REFERENCES

BIN, A.K. (1993). "Gas Entrainment by Plunging Liquid Jets." *Chem. Eng. Science*, Vol. 48, No. 21, pp. 3585-3630.

BONETTO, F., and LAHEY, R.T. Jr (1993). "An Experimental Study on Air Carryunder due to a Plunging Liquid Jet." *Intl Jl of Multiphase Flow*, Vol. 19, No. 2, pp. 281-294. Discussion : Vol. 20, No. 3, pp. 667-770.

BRATTBERG, T., and CHANSON, H. (1998). "Air Entrapment and Air Bubble Dispersion at Two-Dimensional Plunging Water Jets." *Chemical Engineering Science*, Vol. 53, No. 24, Dec., pp. 4113-4127. Errata : 1999, Vol. 54, No. 12, p. 1925.

BRATTBERG, T., CHANSON, H., and TOOMBES, L. (1998). "Experimental Investigations of Free-Surface Aeration in the Developing Flow of Two-Dimensional Water Jets." *Jl of Fluids Eng.*, Trans. ASME, Vol. 120, No. 4, pp. 738-744.

BRENNEN, C. (1970). "Cavity Surface Wave Patterns and General Appearance." *Jl of Fluid Mech.*, Vol. 44, Part I, pp. 33-49.

CHANSON, H. (1988). "A Study of Air Entrainment and Aeration Devices on a Spillway Model." *Ph.D. thesis*, Ref. 88-8, Dept. of Civil Engrg., University of Canterbury, New Zealand.

CHANSON, H. (1995). "Air Bubble Entrainment in Free-surface Turbulent Flows. Experimental Investigations." *Report CH46/95*, Dept. of Civil Engineering, University of Queensland, Australia, June, 368 pages.

CHANSON, H. (1997). "Air Bubble Entrainment in Free-Surface Turbulent Shear Flows." *Academic Press*, London, UK, 401 pages. {http://www.uq.edu.au/~e2hchans/reprints/book2.htm}

CHANSON, H. (1999). "The Hydraulics of Open Channel Flows : An Introduction." *Butterworth-Heinemann*, Oxford, UK, 512 pages. {http://www.uq.edu.au/~e2hchans/reprints/errata.htm}

CHANSON, H., and BRATTBERG, T. (1996). "Air-Water Bubbly Flow in Free-Shear Layers." *Proc. 1996 ASME Fluids Eng. Conf.*, San Diego, USA, ASME-FED Vol. 236, Vol. 1, pp. 357-364.

CHANSON, H., and BRATTBERG, T. (1998). "Air Entrainment by Two-Dimensional Plunging Jets : the Impingement Region and the Very-Near Flow Field." *Proc. 1998 ASME Fluids Eng. Conf.*, FEDSM'98, Washington DC, USA, June 21-25, Paper FEDSM98-4806, 8 pages (CD-ROM). {http://www.uq.edu.au/~e2hchans/reprints/asme98a.pdf}

CHANSON, H., and CUMMINGS, P.D. (1994a). "Effects of Plunging Breakers on the Gas Contents in the Oceans." *Marine Technology Society Journal*, Vol. 28, No. 3, pp. 22-32.

CHANSON, H., and CUMMINGS, P.D. (1994b). "An Experimental Study on Air Carryunder due to Plunging Liquid Jet - Discussion." *Intl Jl of Multiphase Flow*, Vol. 20, No. 3, pp. 667-770 (ISSN 0301-9322).

CHANSON, H., and LEE, J.F. (1997). "Plunging Jet Characteristics of Plunging Breakers." *Coastal Engineering*, Vol. 31, No. 1-4, July, pp. 125-141.

CHANSON, H., AOKI, S., and MARUYAMA, M. (1999). "Air Bubble Entrainment at Plunging Breakers and its Effect on Long Period Waves: an Experimental study." *Coastal/Ocean Engineering Report*, No. COE99-1, Dept. of Architecture and Civil Eng., Toyohashi University of Technology, Japan, July, 41 pages.

CLARK, N.N., and TURTON, R. (1988). "Chord Length Distributions Related to Bubble Size Distributions in Multiphase Flows." *Int. Jl. of Multiphase Flow*, Vol. 14, No. 4, pp. 413-424.

CLIFT, R., GRACE, J.R., and WEBER, M.E. (1978). "Bubbles, Drops, and Particles." Academic Press, San Diego, USA, 380 pages.

COMOLET, R. (1979a). "Vitesse d'ascension d'une bulle de gaz isolée dans un liquide peu visqueux." ('The Terminal Velocity of a Gas Bubble in a Liquid of Very Low Viscosity.') *Jl de Mécanique Appliquée*, Vol. 3, No. 2, pp. 145-171 (in French).

COMOLET, R. (1979b). "Sur le Mouvement d'une bulle de gaz dans un liquide." ('Gas Bubble Motion in a Liquid Medium.') *Jl La Houille Blanche*, No. 1, pp. 31-42 (in French).

CUMMINGS, P.D. (1996). "Aeration due to Breaking Waves." *Ph.D. thesis*, Dept. of Civil Engrg., University of Queensland, Australia.

CUMMINGS, P.D., and CHANSON, H. (1997a). "Air Entrainment in the Developing Flow Region of Plunging Jets. Part 1 Theoretical Development." *Jl of Fluids Eng.*, Trans. ASME, Vol. 119, No. 3, pp. 597-602.

