



VTX Status Report

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DC Meeting

November 7, 2012

Assembly Schedule (actual)

- Oct 4: B0 West assembled and ready for testing
- Oct 10: B1 West assembly started
- Oct 12: B2/B3 West mated
- Oct 23: B1 West and B0/B1 East testing complete
- Oct 24: Mate B0/B1 West
- Oct 26: Pixel (B0/B1) and Strips (B2/B3) mated
- Oct 26: Install B1 West BigWheels and test
- Oct 29: Sandy visited Long Island
- Oct 31: Install B0 West BigWheels and test
- Nov 1: Install FVTX cages and test
- Nov 5: VTX/FVTX ready for survey

Next steps

- After survey strip group requests 1 day for testing of east side
- Move to 1008
- Install and Survey
- Cable up detectors
- Verify cooling/interlocks and power
- Pre-Run Testing

Pixel Status

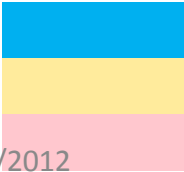
- East Detector:
 - No work done other than testing
 - Still have 3 missing ladders in B1
- West Detector:
 - 8 ladders replaced
 - 5 removed during 2011 shutdown
 - 3 removed during 2012 shutdown
 - All 8 re-bonded and encapsulated
 - New encapsulant used to better match CTE with ladder

Latest Active Area Map for WEST Barrel

Unit is percent

WEST (Run372524 + Qaresult at RIKEN)

WEST	Ladder\Chip	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	Average	Original
Barrel 0	4	94	95	95	95	95	96	95	78	95	96	96	96	91	95	95	83	93	
	3	91	95	96	92	95	95	95	87	92	95	95	94	92	95	95	93	94	
	2	86	90	91	88	86	90	90	88	88	93	88	88	92	91	88	83	89	Repaired Spare
	1	81	89	82	85	86	88	90	83	90	88	84	85	87	84	73	71	84	
	0	95	95	95	95	95	95	96	90	91	96	96	88	83	95	96	96	94	
Barrel 1	9	56	89	87	71	64	88	95	69	49	62	75	94	87	90	87	80	78	B1-L16 B1-L0 B1-L18 B1-L19 B1-L1 B0-L1 B0-L2 B1-L5 B1-L9 B1-L2
	8	39	85	95	95	87	91	93	65	45	74	94	83	67	77	94	91	80	
	7	68	92	95	86	93	97	96	86	60	99	98	97	89	93	93	91	90	
	6	85	91	90	86	95	97	98	95	81	97	96	89	79	83	93	77	90	
	5	94	94	94	94	95	95	95	95	49	80	88	89	93	95	95	95	90	
	4	88	92	92	91	91	94	96	87	79	82	78	88	88	76	76	57	85	
	3	88	93	90	90	94	96	95	73	68	81	64	70	89	89	90	80	84	
	2	27	66	86	66	76	87	90	44	93	95	96	90	86	87	89	64	78	
	1	0	0	24	79	88	93	93	80	93	95	95	94	94	95	95	96	76	
	0	0	95	93	95	91	93	94	76	50	0	96	95	96	94	95	92	78	



Repaired ladder. The ratio of live area were calculated by using QA test results at RIKEN.

The half of chip were completely dead due to broken power wires.

Completely dead chip.

Other low ratio are due to the delamination of bump bond.

Active Area Map for WEST Barrel at Run-12

WEST																		
WEST	Ladder\Chip	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	Average
Barrel 0	4	94	95	95	95	95	96	95	78	95	96	96	96	91	95	95	83	93
	3	91	95	96	92	95	95	95	87	92	95	95	94	92	95	95	93	94
	2	95	0	95	0	96	96	0	82	76	88	0	82	0	95	96	96	62
	1	94	95	95	0	95	96	96	91	49	0	88	93	96	93	92	0	73
	0	95	95	95	95	95	95	96	90	91	96	96	88	83	95	96	96	94
Barrel 1	9	0	0	24	79	88	93	93	80	93	95	95	94	94	95	95	96	76
	8	88	93	95	93	93	96	96	84	59	94	48	0	76	82	93	69	79
	7	81	84	92	81	79	89	90	62	95	96	0	0	0	0	0	0	53
	6	0	0	93	92	92	94	94	49	46	94	0	0	0	0	0	0	41
	5	15	70	92	68	78	94	93	0	95	96	95	95	0	0	0	0	56
	4	92	95	95	96	95	94	93	93	80	95	95	89	0	0	0	0	70
	3	0	0	0	87	87	46	95	95	0	95	94	93	0	0	0	0	43
	2	0	95	93	95	91	93	94	76	50	0	96	95	96	94	95	92	78
	1	94	94	94	94	95	95	95	95	49	80	88	89	93	95	95	95	90
	0	39	85	95	95	87	91	93	65	45	74	94	83	67	77	94	91	80

