Abstract Submitted for the GEC09 Meeting of The American Physical Society

Unconfined cylindrical RF discharge at atmospheric pressure YVONNE SUTTON, The Open University, GEORGE NAIDIS, Russian Acad Sci, Joint Inst High Temp, Moscow, PETER JOHNSON, The Open University, JON MOORE, B & W Group Ltd, UK, DAVID SHARP, NICHOLAS BRAITHWAITE, The Open University — Electrical and optical data for a vertical arc discharge sustained at 325 kHz in atmospheric pressure, ambient air have been compared with a fluid model based on the dominant collision processes in nitrogen –oxygen mixtures. This particular non-equilibrium discharge, has been used as an acoustic source; the present analysis is of the unmodulated RF arc. For a 15 mm long, 20 mA discharge, observations and the model reveal that the gas temperature is about 3000 K, the axial field is ~100 kV m<sup>-1</sup> and the electron density is ~ 2 × 10<sup>17</sup> m<sup>-3</sup>; the column radius is ~1 mm in terms of optical emission, but the gas temperature width is about three times broader.

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Date submitted: 15 Jun 2009

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