

UNITED STATES PATENT AND TRADEMARK OFFICE

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**BEFORE THE PATENT TRIAL AND APPEAL BOARD**

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GENERAL ELECTRIC CO.  
Petitioner,

v.

UNIVERSITY OF VIRGINIA PATENT FOUNDATION,  
Patent Owner

Patent No. RE45,725

Issued: October 6, 2015

Filed: October 14, 2013

Inventors: John Mugler III, *et al.*

Titled: Method and apparatus for spin-echo-train  
MR imaging using prescribed signal evolutions

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*Inter Partes* Review No. IPR\_\_\_\_\_

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**PETITION FOR *INTER PARTES* REVIEW OF  
U.S. PATENT NO. RE45,725**

**UNDER 35 U.S.C. § 312 AND 37 C.F.R. § 42.104**

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**(i) “Substance of interest in said object, with corresponding T1 and T2 relaxation times and a spin density of interest” means “substance in the object having inherent T1 and T2 relaxation times and proton spin density” in this review** ..... 24

**(ii) “effective echo time” means “the echo time at which the center of k space is sampled” in this review** ..... 25

**(iii) “echo time . . . value typical in T2-weighted clinical magnetic resonance imaging of the brain” means “an echo time in the range of 60 ms to 130 ms” in this review** .... 26

**(iv) “T2-weighted contrast . . . that is substantially the same” means “T2-weighted contrast that has substantially the same numerical indicator of contrast or that visually appears similar” in this review** ..... 27

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## EXHIBIT LIST

<i>Exhibit No.</i>	<i>Description</i>
<b>1001</b>	U.S. Patent RE45,725 to Mugler III et al. (“the ’725 Patent”)
<b>1002</b>	Mugler et al, “Three-Dimensional T2-Weighted Imaging of the Brain Using Very Long Spin-Echo Trains,” Proceedings of the International Society for Magnetic Resonance in Medicine, Eighth Meeting, April 2000 at 687 (“Mugler 2000”)
<b>1003</b>	Mugler et al, “Three-Dimensional Spin-Echo-Train Proton-Density-Weighted Imaging Using Shaped Signal Evolutions,” Proceedings of the International Society for Magnetic Resonance in Medicine, Seventh Meeting, May 1999 at 1631 (“Mugler 1999”)
<b>1004</b>	Alsop, “The Sensitivity of Low Flip Angle RARE Imaging,” Magnetic Resonance in Medicine, Vol. 37, pp. 176-184 (“Alsop”)
<b>1005</b>	Mugler, “Overview of MR Imaging Pulse Sequences,” Physics of MR Imaging, Vol. 7, No. 4, pp. 661-697 (Nov. 1999) (“Mugler Overview”)
<b>1006</b>	U.S. Patent No. 5,245,282 to Mugler III et al. (“Mugler ’282”)
<b>1007</b>	U.S. Patent RE44,644 to Mugler III et al. (“the ’644 Patent”)
<b>1008</b>	Patent Owner’s October 16, 2015 Motion for Leave to File Amended Complaint
<b>1009</b>	Declaration of Dr. Norbert Pelc
<b>1010</b>	Curriculum Vitae of Dr. Norbert Pelc
<b>1011</b>	Court’s October 19, 2015 Order Granting Patent Owner’s Motion for Leave to File First Amended Complaint

<b><i>Exhibit No.</i></b>	<b><i>Description</i></b>
<b>1012</b>	Patent Owner's October 19, 2015 First Amended Complaint against Petitioner alleging infringement of '725 patent in the GE Litigation
<b>1013</b>	U.S. Patent No. 7,164,268 to Mugler III et al. ("the '268 patent")
<b>1014</b>	U.S. Provisional Application No. 60/257,182 ("the '182 Application")
<b>1015</b>	Comparison of claim 47 of '725 Patent to claims 75, 82, and 85 of '644 Patent
<b>1016</b>	File history of the '644 patent, July 2, 2013 Notice of Allowance
<b>1017</b>	File history of the '725 patent, May 8, 2015 Comments on Statement of Reasons for Allowance
<b>1018</b>	Proceedings of the International Society for Magnetic Resonance in Medicine, Eighth Meeting, Denver, April 1–7, 2000
<b>1019</b>	Proceedings of the International Society for Magnetic Resonance in Medicine, Seventh Meeting, Philadelphia, May 22–28, 1999
<b>1020</b>	Mugler et al., "Shaping the Signal Response during the Approach to Steady State in Three-Dimensional Magnetization-Prepared Rapid Gradient-Echo Imaging Using Variable Flip Angles," <i>Magnetic Resonance in Medicine</i> , Vol. 28, pp. 165-185 ("Mugler 1992")
<b>1021</b>	Patent Owner's June 25, 2015 Infringement Contentions against Petitioner in the GE Litigation, Ex. A
<b>1022</b>	Patent Owner's June 25, 2015 Infringement Contentions against Petitioner in the GE Litigation, Ex. B
<b>1023</b>	Mugler, "Magnetic resonance imaging of the body trunk using a

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