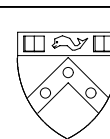


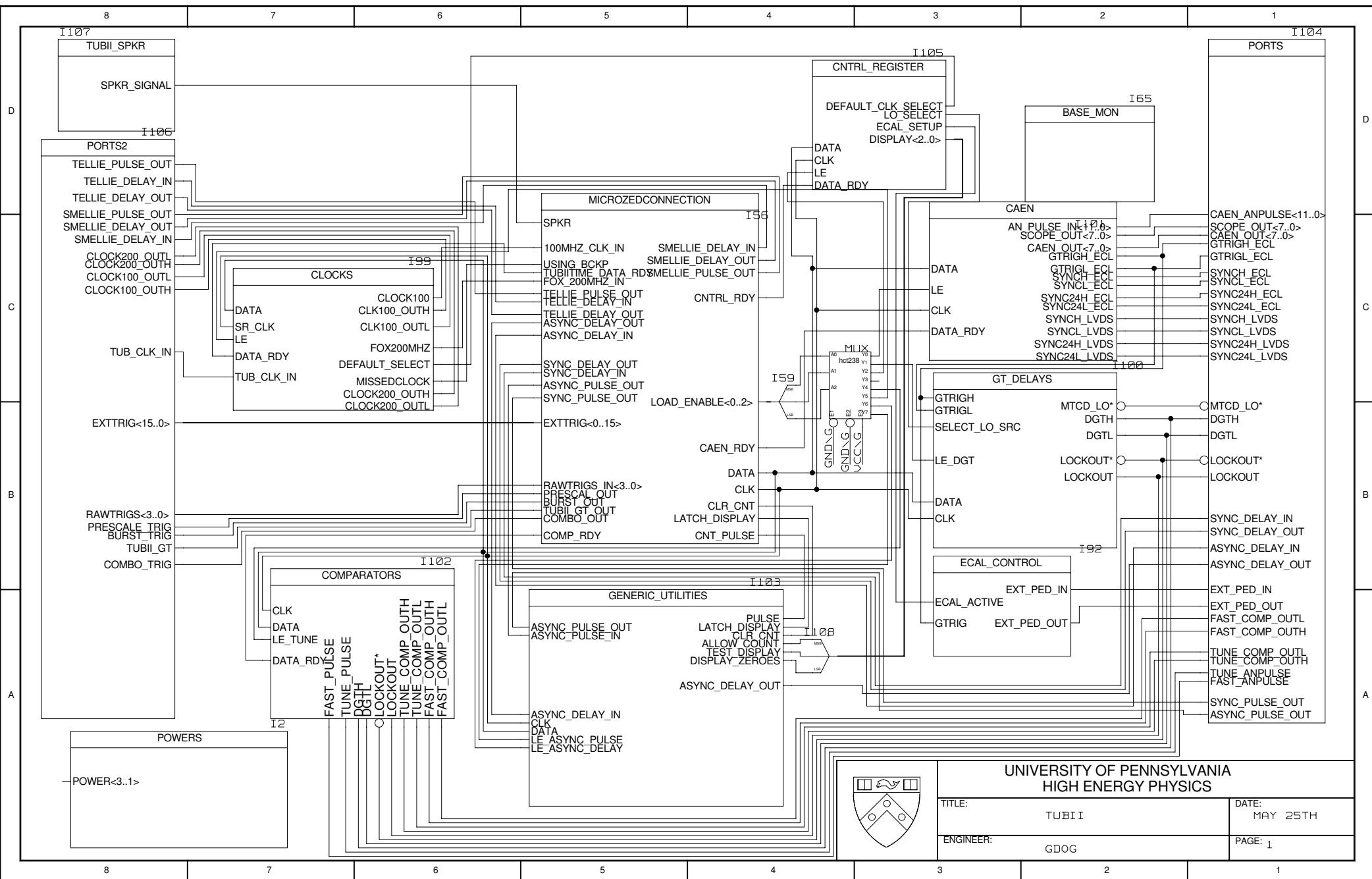
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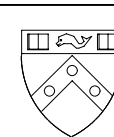
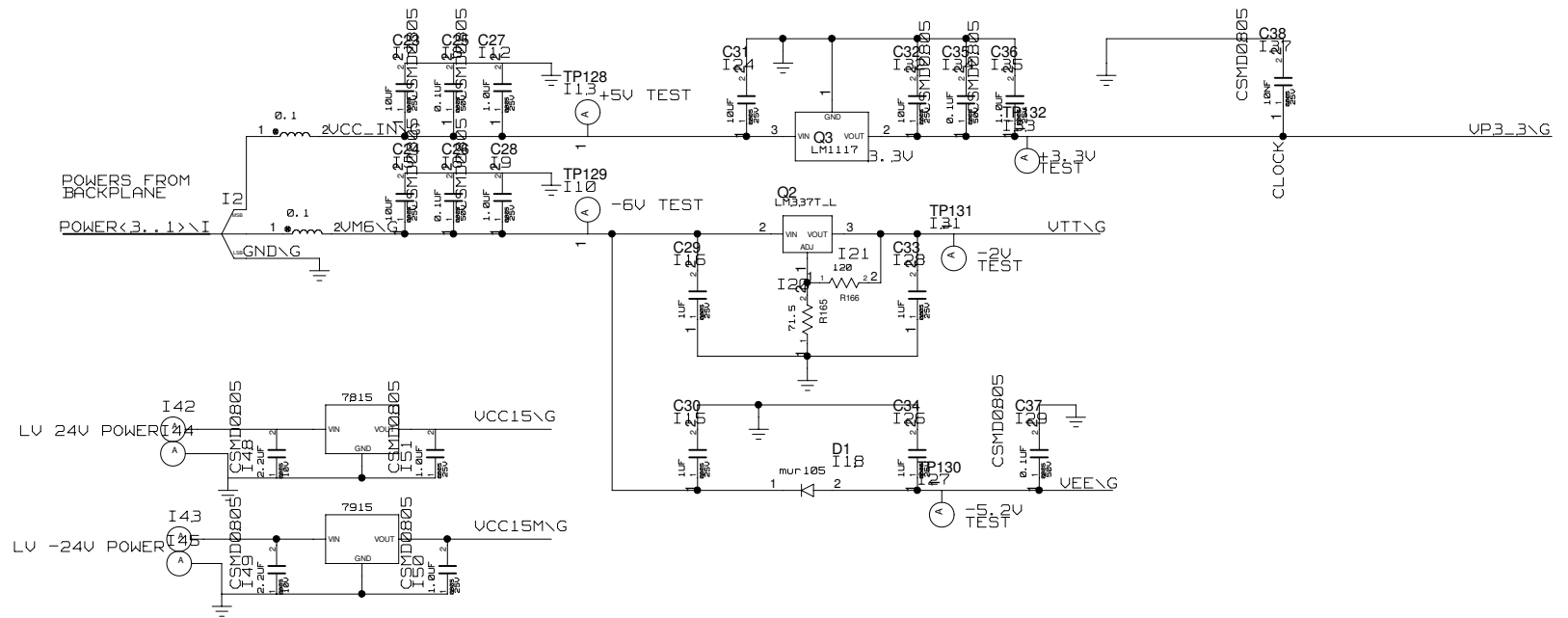


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HIGH ENERGY PHYSICS

TITLE:	DATE:
ENGINEER:	PAGE:



POWERS



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HIGH ENERGY PHYSICS

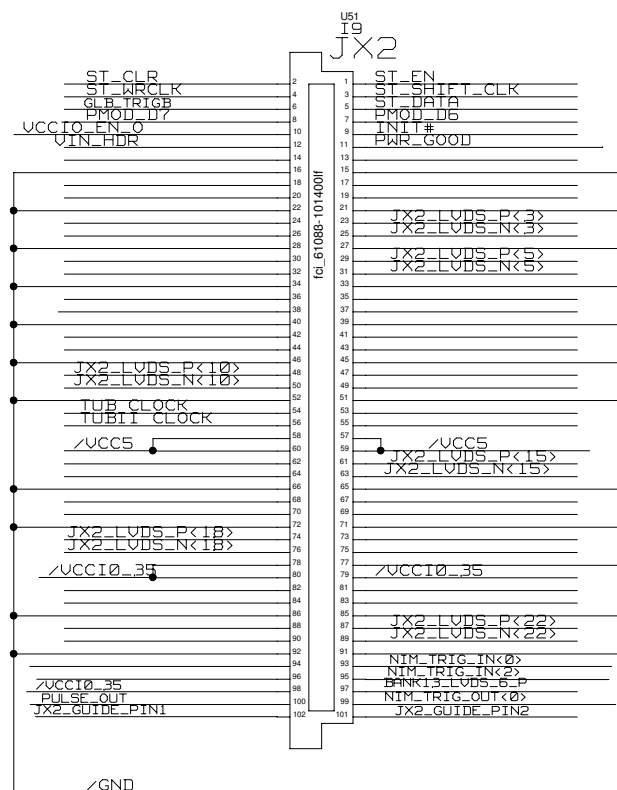
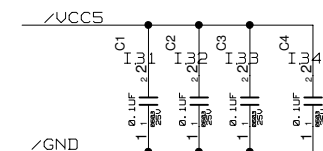
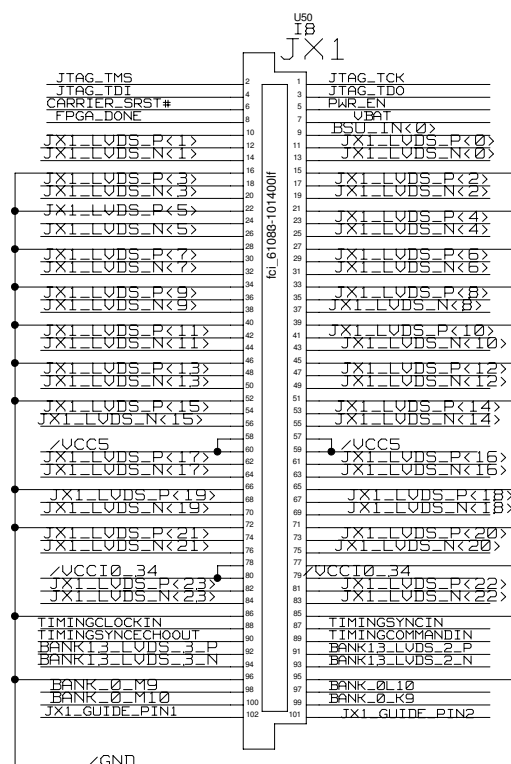
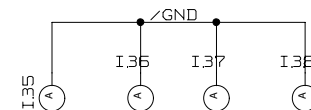
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POWERS

DATE:

ENGINEER:

