

May 14, 2012

Ionizing Radiation Dosimeter Review; Arecibo; April 2012
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Various locations near the klystron RF tubes in the Gregorian dome on the platform and in the 430 MHz transmitter room are monitored with monthly dosimeter badges to measure levels of ionizing radiation.

The Landauer radiation dosimeter badges were put in place on 1 April 2012 by Wilson Arias. The nominal monthly period was 5 April thru 4 May 2012. The Landauer dosimeter report for this period is attached.

All readings were minimal or below 3 mrem except for badges 8, 9 and 10 which were located closest to the 430 MHz klystron tubes in the RF transmitter room. The monthly radiation readings were 95, 11 and 135 mrem respectively.

These areas are not occupied when the 430 MHz RF transmitters are on. A review of the Observatory Telescope Schedule shows that the 430 MHz transmitter was scheduled to be operating during 5 of the days during this period.

A radiation dose of 135 mrem is not dangerous and is below the 5,000 mrem annual limit allowed for occupational workers. (Note again that this area is not occupied and there is no reason to believe that any person received a radiation dose.) However, these results indicate that there is a detectable level of ionizing radiation produced in the immediate vicinity of the klystron cabinet when they are powered up.

Recommendations:

1. Wilson Arias or Angel Vazquez should use the Victoreen ion chamber radiation meter to check the areas immediately outside the transmitter room when the 430 MHz transmitters are operating. I do not expect any detectable readings based on the dosimeter reports. However, this will serve to confirm the levels of radiation in occupiable areas.
2. It should be re-emphasized to Arecibo staff and visiting scientists that the 430 MHz transmitter room should not be occupied when the klystrons are powered.
3. The Landauer dosimeter program should remain in effect for at least 3-4 more months to verify the ionizing radiation levels from the klystron tubes.



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RADIATION DOSIMETRY REPORT

ACCOUNT NO.	SERIES CODE	ANALYTICAL WORK ORDER	REPORT DATE	DOBIMETER RECEIVED	REPORT TIME IN WORK DAYS	PAGE NO.
208716		1212550013	05/10/12	05/04/12	4	1 OF 1

PARTICIPANT NUMBER	NAME			DOSIMETER	USE	RADIATION QUALITY	DOSE EQUIVALENT (MREM) FOR PERIODS SHOWN BELOW			QUARTERLY ACCUMULATED DOSE EQUIVALENT (MREM)			YEAR TO DATE DOSE EQUIVALENT (MREM)			LIFETIME DOSE EQUIVALENT (MREM)			RECORDS FOR YEAR	INCEPTION DATE (MM/YY)	SERIAL NUMBER	SEQUENCE NUMBER	
	ID NUMBER	BIRTH DATE	SEX				DEEP DDE	EYE LDE	SHALLOW SDE	DEEP DDE	EYE LDE	SHALLOW SDE	DEEP DDE	EYE LDE	SHALLOW SDE	DEEP DDE	EYE LDE	SHALLOW SDE					
FOR MONITORING PERIOD:							04/05/12	-	05/04/12	QTR 2			2012										
00000	CONTROL			Pa	CNTRL		M	M	M				M	M	M	M	M	M	M	4	01/12	1305270	9
00001	ARECIBO			Pa	AREA		M	M	M	M	M	M	M	M	M	M	M	M	M	4	01/12	1305271	10
00002	ARECIBO			Pa	AREA		M	M	M	M	M	M	M	M	M	M	M	M	M	4	01/12	1305272	11
00003	ARECIBO			Pa	AREA		M	M	M	M	M	M	M	M	M	M	M	M	M	4	01/12	1305273	12
00004	ARECIBO			Pa	AREA		M	M	M	M	M	M	M	M	M	M	M	M	M	4	01/12	1305274	13
00005	ARECIBO			Pa	AREA		M	M	M	M	M	M	M	M	M	M	M	M	M	4	01/12	1305275	14
00006	ARECIBO			Pa	AREA	P	2	3	3	2	3	3	2	3	3	2	3	3	3	4	01/12	1305276	15
00007	ARECIBO			Pa	AREA		M	M	M	M	M	M	1	1	1	1	1	1	1	4	01/12	1305277	16
00008	ARECIBO			Pa	AREA	PH	95	95	94	95	95	94	95	95	94	95	95	94	4	01/12	1305278	17	
00009	ARECIBO			Pa	AREA	P	11	11	11	11	11	11	11	11	11	11	11	11	4	01/12	1305279	18	
00010	ARECIBO			Pa	AREA	P	135	135	135	135	135	135	135	135	135	135	135	135	4	01/12	1305280	19	
00011	ARECIBO			Pa	AREA		M	M	M	M	M	M	M	M	M	M	M	M	M	4	01/12	1305281	20
00012	ARECIBO			Pa	AREA		M	M	M	M	M	M	M	M	M	M	M	M	M	4	01/12	1305282	21
00013	ARECIBO			Pa	AREA		M	M	M	M	M	M	M	M	M	M	M	M	M	4	01/12	1305283	22
00014	ARECIBO			Pa	AREA		M	M	M	M	M	M	2	2	1	2	2	1	4	01/12	1305284	23	
00015	ARECIBO			Pa	AREA	P	3	3	3	3	3	3	3	3	3	3	3	3	4	01/12	1305285	24	
00016	ARECIBO			Pa	AREA		M	M	M	M	M	M	M	M	M	M	M	M	M	4	01/12	1305286	25
00017	ARECIBO			Pa	AREA		M	M	M	M	M	M	1	1	1	1	1	1	4	01/12	1305287	26	
00018	ARECIBO			Pa	AREA		M	M	M	M	M	M	M	M	M	M	M	M	M	4	01/12	1305288	27

