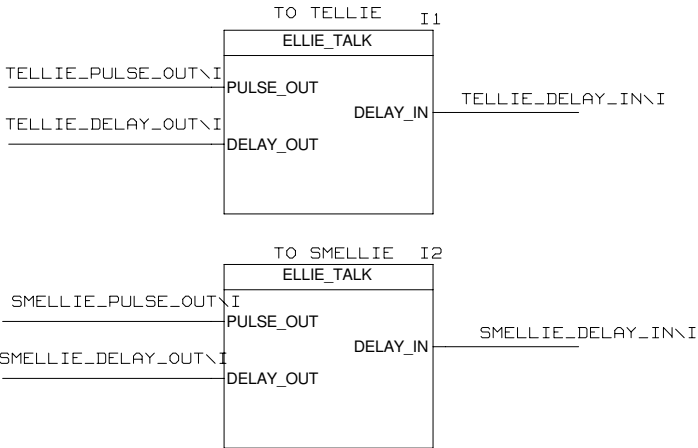


TUBII TRIGGERS INPUTS AND OUTPUTS TO/FROM MICRO ZED



ELLIE

PORTS FOR COMMUNICATING WITH TELLIE/SMELLIE

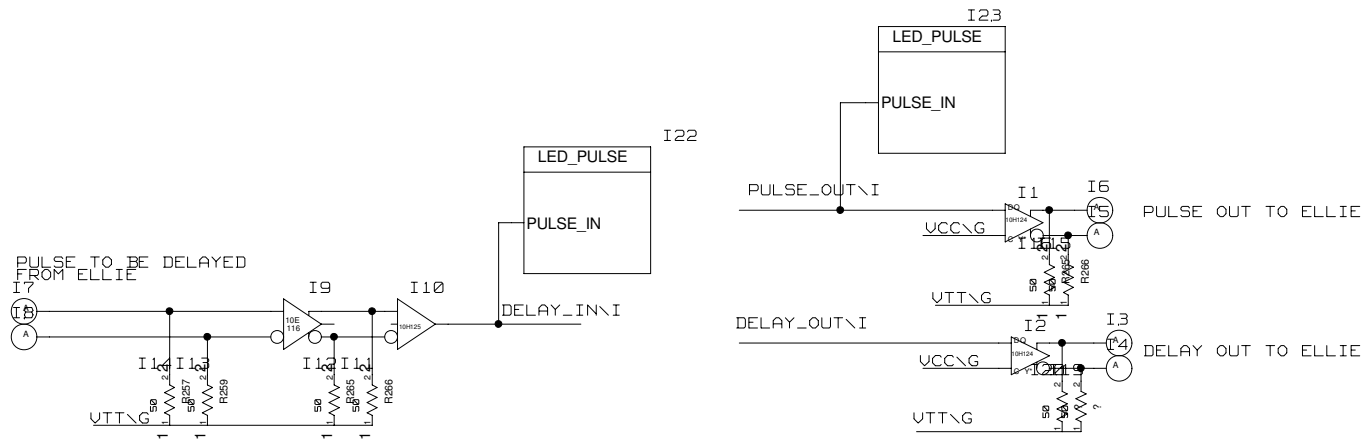


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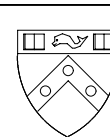
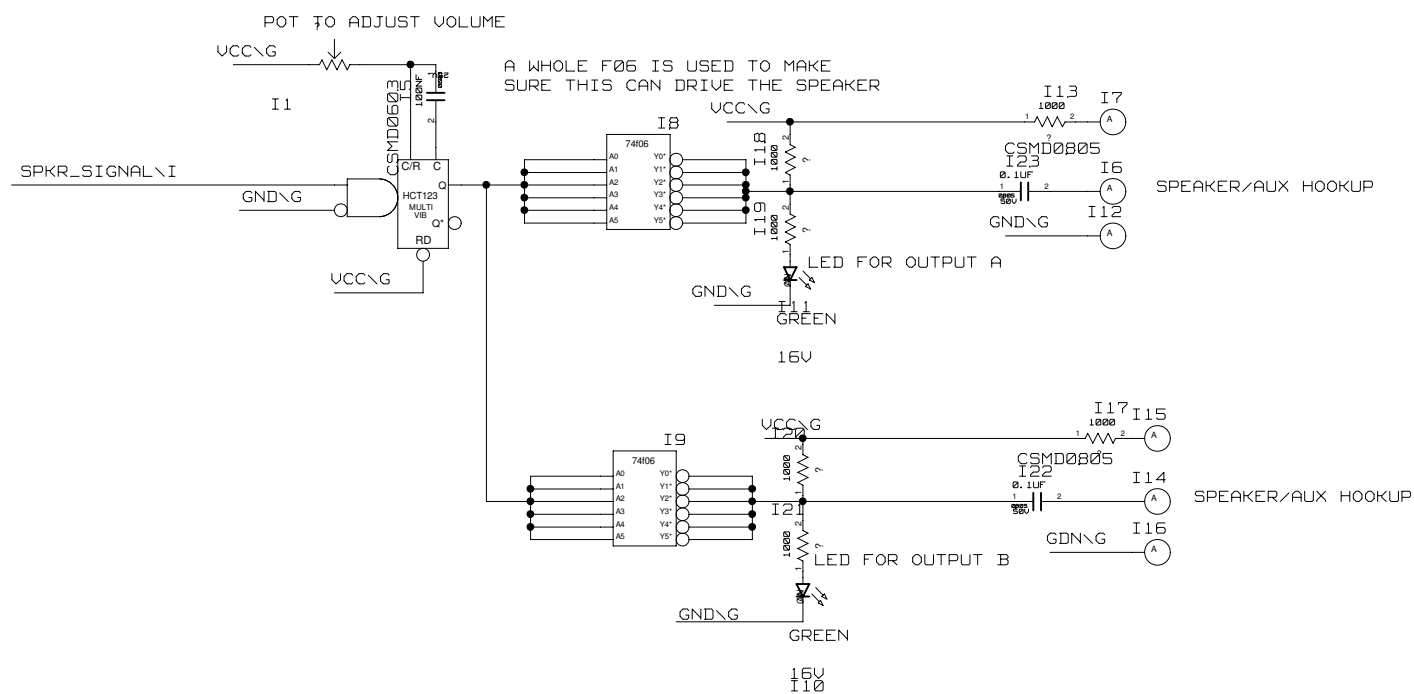
TITLE: ELLIE	DATE: 9/24/14
ENGINEER: ERIC M	PAGE: 14C

ELLIE TALK

COMMUNICATIONS TO/FROM ELLIE



TUBII SPEAKER



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TITLE: TUBII_SPKR	DATE: 10/2/14
ENGINEER: ERIC M	PAGE: 15