PAGE:
2

MICROZED CONNECTION



DRAWING UNIVERSITY OF PENNSYLVANIA
MICROZED_MOD HIGH ENERGY PHYSICS

TITLE:	MICROZED_CONNECTION	DATE
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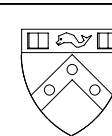
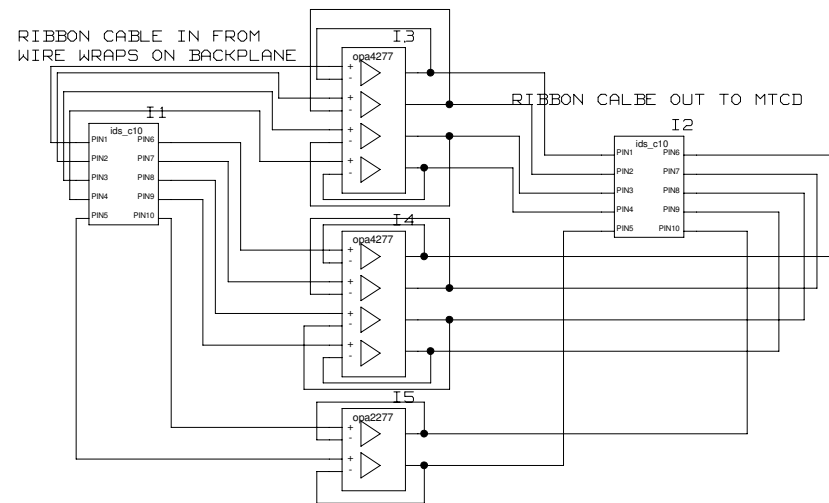
ENGINEER MODIFIED=Thu Oct 09 12:50:40 2014

DATE

	PAGE
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BASELINE MONITORING

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



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HIGH ENERGY PHYSICS

TITLE:
BASELINE MONITORING

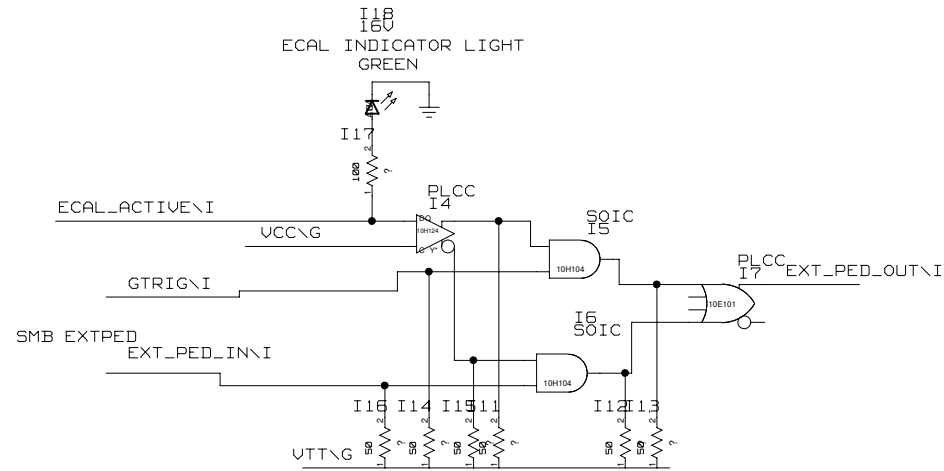
DATE:
9/8/14


ENGINEER:
ERIC M

PAGE: 4

ECAL CONTROL

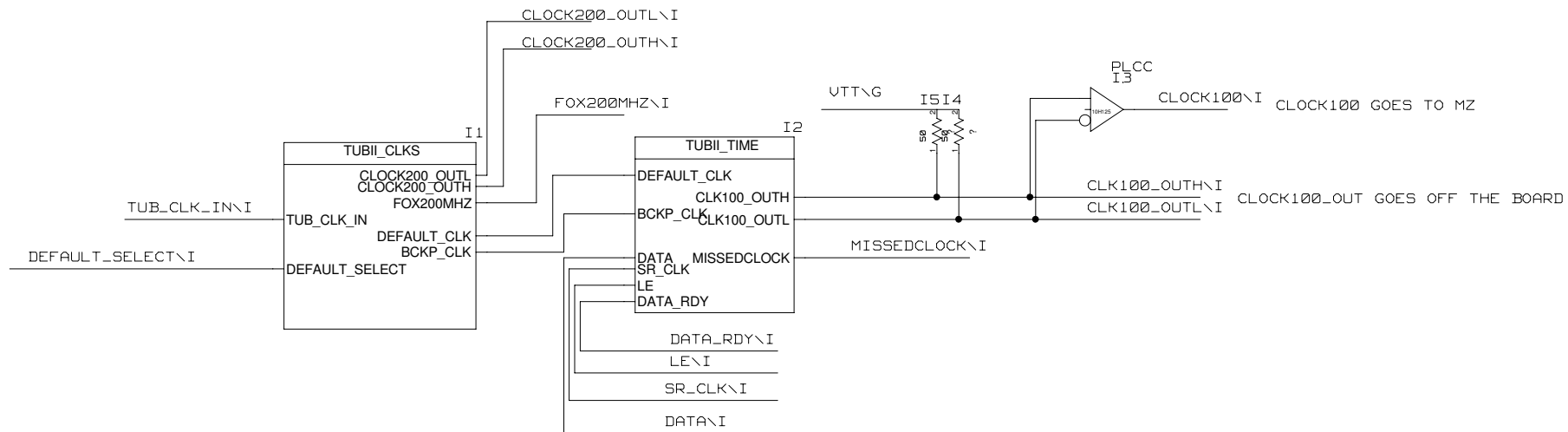
WHEN PERFORMING ECALS GTRIG FEEDS INTO THE EXT_PED
ON THE MTCD. OTHERWISE THE MTCD'S EXT_PED COMES FROM
TUBII'S EXT_PED



		UNIVERSITY OF PENNSYLVANIA HIGH ENERGY PHYSICS	
TITLE: ECAL CONTROL		DATE: 9/19/14	
ENGINEER: ERIC M		PAGE: 5	

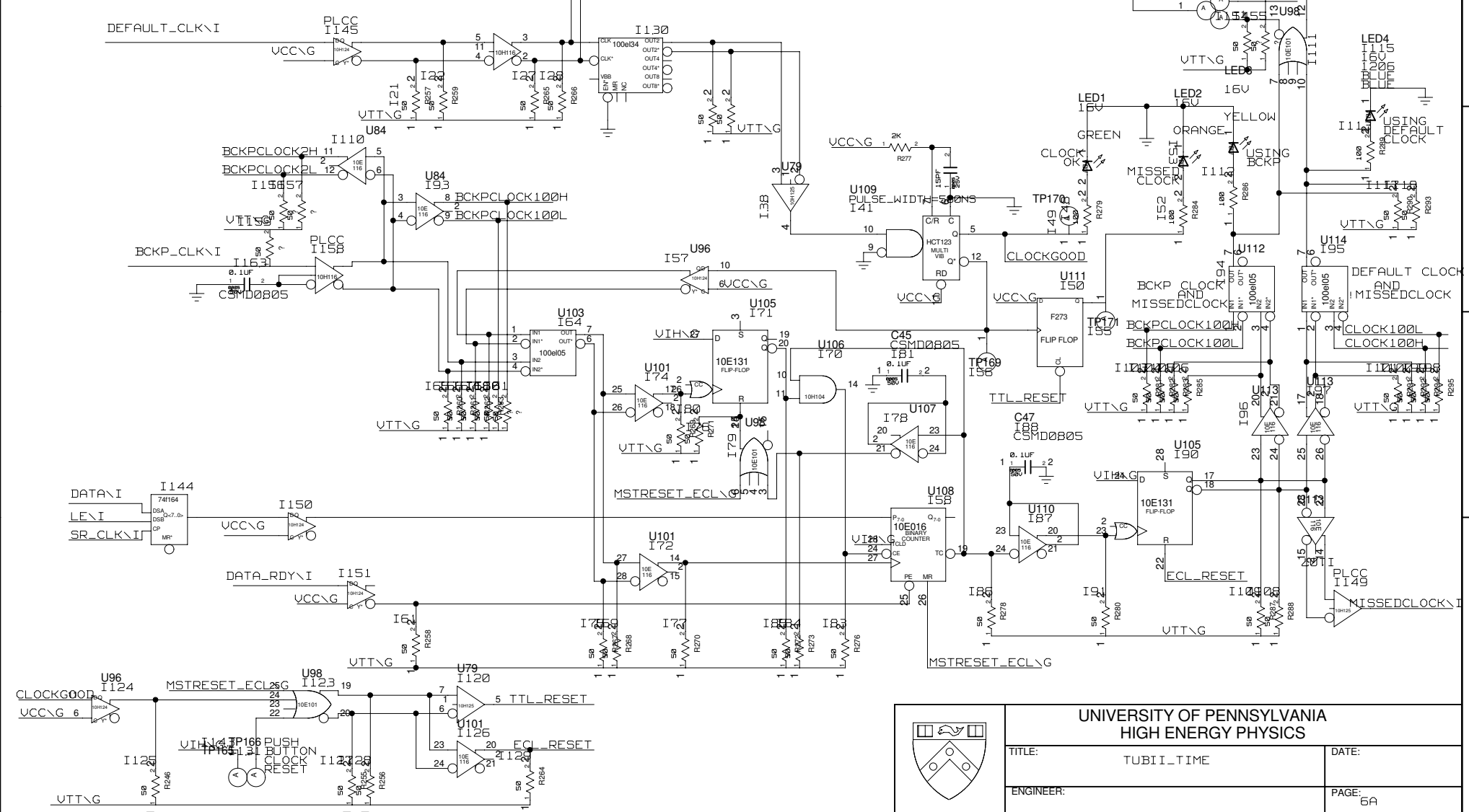
CLOCKS

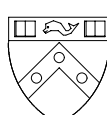
ALL THINGS CLOCK RELATED



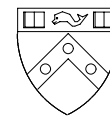
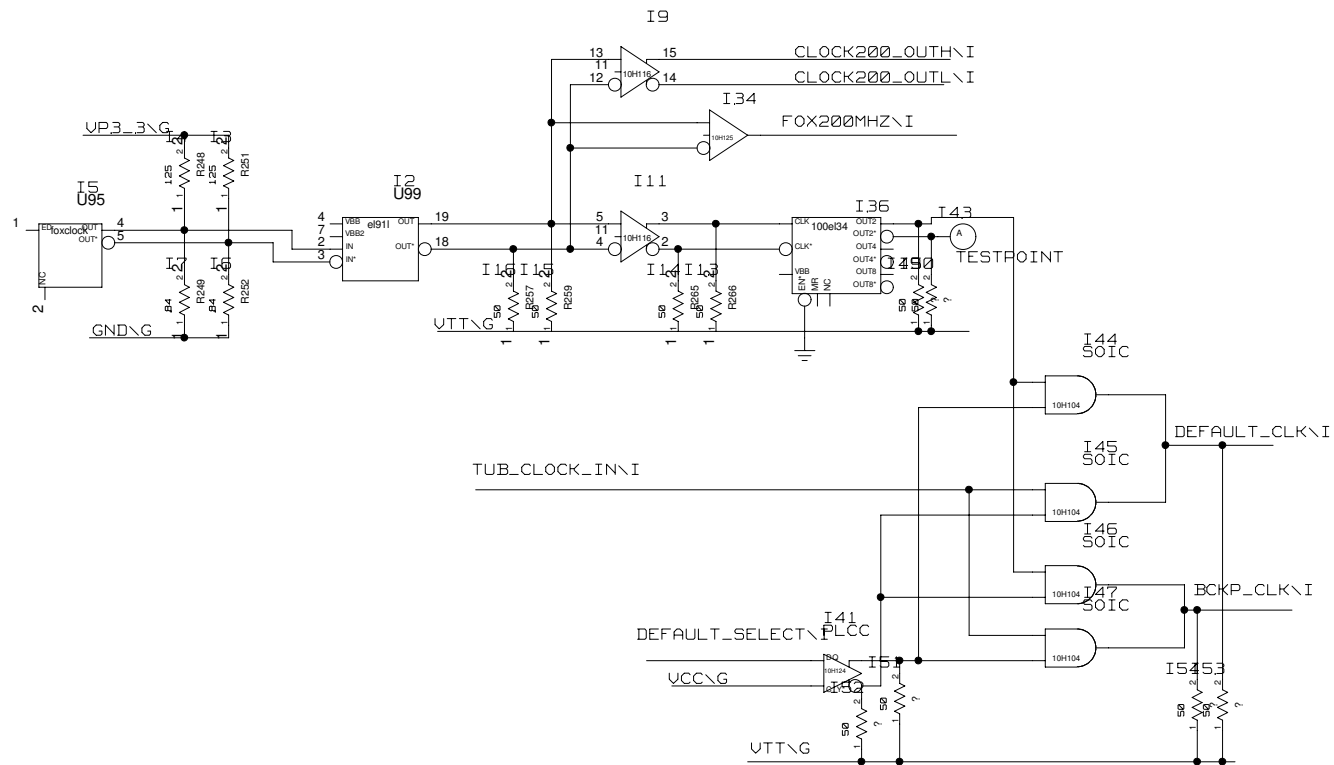
TUBII TIME

