brought about by the jet in the model will be exactly reproduced in the real machine. There is little doubt, however, that the underlying mechanism of a separated flow being turned through a blade row to produce an extensive vortex system will occur in any machine which has a step in the casing, and it is highly likely that the consequence will be a reduction of several percentage points in the efficiency of the stage immediately following the step. This experiment gives a guide to the magnitude of the effect, and an empirical line fitted to the efficiency penalty in this case is given approximately by:

Efficiency penalty (%)

$$=173\times\left[1-\frac{\text{diameter upstream of step}}{\text{diameter downstream of step}}\right]$$

with approximately 1–2 percentage points mitigation for a typical leakage jet.

Conclusions

1. The presence of a backward facing step in the casing upstream of a stage causes a significant reduction in the efficiency of that stage.
2. The reason for this reduction in efficiency is the substantial flow disturbance resulting from the interaction of the separated flow from the step and the blades of the stage.
3. The presence of a tip leakage jet improved the efficiency of the stepped casing configurations but the effect was small when account was taken of the extra flow area introduced by the jet.

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CALENDAR

5th International Symposium on Finite Element Methods in Flow Problems	23–26 January 1984 Austin, TX, USA	The University of Texas, Austin, TX 78712, USA
International Symposium on Gas–Solid Flows (ASME Spring Meeting)	11–17 February 1984 New Orleans, LA, USA	Professor J. J. Jurewicz, Chairman, Mechanical and Aerospace Engineering, W. Virginia University, Morgantown, WV 26506, USA
Symposium on Liquid–Solid Flows and Erosion Wear in Industrial Equipment (ASME Spring Meeting)	11–17 February 1984 New Orleans, LA, USA	Professor M. C. Roco, Chairman, Mechanical Engineering, University of Kentucky, Lexington, KY 40506-0046, USA
Fossil Fired Large Power Steam Generation (course)	February 1984 New Jersey, USA	The Center for Professional Advancement, PO Box H, East Brunswick, New Jersey 08816-0257, USA
Gas Turbine Technology (course)	12–15 March 1984 Copenhagen, Denmark	The Center for Professional Advancement, Palestrinastraat 1, 1071 LC Amsterdam, The Netherlands
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International Conference on Flow Measurement in The Water Industry	10–12 April 1984 East Kilbride, UK	P. Collier, Conference Organiser, National Engineering Laboratory, East Kilbride, Glasgow G75 0QU, UK
Computational Methods in Design of Turbine Machinery (Rotating)	10–12 April 1984 Birmingham, UK	The Institution of Mechanical Engineers, 1 Birdcage Walk, Westminster, London SW1H 9JJ, UK
Second Symposium on Thermotechnical Measurements	16–18 April 1984 Budapest, Hungary	MATE Secretariat, H-1372 Budapest, POB 451, Hungary

IEA Conference on Heat Pumps: Current Situation and Future Prospects	22–25 May 1984 Graz, Austria	Dipl Ing Hochegger, Energiesparhaus Graz, 8010 Graz Peterstrasse 45, Austria
29th International Gas Turbine Conference and Exhibit	3–7 June 1984 Amsterdam, The Netherlands	International Gas Turbine Center, 4250 Perimeter Park South, Suite 108, Atlanta, GA 30341, USA
World Conference on Thermal Analysis	4–5 June 1984 Amsterdam, The Netherlands	Alena Enterprises of Canada, PO Box 1797, Cornwell K6H 5V7, Ontario, Canada
5th IMACS International Symposium on Computer Methods for Partial Differential Equations	19–21 June 1984 Bethlehem, PA, USA	Professor W. E. Schiesser, Dept of Chemical Engineering, Whitaker Lab 5, Lehigh University, Bethlehem, PA 18015, USA
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NATO Advanced Study Institute: Natural Convection—Fundamentals and Applications	16–27 July 1984 Izmir, Turkey	Dr S. Kakac, Department of Mechanical Engineering, University of Miami, Coral Gables, FL 33124, USA
22nd ASME/AIChE National Heat Transfer Conference	5–8 August 1984 Niagara Falls, NY, USA	ASME, 345 East 47th Street, New York, NY 10017, USA
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12th Symposium of the International Association for Hydraulic Research—IAHR (Hydraulic machinery in the energy related industries)	27–30 August 1984 Stirling, UK	Conference Section, National Engineering Laboratory, East Kilbride, Glasgow G75 0QU, UK
10th International Conference on the Properties of Steam	2–7 September 1984 Moscow, USSR	H. J. White, Office of Standard Reference Data, National Bureau of Standards, Washington DC20234, USA
CHISA '84: International Congress of Chemical Engineering	3–7 September 1984 Prague Czechoslovakia	Congress Secretariat, Attention: Dr J. Skarka, 8th Congress CHISA '84, PO Box 857, CS 111 21, Praha 1, Czechoslovakia
International Conference on Direct Fired Heat Pumps	19–21 September 1984 Bristol, UK	P. W. Fitt, Department of Mechanical Engineering, University of Bristol, Queen's Building, University Walk, Bristol BS8 1TR, UK
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