M: MINIMAL REPORTING SERVICE OF 1 MREM

QUALITY CONTROL RELEASE: SXB

1 - PR 10010 - RPT1305- N1

- 12513

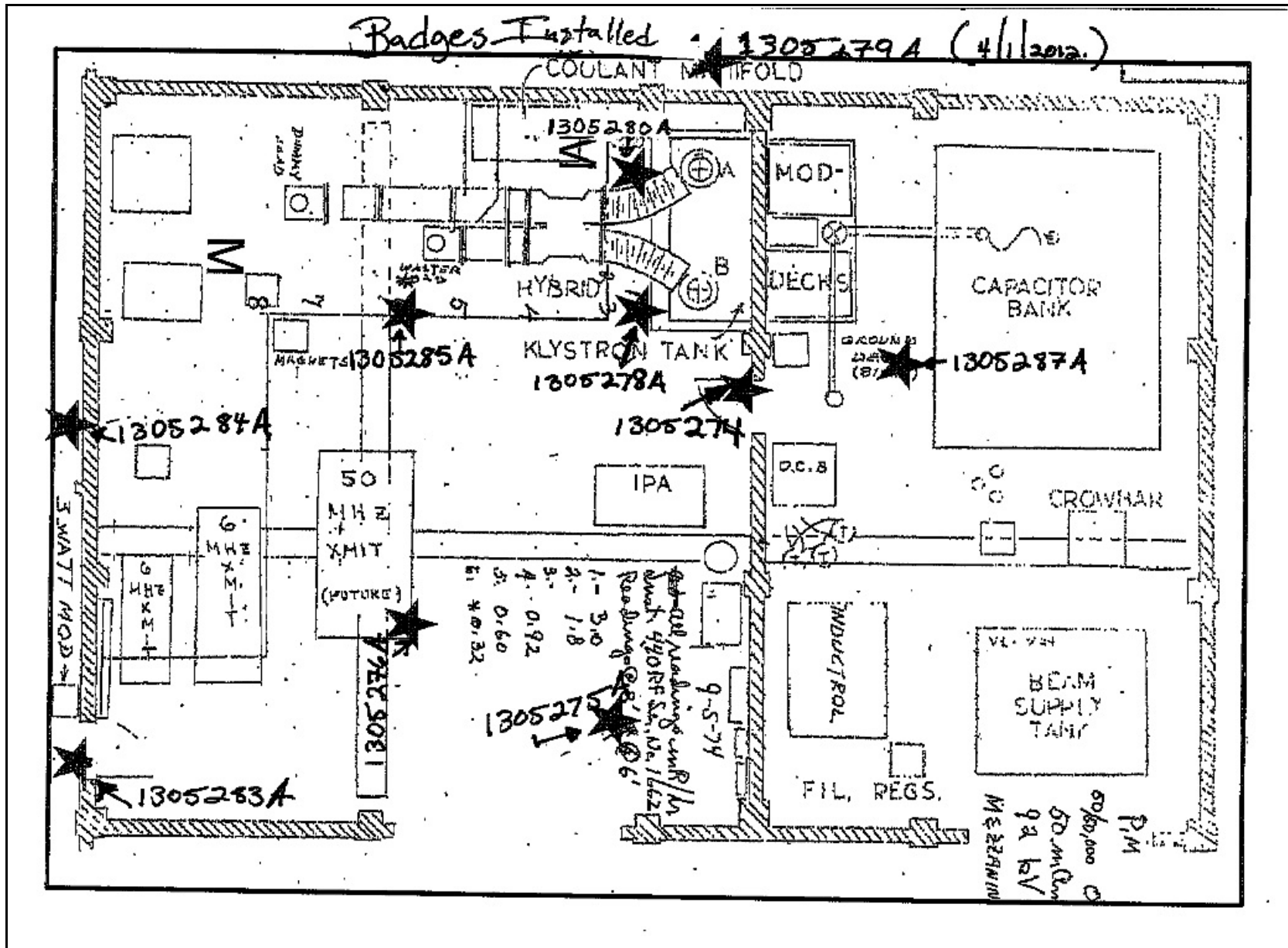




Figure 4 The 430 MHz Klystron cabinet with yellow caution radiation signs.