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



		UNIVERSITY OF PENNSYLVANIA HIGH ENERGY PHYSICS	
TITLE:		TUBII TIME	
ENGINEER:		DATE:	
		PAGE: 6A	

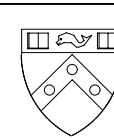
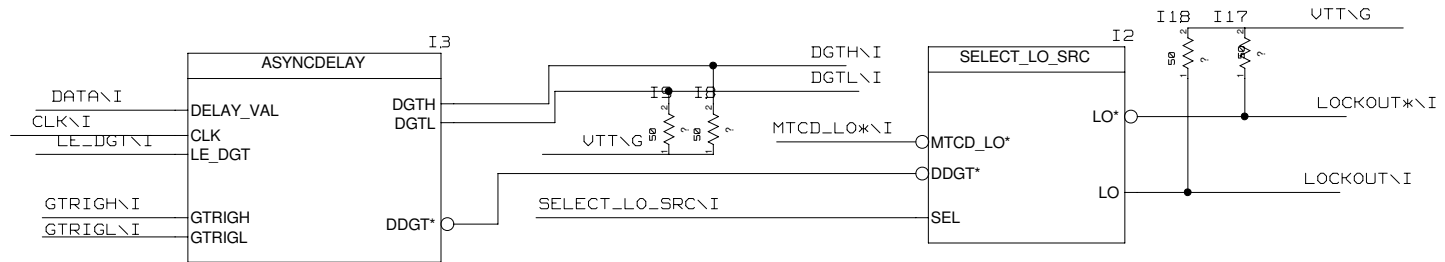
DECIDES WHICH CLOCK (TUB OR FOX) IS
THE DEFAULT CLOCK AND WHICH IS THE BACKUP



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

GT DELAYS

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



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HIGH ENERGY PHYSICS

TITLE:
GT_DELAYS

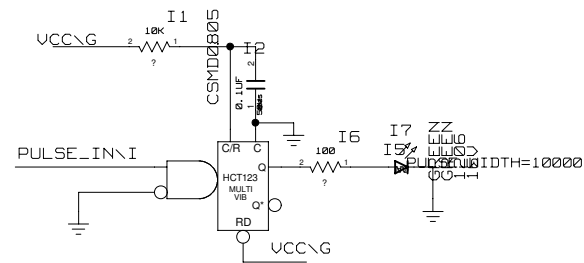
DATE:
10/3/14


ENGINEER:
ERIC M

PAGE: 7

LED PULSE

TAKES AN INPUT PULSE
STRETCHES IT AND FLASHES AN LED

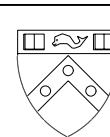
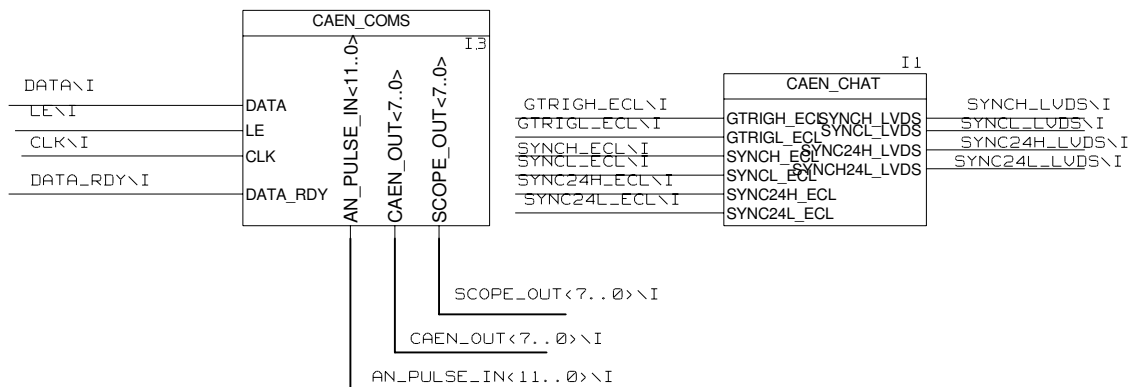


		UNIVERSITY OF PENNSYLVANIA HIGH ENERGY PHYSICS	
TITLE: LED PULSE		DATE: 10/7/14	
ENGINEER: ERIC M		PAGE: B	

CAEN

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

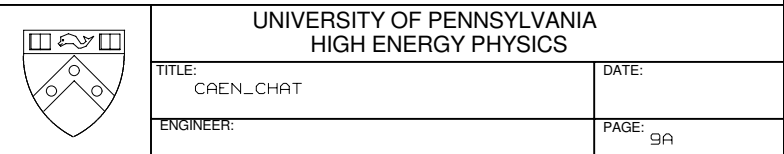
HERE IS WHERE A VARIETY OF
ANALOG SIGNALS ARE CHOSEN
TO GO TO THE CAEN



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HIGH ENERGY PHYSICS

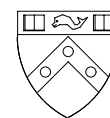
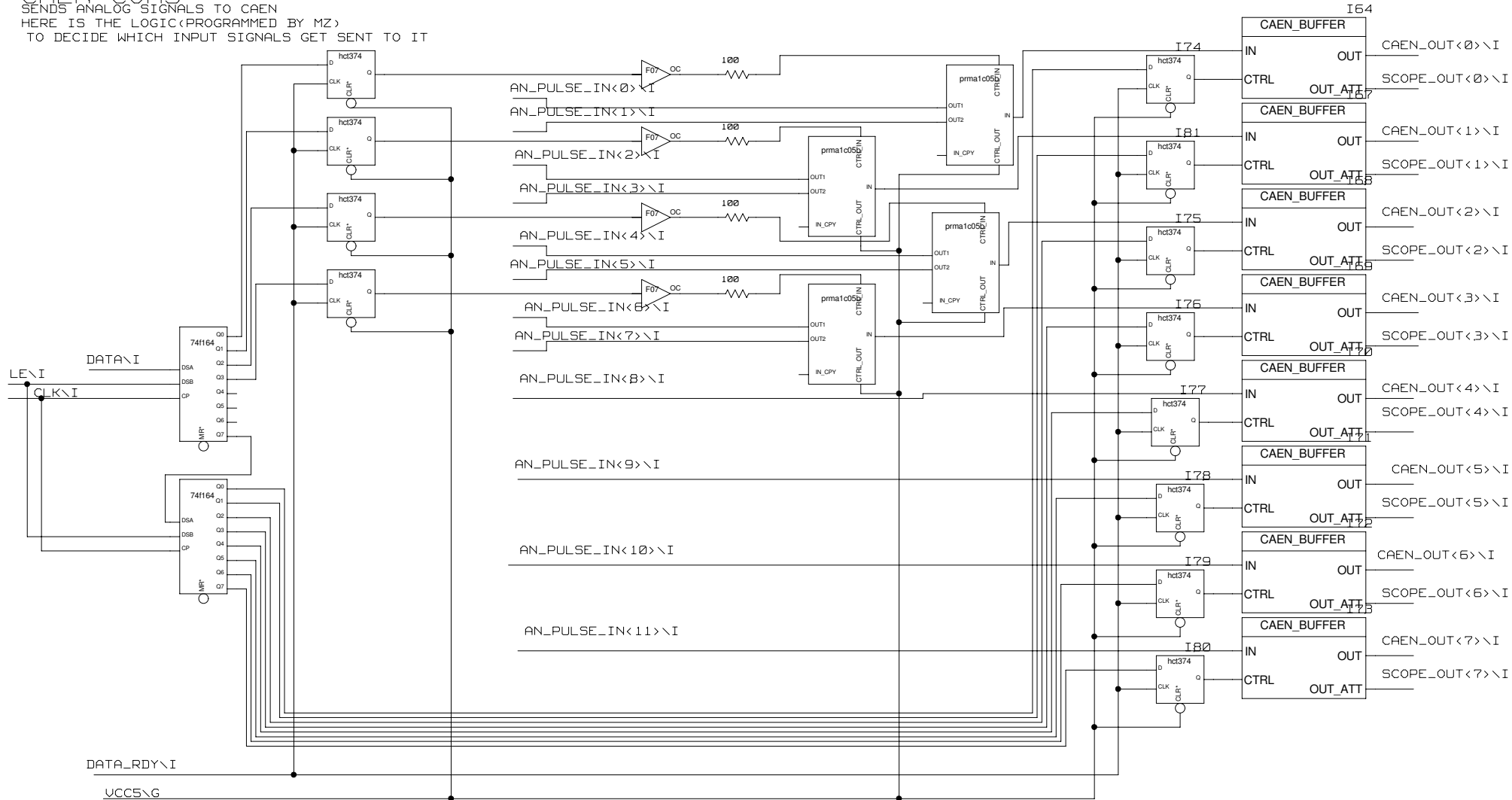
TITLE: CAEN		DATE: 9/25/14
ENGINEER: ERIC M		PAGE: 9

