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**EQUAL Physicist**

*Amélie Roué*

**EQUAL Technicians**

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*Aline Méchet*

Dr. Med. Beat AMSLER  
Radio-oncologie Amsler  
Aerztehaus Allschwil  
Brenner Strasse 12  
4123 Allschwil  
Switzerland

AR-IHF-AB/am  
03ch13[P]

Villejuif, 25 September 2003

Dear Dr. Amsler,

Please find, enclosed, the results concerning the dosimetric checks based on postal TLD service for on axis dose in reference and non-reference conditions for **high energy photon beams** performed at Aerztehaus Allschwil by Ingeborg Matscull, medical physicist, in the frame of the ESTRO QUALity Assurance Network (EQUAL) [ESQUIRE project (Task 1)]:

**Photon beams**

- 6 MV X-ray beam of the Clinac 23EX,
- 18 MV X-ray beam of the Clinac 23EX.

These results are divided into two parts, each of them including the user stated values ( $D_s$ ), the IGR (measuring centre) measured values ( $D_m$ ), and the ratio of these two data. The first part presents the results obtained for points located on the beam axis. The second part deals with additional dosimetric data checks, and provides ratios calculated from the measurements.

**Results of TLD measurements for on axis points**

- For the **6 MV X-ray beam of the Clinac 23EX**, the results are within the optimal level ( $|\delta| \leq 3\%$ ).

- For the 18 MV X-ray beam of the Clinac 23EX, the results are within the optimal level ( $|\delta| \leq 3\%$ ).

For any question, please do not hesitate to contact us.

Thank you for your participation in the ESTRO-EQUAL Programme.

Sincerely yours,



Dr. A. ROUÉ



Dr. I.H. FERREIRA



Dr. A. BRIDIER

Enclosures : 4 pages of results

Copy to : Prof. H. SVENSSON Prof. A. DUTREIX

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The rates of deviation ( $|\delta| = |(D_{\text{stated}} - D_{\text{measured}}) \times 100 / D_{\text{stated}}|$ ) are : within the optimal level when  $|\delta|$  is  $\leq 3\%$  ; outside the optimal and within the tolerance level when  $|\delta|$  is  $> 3\%$  and  $\leq 5\%$  ; outside the tolerance level when  $|\delta|$  is  $> 5\%$  and  $\leq 10\%$  and in the emergency level when  $|\delta|$  is  $> 10\%$ .



## ESTRO POSTAL DOSE CHECKS (TLD) HIGH ENERGY PHOTON BEAMS

**Name of Institution :** Aerztehaus Allschwil

**Address :** Brenner Strasse 12

4123 Allschwil

**Country :** Switzerland

**Irradiation performed by:** Ingeborg Matschull

**Position :** Medical Physicist

**Date of irradiation :** 02/08/2003

**Date of dose evaluation by the measuring centre :** 02/09/2003

### RESULTS OF TLD MEASUREMENTS : FOR ON AXIS POINTS.

**Radiation Unit :** Clinac 23EX

**Beam :** 6 MV

**TLD batch n° :** DTL 937/ Nbr8

**TLD box n° :** 03ch13rx61

Points	Depth in water (cm)	SSD irradiation distance (cm)	Field size (cm x cm)	User stated value [Gy]	<sup>(1)</sup> Measured value [Gy] *	<sup>(2)</sup> Relative Deviation %	<sup>(1)</sup> Measured value
							User stated value
1	10	100	10 x 10	2.000	2.000	0.0	1.000
2	10	100	10 x 10	2.000	2.003	-0.2	1.002
3a	10	100	10 x 10	2.000	1.994	0.3	0.997
3b	20			1.150	1.137	1.1	0.989
4a	10	100	20 x 20	2.000	1.997	0.1	0.999
4b	20			1.220	1.211	0.8	0.992
5	10	100	7 x 7	2.000	1.964	1.9	0.982
6	10	100	7 x 20	2.000	1.996	0.2	0.998
7	10	100	10 x 10 (w)	2.000	1.988	0.6	0.994
8	10	100	7 x 20 (w)	2.000	2.000	0.0	1.000

\*The uncertainty in the TLD measurement of the dose is about 1.7% (1 standard deviation) for Co-60 and 2.3% (1 standard deviation) for X-rays.

<sup>(1)</sup> The Reference Dosimetry and Dose Intercomparisons Quality Assurance are assured by IGR Physics Department.

<sup>(2)</sup> Relative Deviation (%) = 100 (user stated value - measured value) / measured value.

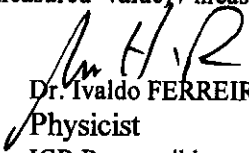


Dr. Amélie ROUE

Physicist

ESTRO-EQUAL

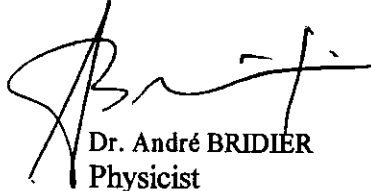
NJ Date 02.09.03



Dr.IVALDO FERREIRA

Physicist

IGR Responsible



Dr. André BRIDIER

Physicist

IGR Responsible

**IMPORTANT NOTICE :** This information is provided only as an independent verification of beam output and not as a machine calibration nor as an alternative to frequent calibration by a qualified physicist. **IT DOES NOT CONSTITUTE A STATEMENT WITH REGARD TO THE QUALITY OF RADIOTHERAPY TREATMENTS.**



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Irradiation performed by: Ingeborg Matschull

