

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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GENERAL ELECTRIC COMPANY  
Petitioner

v.

UNITED TECHNOLOGIES CORPORATION,  
Patent Owner

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Case IPR2016-01289  
Patent 7,060,360

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**PATENT OWNER UNITED TECHNOLOGIES CORPORATION'S  
PRELIMINARY RESPONSE**

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### Cases

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### Rules

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## EXHIBIT LIST

- UTC-2001 Declaration of Dr. David R. Clarke
- UTC-2002 M.G. Hocking *et al.*, METALLIC & CERAMIC COATINGS: PRODUCTION, HIGH TEMPERATURE PROPERTIES & APPLICATIONS (1989)
- UTC-2003 Alwyn Scott, *Japanese airline ANA to replace 100 Rolls engines on 787s*, Reuters (Aug. 31, 2016), available at <http://www.reuters.com/article/us-ana-rolls-royce-hldg-engines-idUSKCN1162OD>
- UTC-2004 Excerpt of MERRIAM WEBSTER'S COLLEGIATE DICTIONARY (10th ed. 2002)
- UTC-2005 Curriculum Vitae of Dr. David R. Clarke
- UTC-2006 J.W. Hutchinson and A.G. Evans, *On the delamination of thermal barrier coatings in a thermal gradient*, 149 Surface and Coatings Technology. 179-184 (2002).
- UTC-2007 D.R. Clarke and C.G. Levi, *Materials Design for the Next Generation Thermal Barrier Coatings*, 33 Annual Review of Materials Research. 383-417 (2003).
- UTC-2008 D. Zhu and R.A. Miller, *Sintering and creep behavior of plasma-sprayed zirconia- and hafnia-based thermal barrier coatings*, 108-109 Surface and Coatings Technology. 114-120 (1998).
- UTC-2009 J.W. Hutchinson and Z. Suo, *Mixed Mode Cracking in Layered Materials*, 29 Advances in Applied Mechanics. 63-191 (1991).
- UTC-2010 A. Bagchi and A.G. Evans, *The Mechanics and Physics of Thin Film Decohesion and its Measurement*, 3 Interface Science. 169-193 (1996).

- UTC-2011 D. Zhu and R.A. Miller, *Investigation of thermal fatigue behavior of thermal barrier coating systems*, 94-95 *Surface and Coatings Technology*. 94-101 (1997).
- UTC-2012 A.G. Evans, D.R. Mumm, J.W. Hutchinson, G.H. Meier, and F.S. Pettit, *Mechanisms controlling the durability of thermal barrier coatings*, 46 *Progress in Materials Science*. 505-553 (2001).

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