SENDS DIGITAL SIGNALS TO CAEN
AFTER TRANSLATING THEM APPROPRIATELY



CAEN_COMS

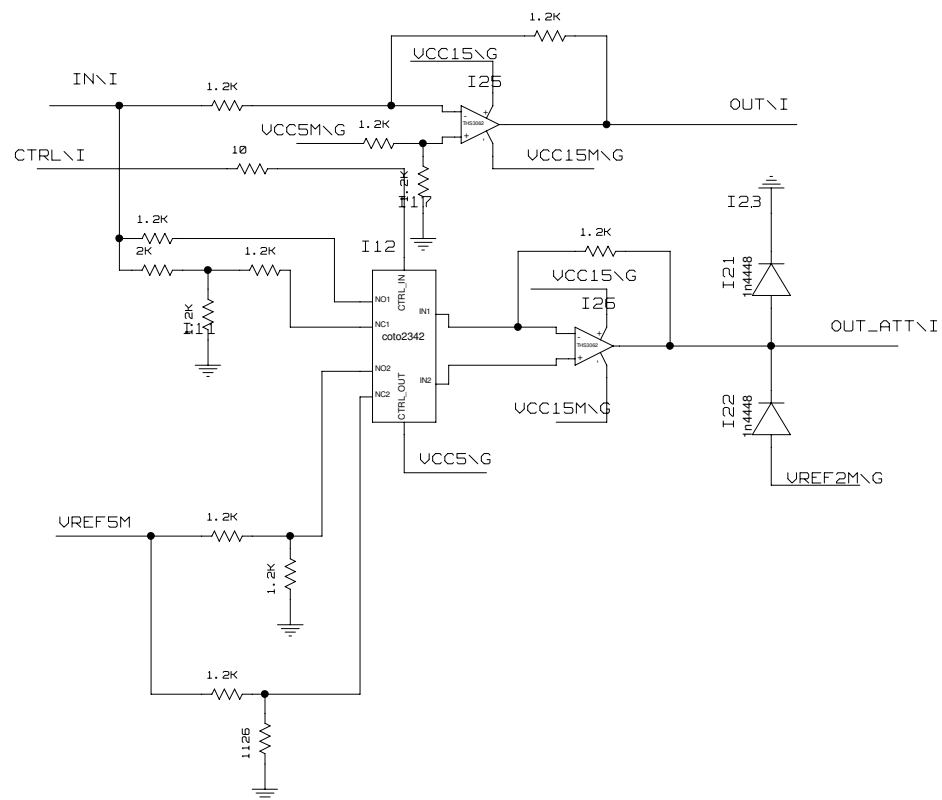
SENDS ANALOG SIGNALS TO CAEN
HERE IS THE LOGIC (PROGRAMMED BY MZ)
TO DECIDE WHICH INPUT SIGNALS GET SENT TO IT



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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

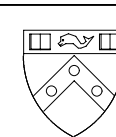
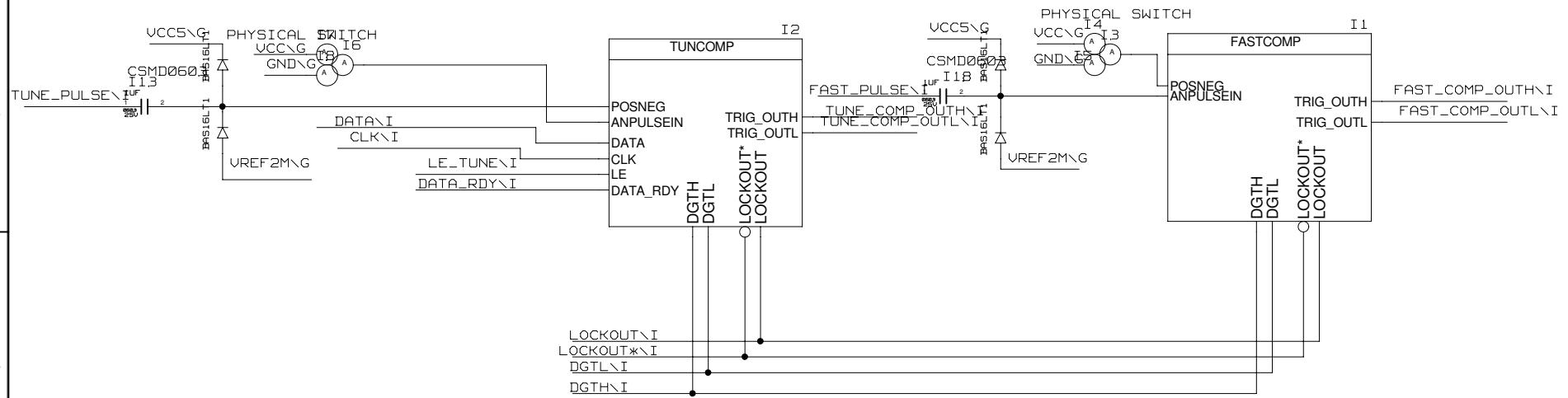


DATE: 8/18/14

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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HIGH ENERGY PHYSICS

TITLE: COMPARATORS

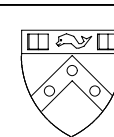
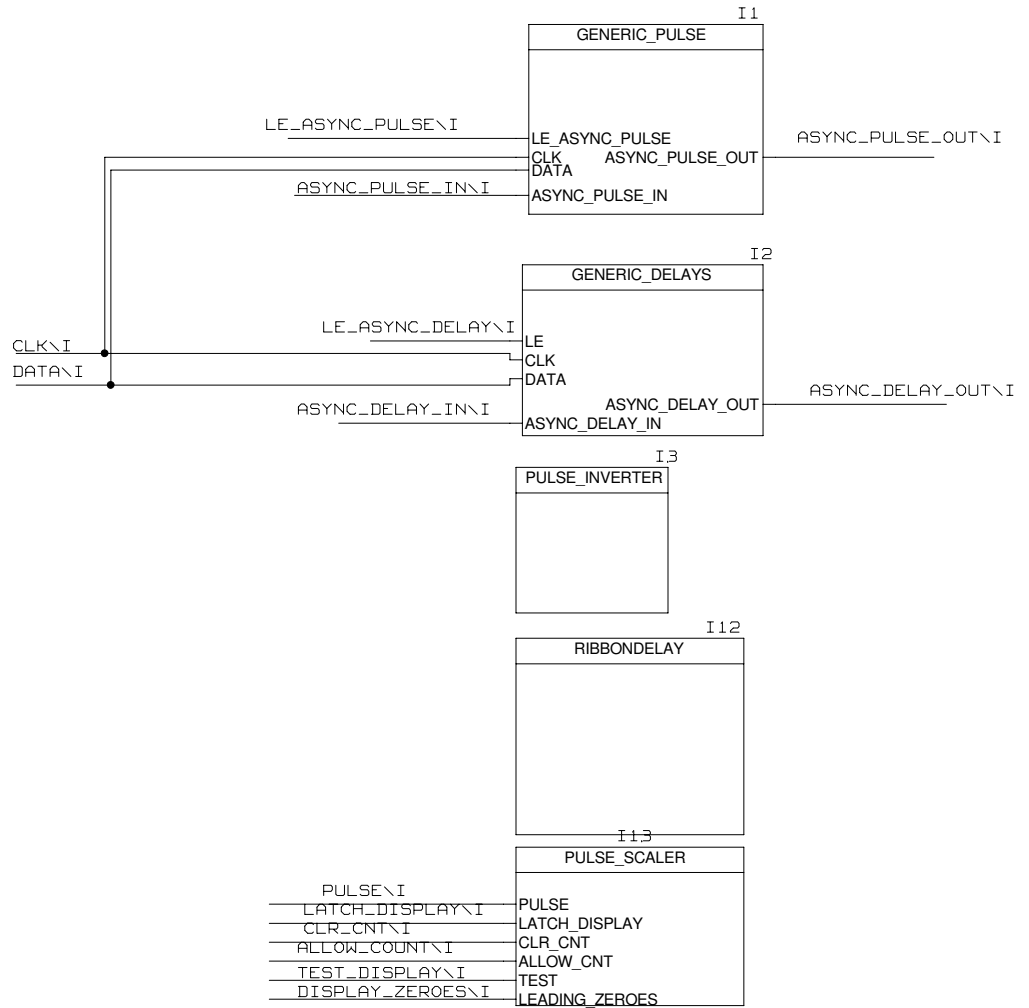
DATE: 9/25/14

ENGINEER: ERIC M

PAGE: 10

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

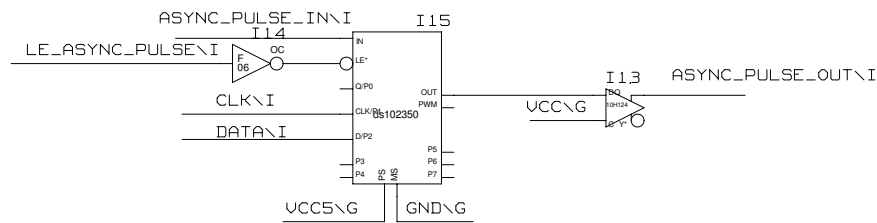



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HIGH ENERGY PHYSICS

TITLE:	DATE:
ENGINEER:	PAGE: 11

GENERIC PULSE

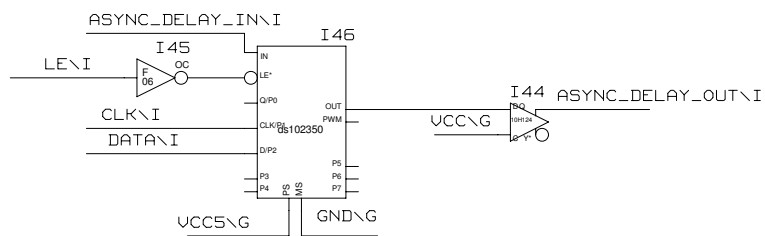
A PULSE COMES FROM THE MZ AT SOME RATE.
THIS CIRCUIT OFF SETS THAT RATE BY SOME SMALL
ASYNCHRONOUS AMOUNT.



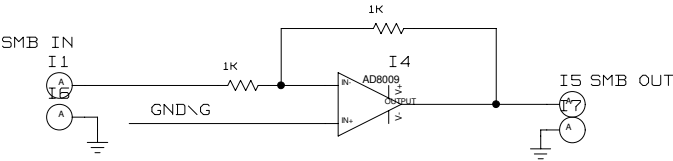
	UNIVERSITY OF PENNSYLVANIA HIGH ENERGY PHYSICS	
	TITLE: GENERIC PULSE	DATE:
	ENGINEER:	PAGE: 11A