Position : Medical Physicist

Date of irradiation : 02/08/2003

Date of dose evaluation by the measuring centre : 02/09/2003

### RESULTS OF TLD MEASUREMENTS : CHECKED DOSIMETRIC DATA

Radiation Unit : Clinac 23EX

Beam : 6 MV

TLD batch n° : DTL 937/ Nbr8

TLD box n° : 03ch13rx61

Checked Dosimetric Data	Depth in water (cm)	SSD irradiation distance (cm)	Field size (cm x cm)	User stated value	<sup>(1)</sup> Measured value [Gy]*	<sup>(2)</sup> Relative Deviation %	<sup>(1)</sup> Measured value
							User stated value
<b>Reference beam output :</b>							
	1	100	10 x 10	2.000	2.000	0.0	1.000
	2	100	10 x 10	2.000	2.003	-0.2	1.002
< mean value >				2.000	2.001	-0.1	1.001
<b>Percentage Depth Dose : D20/D10</b>	3b/3a=	20 and 10	10 x 10	0.575	0.570	0.8	0.992
	4b/4a=	20 and 10	20 x 20	0.610	0.606	0.7	0.994
<b>Beam Output Variation :</b>	4a/3a=	10	20 x 20 to 10 x 10	1.000	1.002	-0.2	1.002
Open Beams	6/5=	10	7 x 20 to 7 x 7	1.000	1.017	-1.6	1.017
	3a/5=	10	10 x 10 to 7 x 7	1.000	1.015	-1.5	1.015
	6/<1,2>=	10	7 x 20 to 10 x 10	1.000	0.997	0.3	0.997
Wedged Beams	8/7 =	10	7 x 20 (w) to 10 x 10 (w)	1.000	1.006	-0.6	1.006
<b>Wedge transmission factor check</b>	7/3a=	10	10 x 10 (w)	1.000	0.997	0.3	0.997
	8/6=	10	7 x 20 (w)	1.000	1.002	-0.2	1.002

<sup>(1)</sup> The Reference Dosimetry and Dose Intercomparisons Quality Assurance are assured by IGR Physics Department.

<sup>(2)</sup> Relative Deviation (%) = 100 (user stated value - measured value) / measured value.

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Physicist

ESTRO-EQUAL

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**Position :** Medical Physicist

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**Date of dose evaluation by the measuring centre :** 02/09/2003

### RESULTS OF TLD MEASUREMENTS : FOR ON AXIS POINTS.

**Radiation Unit :** Clinac 23EX

**Beam :** 18 MV

**TLD batch n° :** DTL 937/ Nbr8

**TLD box n° :** 03ch13rx181

Points	Depth in water (cm)	SSD irradiation distance (cm)	Field size (cm x cm)	User stated value [Gy]	<sup>(1)</sup> Measured value [Gy] *	<sup>(2)</sup> Relative Deviation %	<sup>(1)</sup> Measured value
							User stated value
1	10	100	10 x 10	2.000	2.011	-0.5	1.005
2	10	100	10 x 10	2.000	2.022	-1.1	1.011
3a	10	100	10 x 10	2.000	2.007	-0.3	1.003
3b	20			1.530	1.322	0.6	0.994
4a	10	100	20 x 20	2.000	1.983	0.9	0.991
4b	20			1.370	1.359	0.8	0.992
5	10	100	7 x 7	2.000	2.015	-0.8	1.008
6	10	100	7 x 20	2.000	2.046	-2.2	1.023
7	10	100	10 x 10 (w)	2.000	1.983	0.9	0.991
8	10	100	7 x 20 (w)	2.000	2.014	-0.7	1.007

\*The uncertainty in the TLD measurement of the dose is about 1.7% (1 standard deviation) for Co-60 and 2.3% (1 standard deviation) for X-rays.

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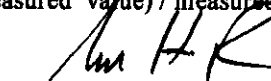
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**Beam :** 18 MV

**TLD batch n° :** DTL 937/ Nbr8

**TLD box n° :** 03ch13rx181

Checked Dosimetric Data	Depth in water (cm)	SSD irradiation distance (cm)	Field size (cm x cm)	User stated value	<sup>(1)</sup> Measured value [Gy]*	<sup>(2)</sup> Relative Deviation %	<sup>(1)</sup> Measured value
							User stated value
<b>Reference beam output :</b>							
	1	100	10 x 10	2.000	2.011	-0.5	1.005
	2	100	10 x 10	2.000	2.022	-1.1	1.011
< mean value >				2.000	2.016	-0.8	1.008
<b>Percentage Depth Dose : D20/D10</b>	3b/3a =	20 and 10	10 x 10	0.665	0.659	0.9	0.991
	4b/4a =	20 and 10	20 x 20	0.685	0.686	-0.1	1.001
<b>Beam Output Variation :</b>	4a/3a =	10	20 x 20 to 10 x 10	1.000	0.988	1.2	0.988
<b>Open Beams</b>	6/5 =	10	7 x 20 to 7 x 7	1.000	1.015	-1.5	1.015
	3a/5 =	10	10 x 10 to 7 x 7	1.000	0.996	0.4	0.996
	6/<1,2> =	10	7 x 20 to 10 x 10	1.000	1.015	-1.4	1.015
<b>Wedged Beams</b>	8/7 =	10	7 x 20 (w) to 10 x 10 (w)	1.000	1.016	-1.6	1.016
<b>Wedge transmission factor check</b>	7/3a =	10	10 x 10 (w)	1.000	0.988	1.2	0.988
	8/6 =	10	7 x 20 (w)	1.000	0.985	1.6	0.985

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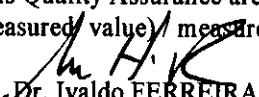
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