Active Area Map for EAST Barrel at Run-12

EAST (Run372524 May 18th 2012)

EAST	Ladder\Chip	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	Average
Barrel 0	5	95	95	95	95	95	95	95	95	50	96	95	50	0	0	0	0	66
	6	93	95	95	95	95	95	95	95	90	94	94	94	0	0	0	0	71
	7	95	95	95	95	95	95	95	92	94	95	95	92	0	0	0	0	71
	8	94	95	95	95	94	96	96	96	9	56	93	62	0	0	0	0	61
	9	95	0	95	81	78	96	96	73	87	93	95	78	78	93	73	10	76
Barrel1	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11	0	0	0	0	60	80	95	84	34	95	94	48	79	94	86	30	55
	12	58	80	89	79	85	93	94	90	0	94	95	0	95	48	93	95	74
	13	0	0	93	93	95	93	95	93	91	95	95	95	95	95	96	94	82
	14	53	91	89	93	92	94	94	65	50	88	95	95	95	94	94	93	86
	15	95	96	95	92	92	96	96	77	76	96	96	46	64	39	0	0	72
	16	92	93	95	93	94	94	95	96	95	94	96	95	95	91	95	95	94
	17	0	95	96	0	0	47	96	0	96	96	96	96	95	95	95	95	69
	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

StriPixel Status

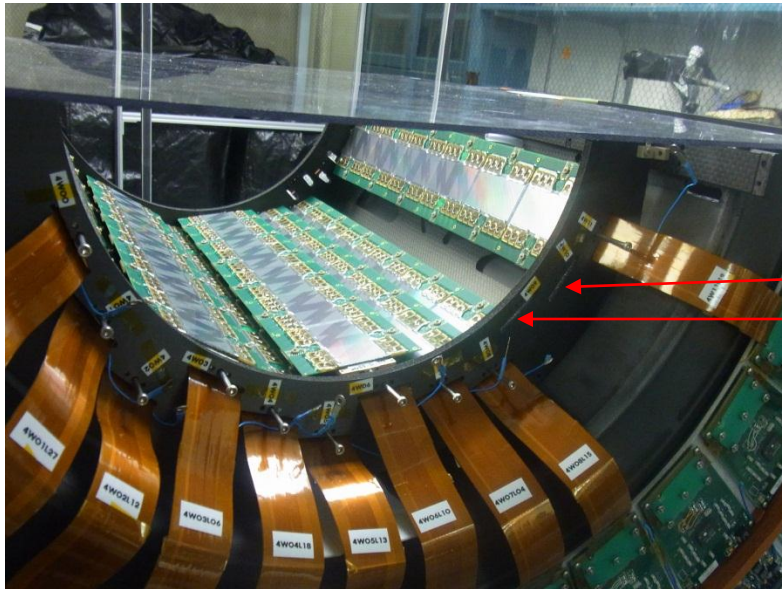
Maintenance Status of VTX-Stripixel Summer 2012

Rachid Nouicer, BNL

Conclusion:

- The maintenance of VTX-stripixel detector is done and achieved very successfully

During maintenance: VTX-Stripixel west side



- B3L09 has to be removed in order to fix bad ladder B3L10.

B3L10

B3L09

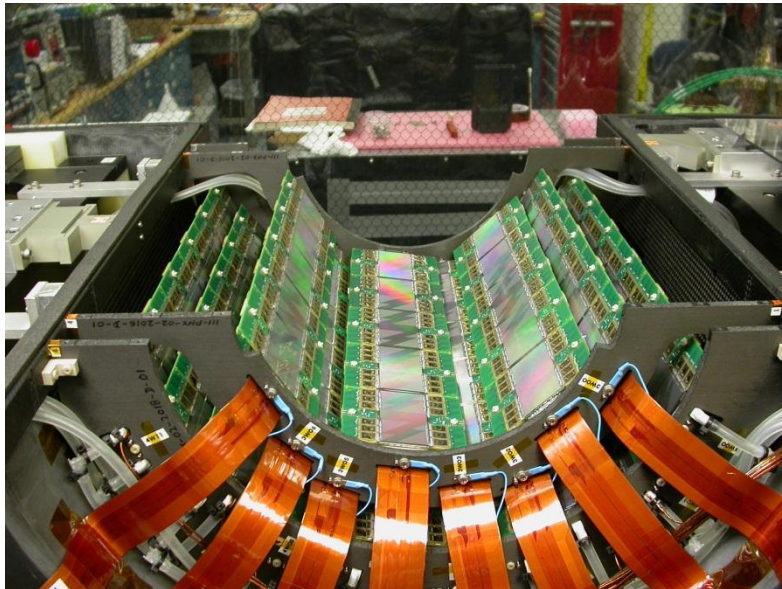
- The good news: B3L09 has also two bad RCCs. We took the opportunity to replace the two bad RCCs, now B3L09 is working 100%.