GENERIC DELAYS

SIMPLY DELAYS AN INCOMING
PULSE BY SOME TUNEABLE
ASYNCHRONOUSE AMOUNT

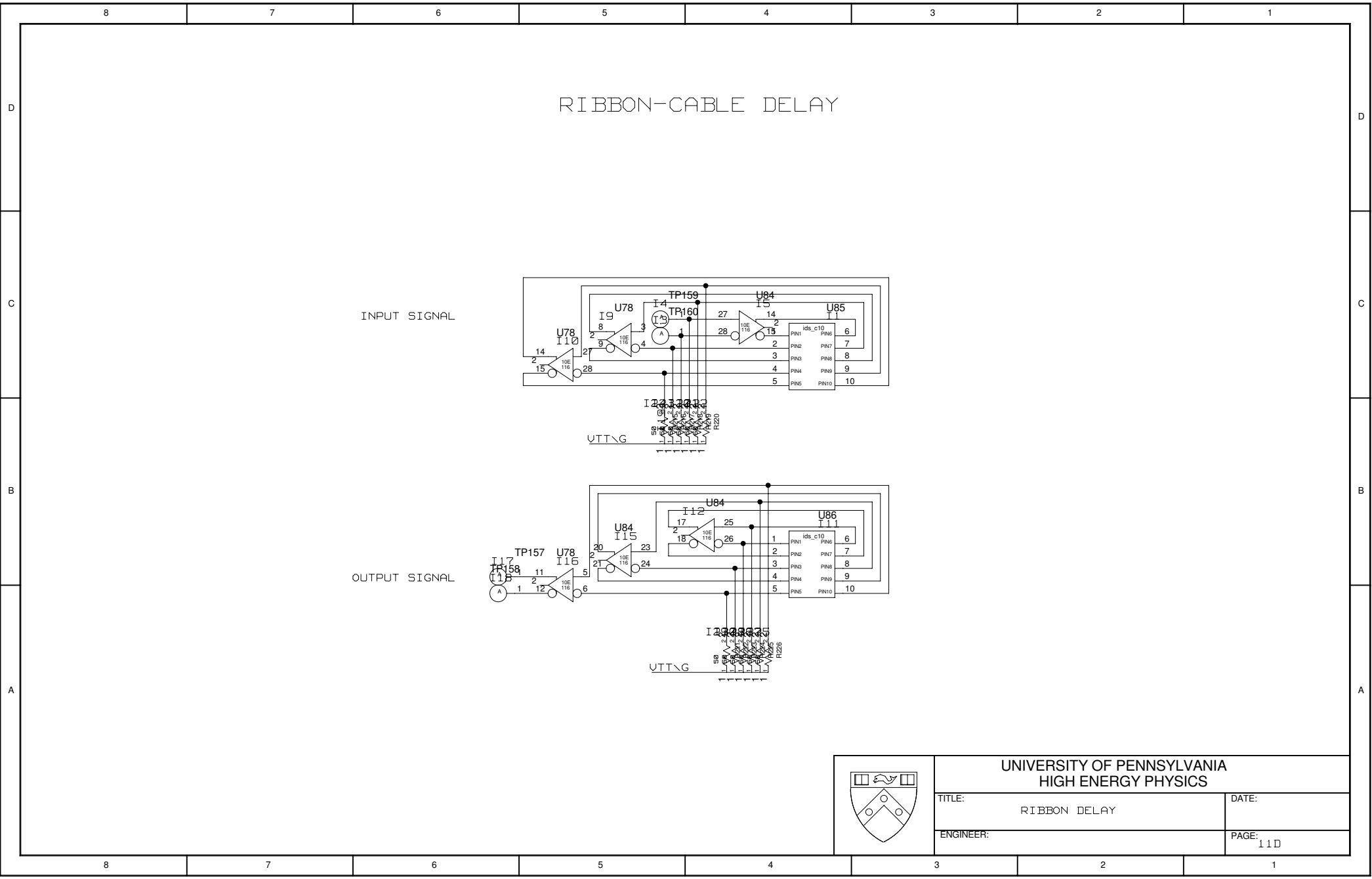


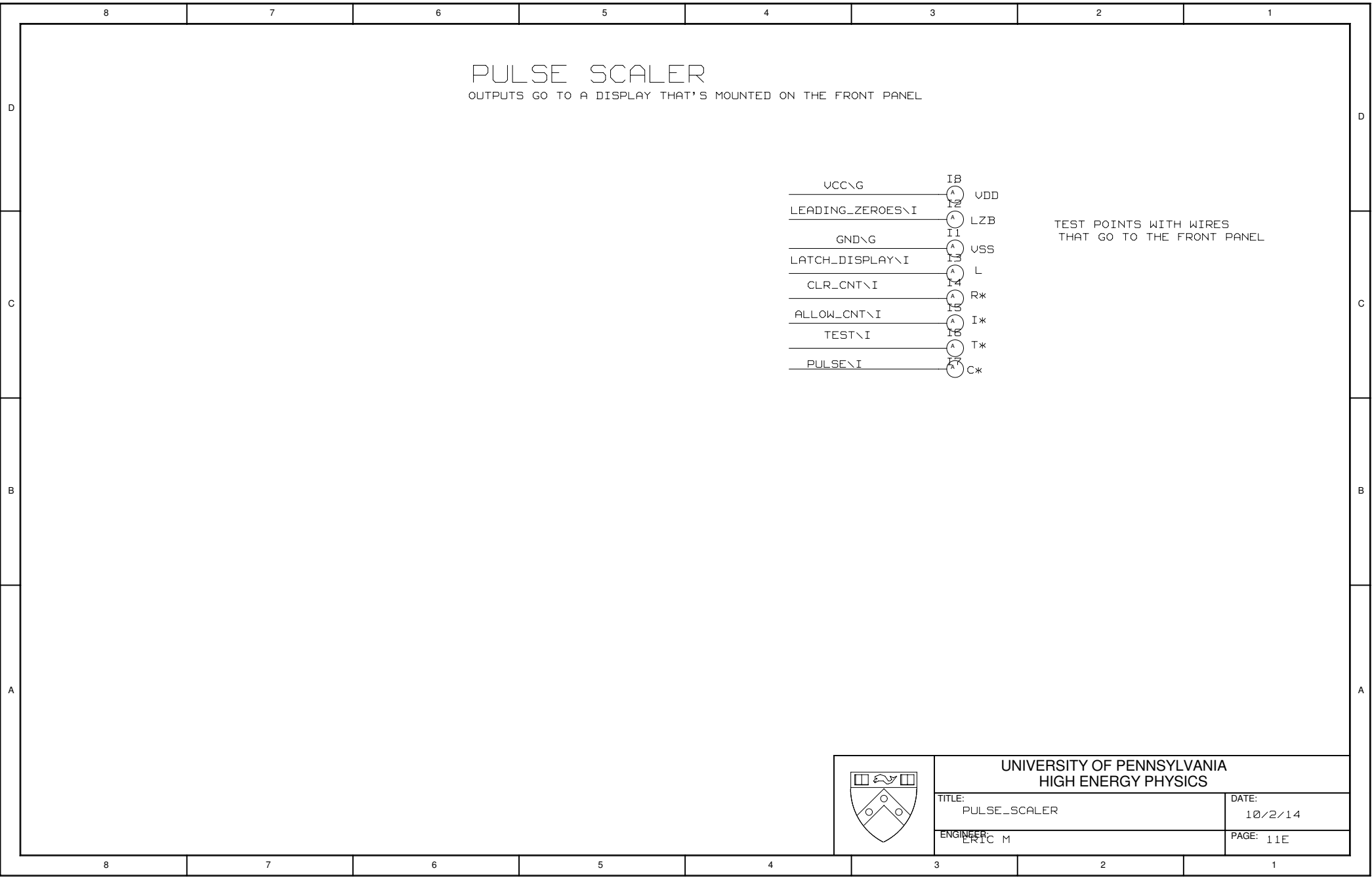
PULSE INVERTER



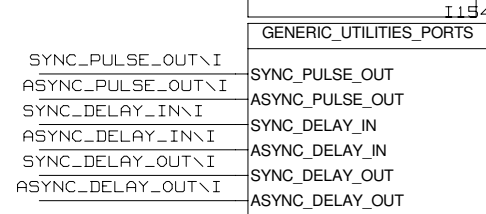
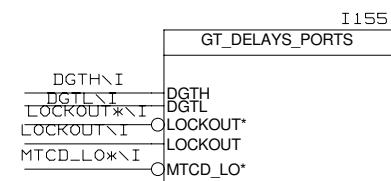
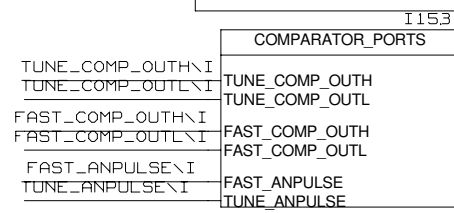
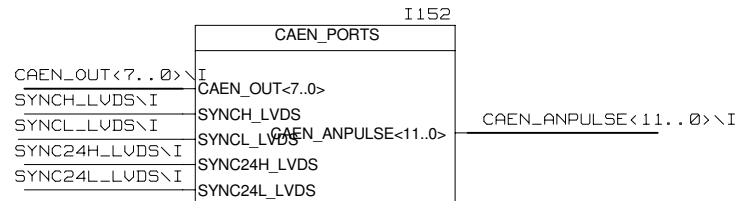
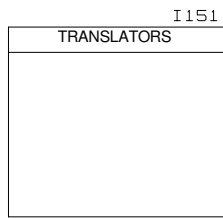
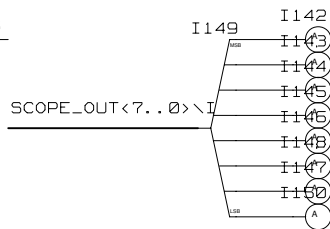
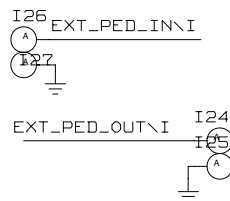
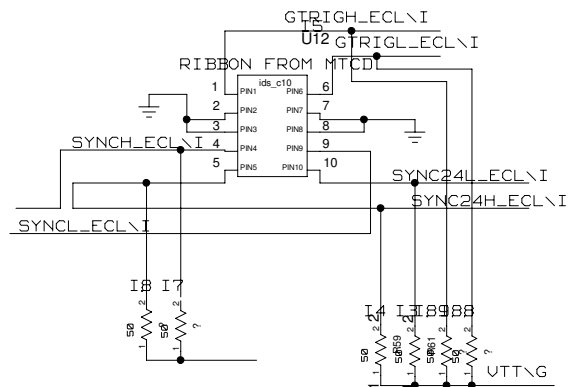
UNIVERSITY OF PENNSYLVANIA
HIGH ENERGY PHYSICS

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

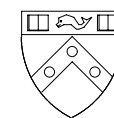
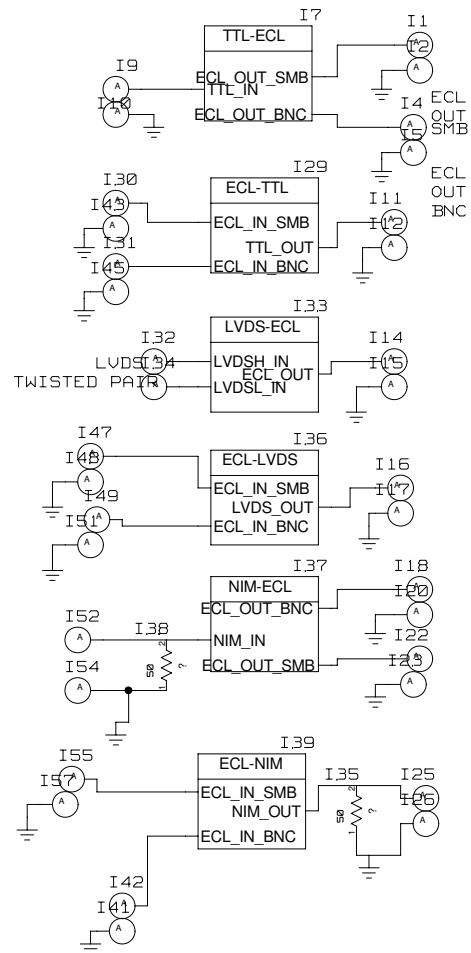




PORTS PORTS IN/OUT OF TUBII



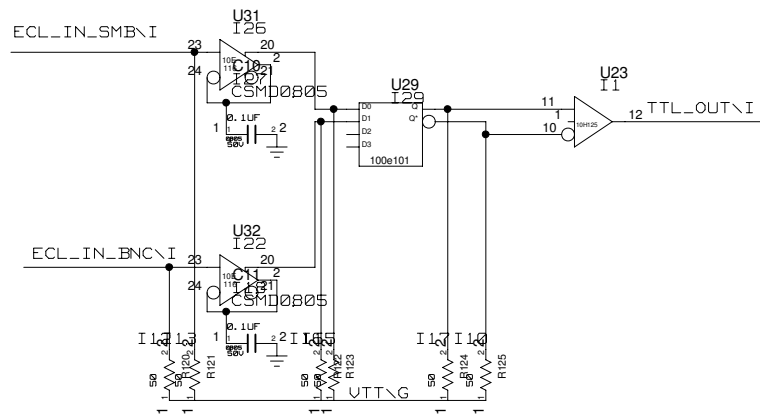
TRANSLATORS



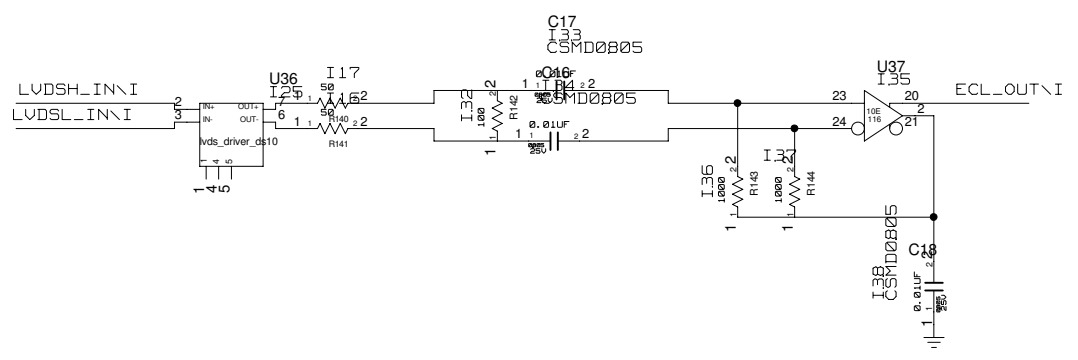
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TITLE: TRANSLATORS	DATE: 10/9/14
ENGINEER: ERIC M	PAGE:

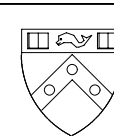
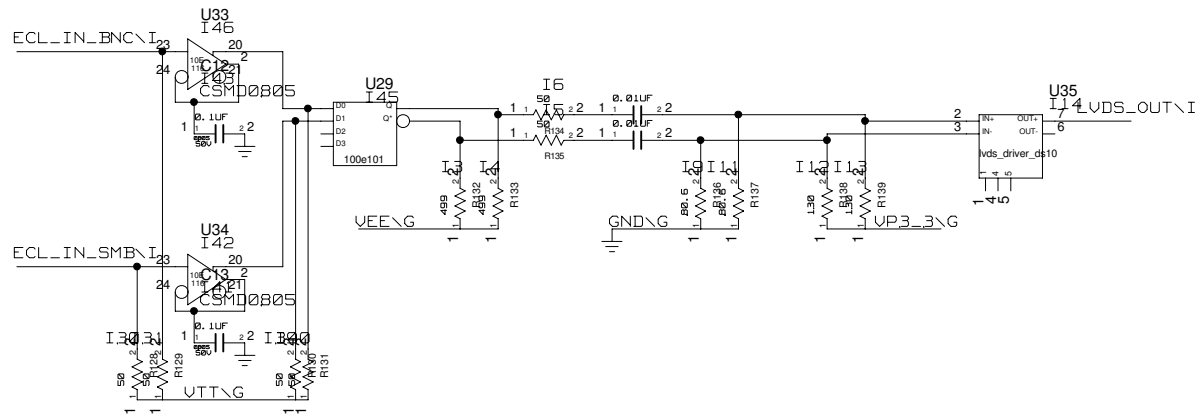
ECL-TTL



LVDS-ECL



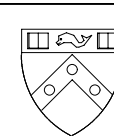
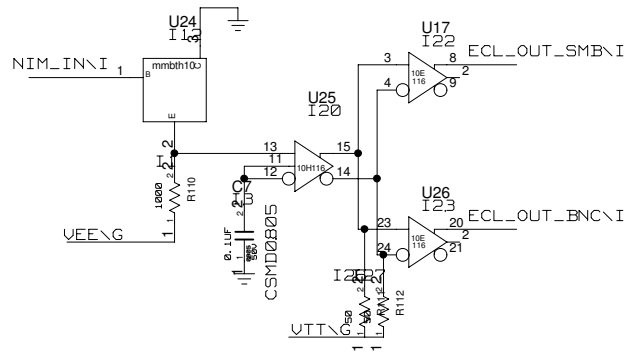
ECL-LVDS



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HIGH ENERGY PHYSICS

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

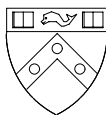
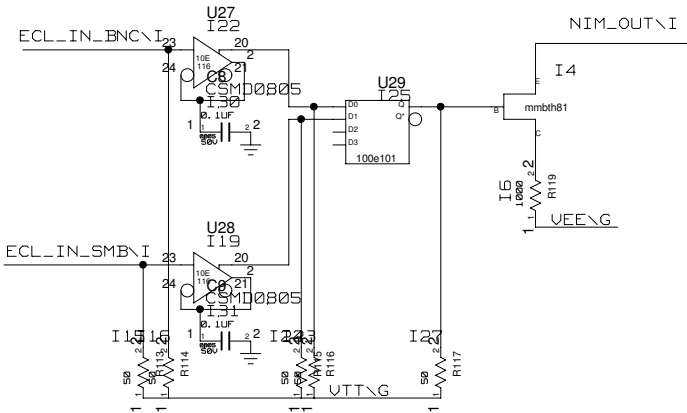
NIM-ECL



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HIGH ENERGY PHYSICS

TITLE: NIM-ECL CONVERSION	DATE:
ENGINEER:	PAGE: 12A

ECL-NIM



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HIGH ENERGY PHYSICS

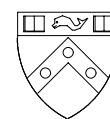
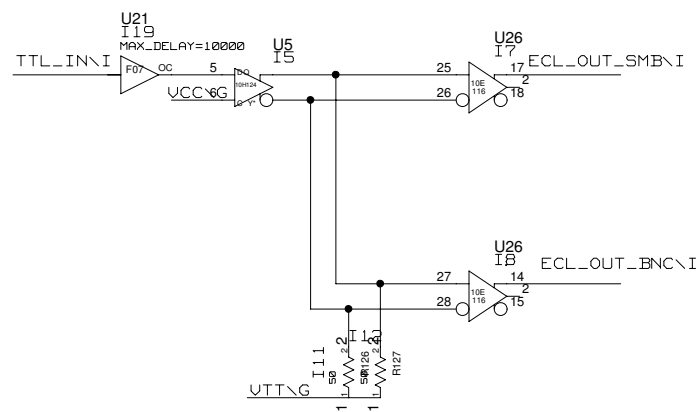
TITLE:	ECL-NIM CONVERSION
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DATE:

ENGINEER:

PAGE: 12D

TTL-ECL



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HIGH ENERGY PHYSICS

TITLE: TTL-ECL CONVERSION

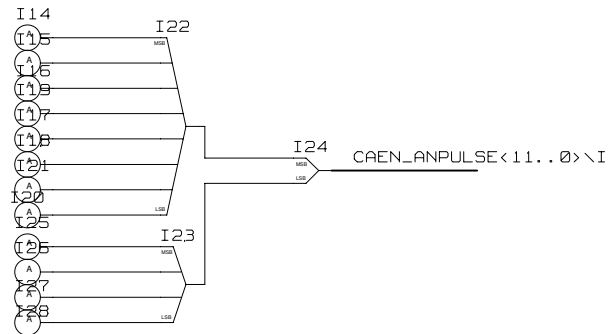
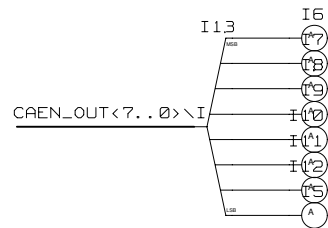
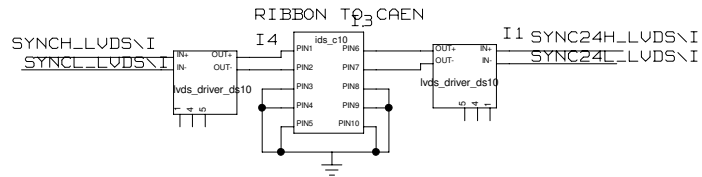
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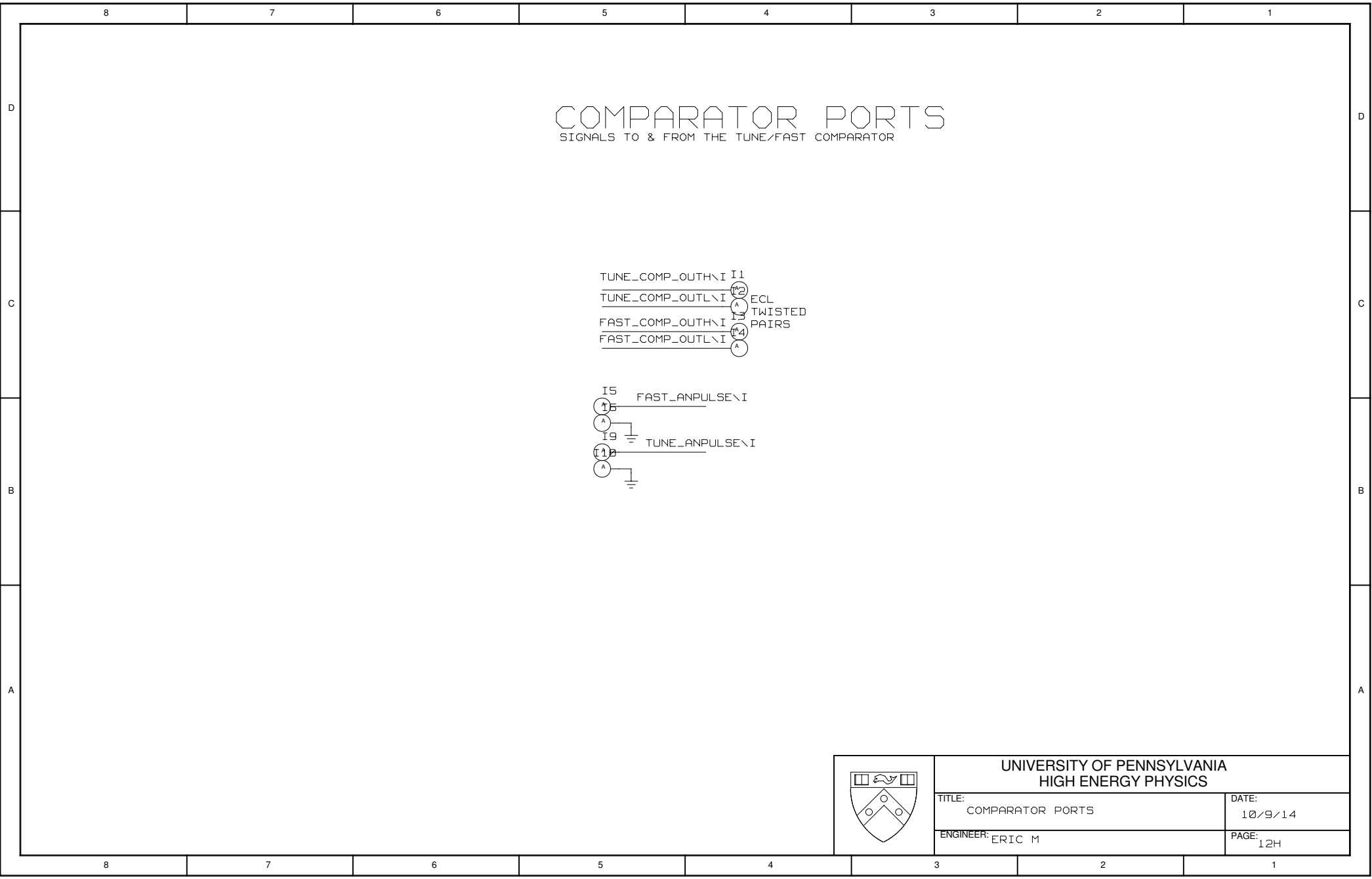
PAGE: 12E