Maintenance Status of VTX-Stripixel Summer 2012

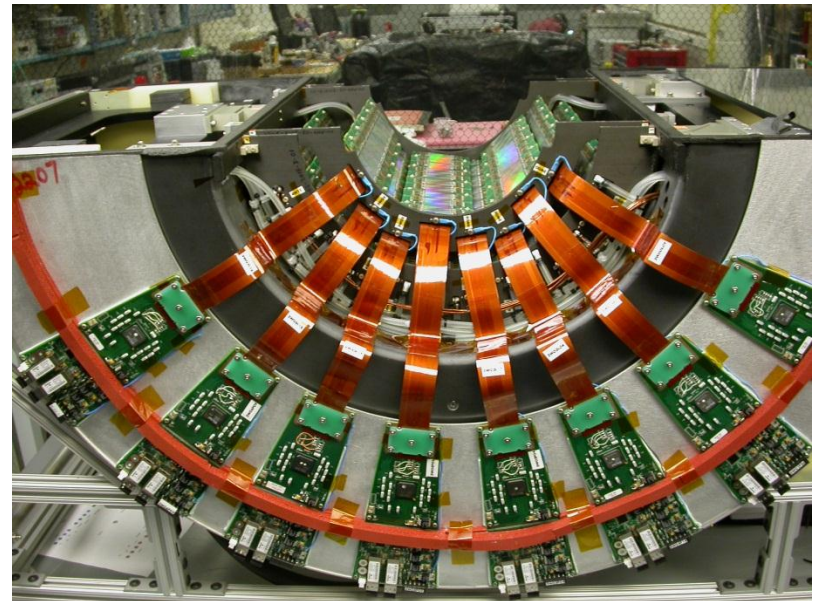
Rachid Nouicer, BNL

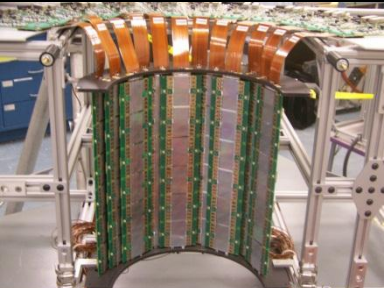
- One LDTBs board was replaced. B3L09, the new B3L10 and new B2L04 fixed and mounted back to the west barrels. We do testing in every stage to ensure success. See details in the next slides.

Maintenance: Done

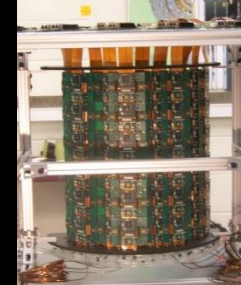


**Half Barrels 3 and 4 into each other with LDTBs
West VTX-Stripixel**





Details:



- **East VTX-stripixel** detector was tested and broken LDTB-B3L16 was not replaced. It will be fixed in the future as we agreed.
- **West VTX-stripixel** maintenance is done and achieved very successfully

- 1) **B2L02:** LDTB board problem (analog prb.). Its LDTB board was replaced (wrk. 100%)
- 2) **B3L10:** was removed, tested and the cause of the problem was identified
→ B3L10 was replaced by a spare ladder and put back to barrel #4 (wrk. 84%)
- 3) **B3L09:** was removed, tested, two RCCs replaced and put back to the barrel #4 (wrk. 100%)
- 4) **B2L04 (barrel 3):** removed: it has serious issues in ADC data (configuration and channel data are excellent): → replaced by new spare ladder (work. 100%)

Conclusion: the maintenance of VTX-stripixel detector is done and achieved very successfully

→ West half barrels put back together and it will be tested one more time before leaving the lab to the IR.

How many channels are working properly in West VTX-stripixel now?
95% (6/112 RCCs)

StriPixel Electronics

- ORNL Team (Miljko B., Matt W.) visited BNL week of Oct 15.
- Systematically tested west barrels.
- Some temperature dependence observed, but source not understood.
- Single chip/hybrid can impact entire ladder.
- Some problems are intermittent so periodic re-assessment is required.
- Timing issues looked at, but no global problems identified.

Conclusions

- Work on west ½ was successful- ~90% active
- VTX is ready for survey
- VTX Strips need one day for final testing before relocation to 1008
- Despite Sandy's best efforts the schedule was expedited by ~1 week
- Still lots of work to be done before run starts but the VTX group is positioned to get it done.

Thanks To

- BNL Tech Staff:
 - Mike L, Jimmy L, Sal P, Richie R, Bill L., ...
- Pixel Group:
 - Maki K, Aki E., Hidemitsu A., Chuck P.
- StriPixel Group:
 - Paul S., Miljko B., Matt W., Paul K., John K.
- Everyone I did not mention, but contributed.