CAEN PORTS

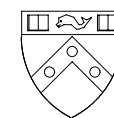
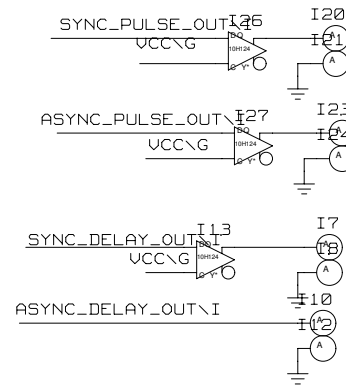
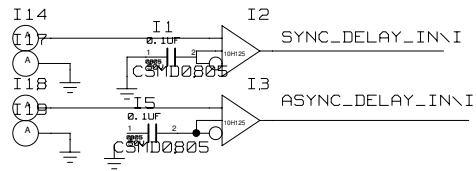
OUTPUTS THAT GO TO THE CAEN BOARD



	UNIVERSITY OF PENNSYLVANIA HIGH ENERGY PHYSICS	
	TITLE: CAEN_PORTS	DATE: 10/9/14
	ENGINEER: ERIC M	PAGE: 12G



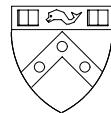
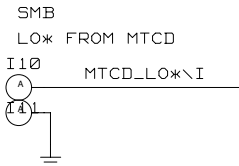
GENERIC UTILITIES PORTS PORTS TO/FROM THE TUBII THAT ARE FOR GENERIC PURPOSES



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TITLE: GENERIC_UTILITIES_PORTS	DATE: 10/9/14
ENGINEER: ERIC M	PAGE: 121

GT_DELAYS_PORTS
PORTS TO/FROM TUBII THAT ARE USED BY
THE GT DELAYS SYSTEM

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TITLE:
GT DELAYS PORTS

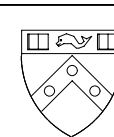
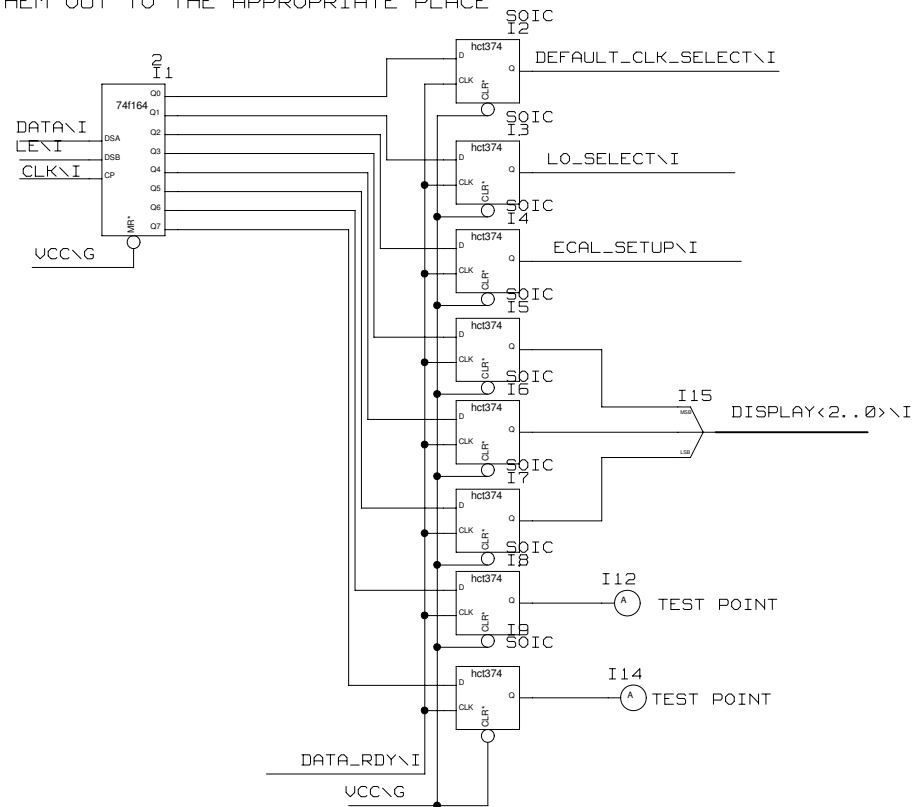
ENGINEER: ERIC M

DATE:
10/9/14

PAGE 12J

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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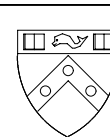
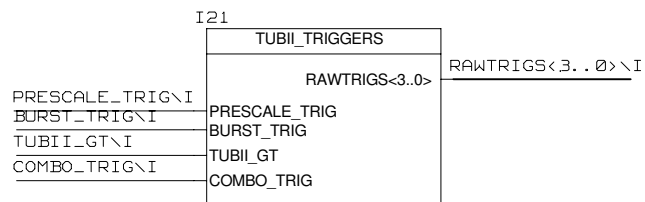
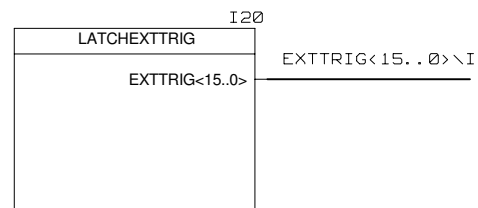
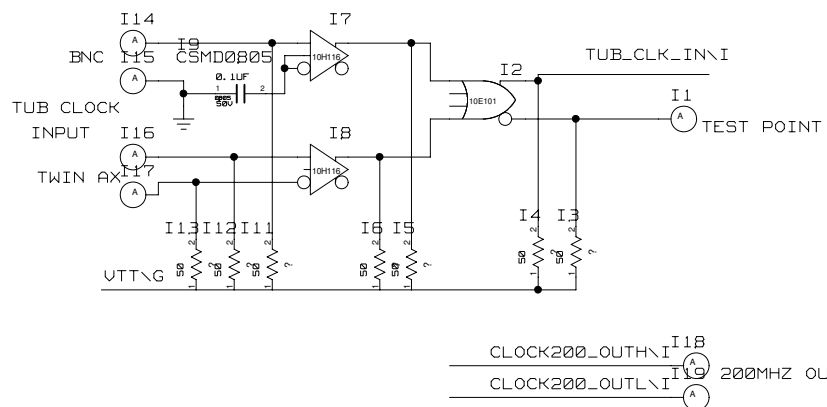
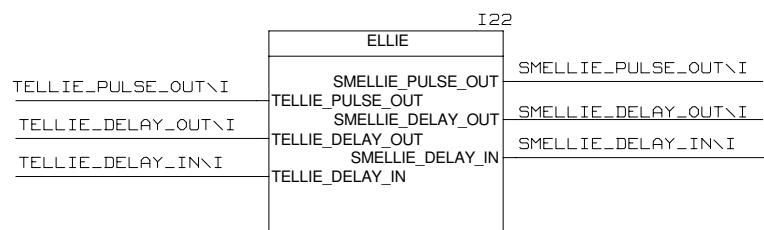
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DATE:
9/30/14

ENGINEER
ERIC M

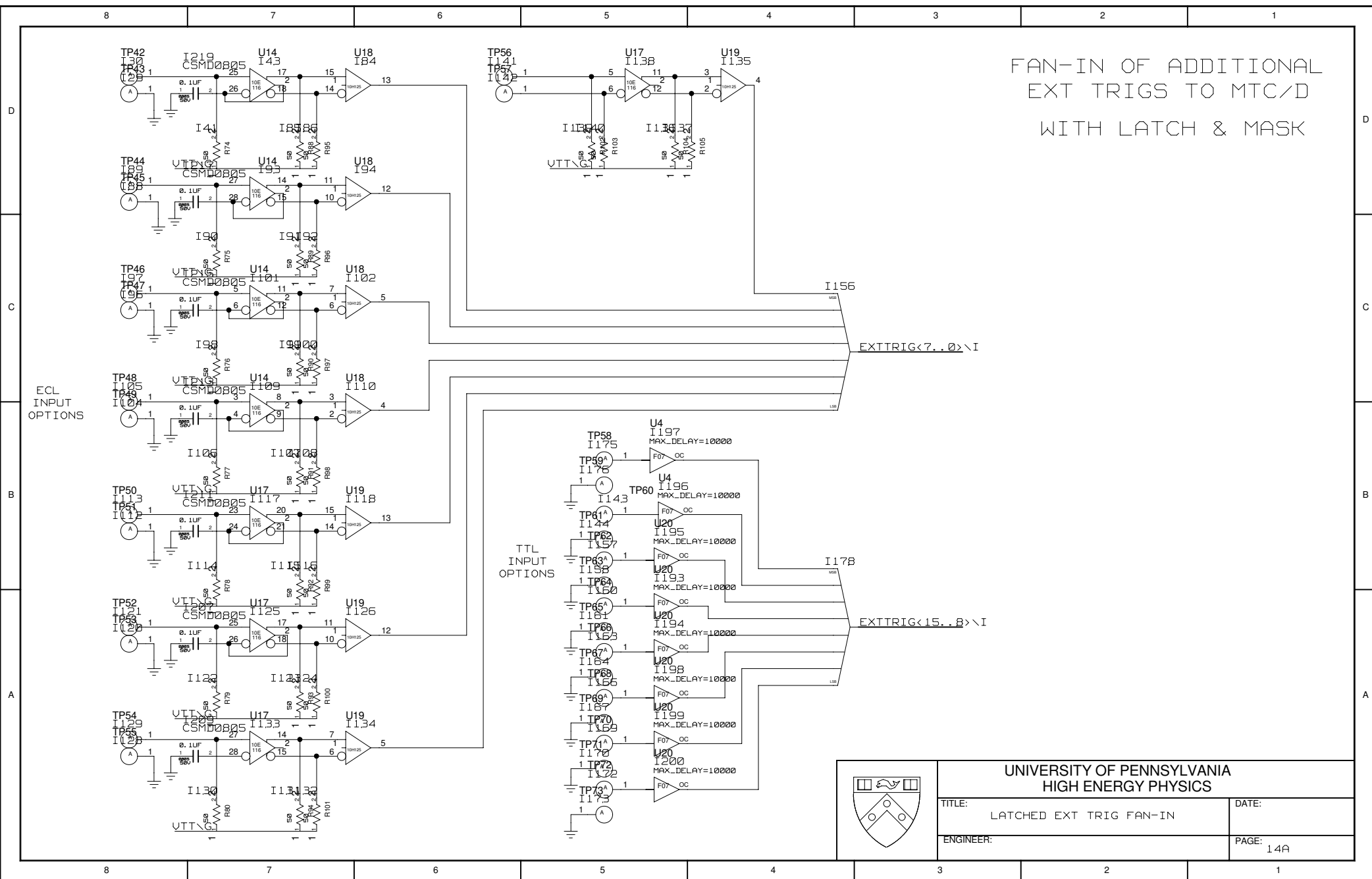
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13

PORTS2 PORTS IN TO & OUT OF TUBII

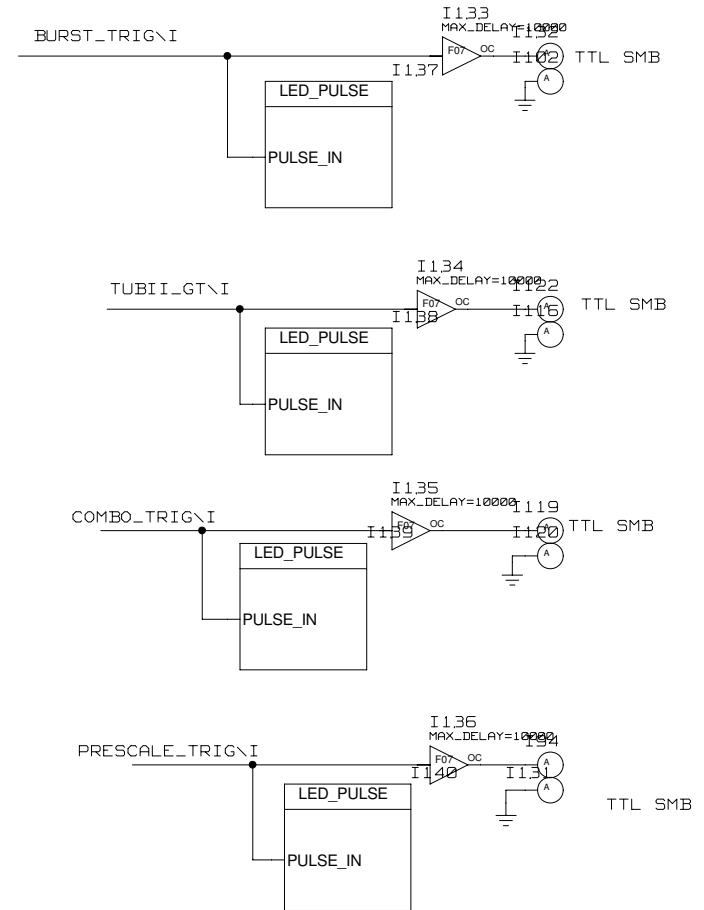
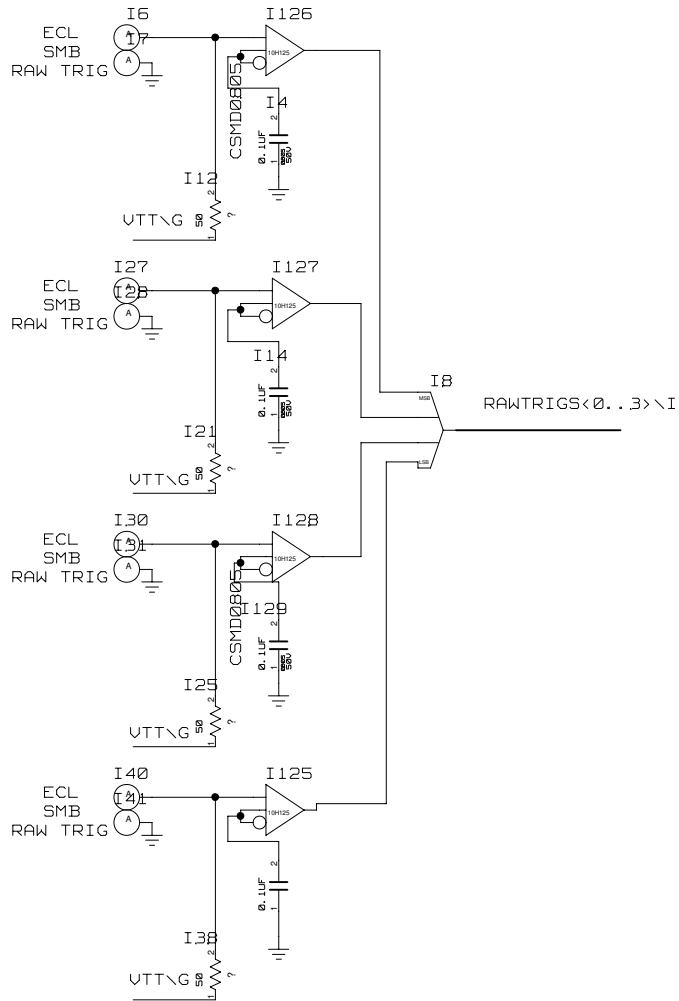


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TITLE:	DATE:
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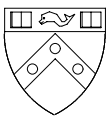
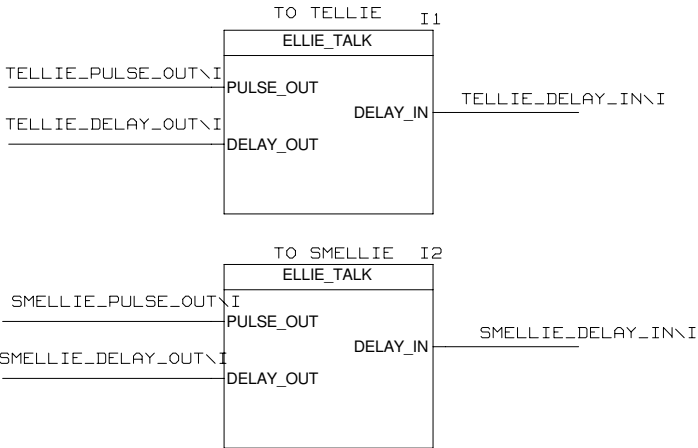


TUBII TRIGGERS INPUTS AND OUTPUTS TO/FROM MICRO ZED



ELLIE

PORTS FOR COMMUNICATING WITH TELLIE/SMELLIE

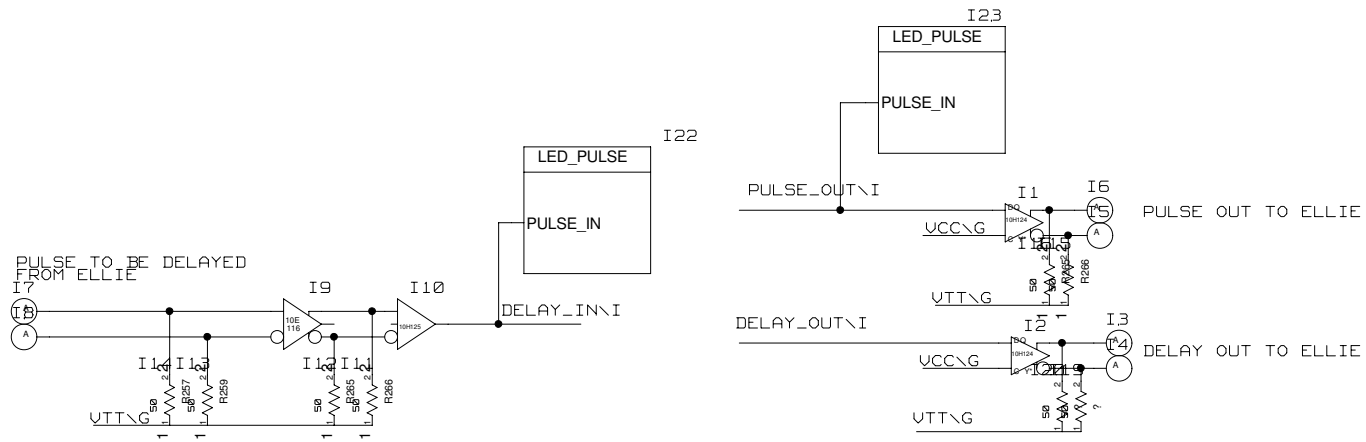


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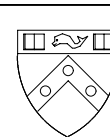
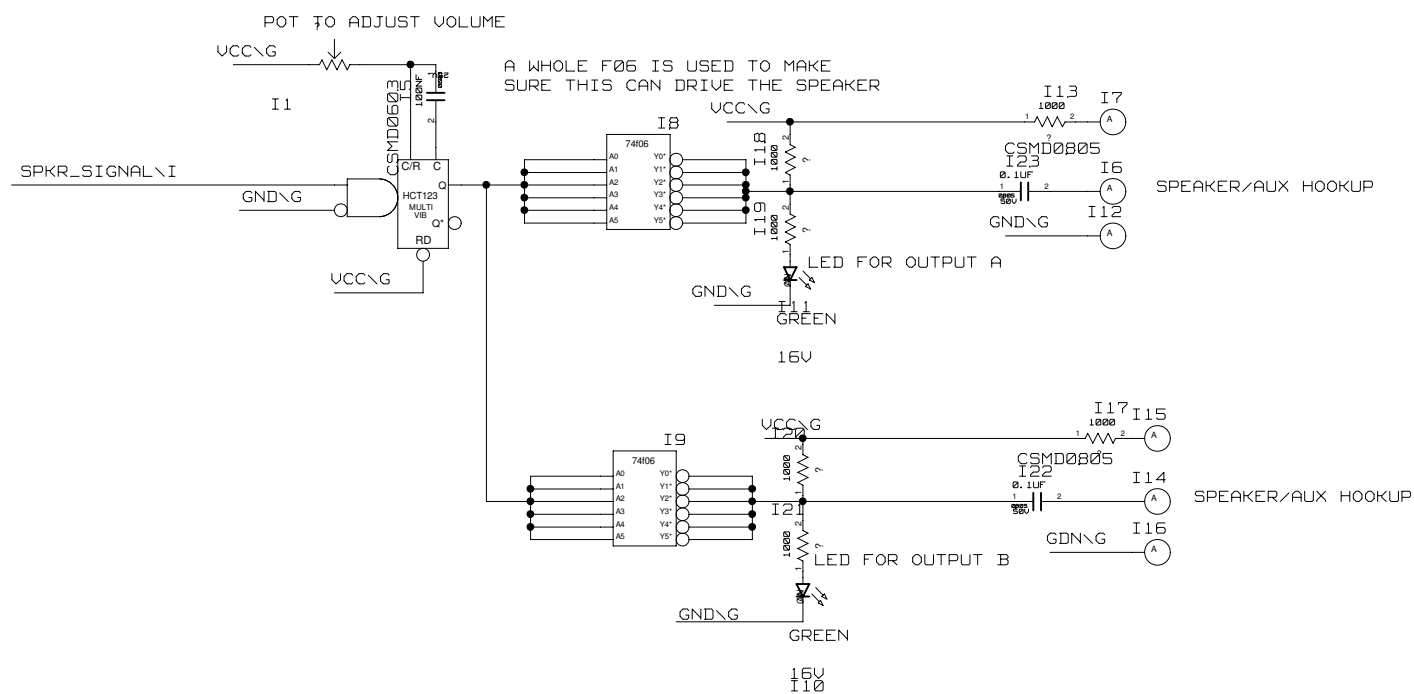
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ENGINEER: ERIC M	PAGE: 14C

ELLIE TALK

COMMUNICATIONS TO/FROM ELLIE



TUBII SPEAKER



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