CUMMINGS, P.D., and CHANSON, H. (1997b). "Air Entrainment in the Developing Flow Region of Plunging Jets. Part 2 : Experimental." *Jl of Fluids Eng.*, Trans. ASME, Vol. 119, No. 3, pp. 603-608. Databank file : {http://www.uq.edu.au/~e2hchans/data/jfe97.html}.

CUMMINGS, P.D., and CHANSON, H. (1999). "An Experimental Study of Individual Air Bubble Entrainment at a Planar Plunging Jet." *Chem. Eng. Research and Design*, Trans. IChemE, Part A, Vol. 77, No. A2, pp. 159-164.

DETSCH, R.M., and SHARMA, R.N. (1990). "The Critical Angle for Gas Bubble Entrainment by Plunging Liquid Jets." *Chem. Eng. Jl*, Vol. 44, pp. 157-166.

EL HAMMOUMI, M. (1994). "Entraînement d'Air par Jet Plongeant Vertical. Application aux Becs de Remplissage pour le Dosage Pondéral." ('Air Entrainment by Vertical Plunging Jet. Application to Refill Nozzles applied to Dosage.'). *Ph.D. thesis*, INPG, Grenoble, France (in French).

ERVINE, D.A., and FALVEY, H.T. (1987). "Behaviour of Turbulent Water Jets in the Atmosphere and in Plunge Pools." *Proc. Instn Civ. Engrs., London*, Part 2, Mar. 1987, 83, pp. 295-314. Discussion : Part 2, Mar.-June 1988, 85, pp. 359-363.

ERVINE, D.A., McKEOGH, E.J., and, ELSAWY, E.M. (1980). "Effect of Turbulence Intensity on the rate of Air Entrainment by Plunging Water Jets." *Proc. Instn Civ. Engrs*, Part 2, June, pp. 425-445.

EVANS, G.M. (1990). "A Study of a Plunging Jet Bubble Column." *Ph.D. thesis*, Univ. of Newcastle, Australia.

GOLDRING, B.T., MAWER, W.T., and THOMAS, N. (1980). "Level Surges in the Circulating Water Downshaft of Large Generating Stations." *Proc. 3rd Intl Conf. on Pressure Surges*, BHRA Fluid Eng., F2, Canterbury, UK, pp. 279-300.

GRIFFIN, O.M. (1984). "The Breaking of Ocean Surface Waves." *Naval Research Lab. Memo.*, Report No. 5337, Washington, USA.

HENDERSON, F.M. (1966). "Open Channel Flow." *MacMillan Company*, New York, USA.

HOYT, J.W., and TAYLOR, J.J. (1977). "Waves on Water Jets." *Jl of Fluid Mech.*, Vol. 83, Pt 1, pp. 119-127.

HUBBARD, D.W., GRIFFIN, O.M., and PELTZER, R.D. (1987). "Foam Generation and Air Entrainment near a Free Surface." *Naval Research Laboratory Memorandum Report 6038*, Sept., Washington DC, USA.

HUGHES, S.A. (1993). "Physical Models and Laboratory Techniques in Coastal Engineering." *Advanced Series on Ocean Eng.*, Vol. 7, World Scientific Publ., Singapore.

IINO, M., SUZUKI, M., IKUSHIMA, A.J., and OKUDA, Y. (1985). "Surface Tension of Liquid ^{3}He down to 0.3 K." *Jl Low Temperature Physics*, Vol. 59, No. 3/4, pp. 291-294.

JAMESON, G.L. (1995). "Bubbly Flows and the Plunging Jet Flotation Column." *Proc. 12th Australasian Fluid Mechanics Conference AFMC*, Sydney, Australia, R.W. BILGER Ed., Vol. 2, pp. 735-742.

JOUKOWSKI, N.E. (1890). "Modification of Kirchoff's Method for Determining the Two Dimensional Motion of a Fluid at a Prescribed Constant Velocity on a Given Streamline." *Proc. Math. Symp.*, Moscow, Russia, Vol. XV.

KENNEDY, B.S., and BURLEY, R. (1977). "Dynamic Fluid Interface Displacement and Prediction of Air Entrainment." *Jl Colloid and Interface Science*, Vol. 62, No. 1, pp. 48-62.

KNAPP, R.T., DAILY, J.W., and HAMMITT, F.G. (1970). "Cavitation." *McGraw-Hill Book Company*, New York, USA.

KOLANI, A.R., OGUZ, H.N., and PROSPERETTI, A. (1998). "A New Aeration Device." *Proc. 1998 ASME Fluids Eng. Summer Meeting*, 21-25 June 1998, Washington, D.C., USA 257, 111-145.

KOBUS, H. (1984). "*Proceedings of International Symposium on Scale Effects in Modelling Hydraulic Structures*." IAHR, Esslingen, Germany, H. KOBUS Editor.

KOGA, M. (1982). "Bubble Entrainment in Breaking Wind Waves." *Tellus*, Vol. 34, No. 5, pp. 481-489.

McKEOGH, E.J. (1978). "A Study of Air Entrainment using Plunging Water Jets." *Ph.D. thesis*, Queen's University of Belfast, UK, 374 pages.

McKEOGH, E.J., and ERVINE, D.A. (1981). "Air Entrainment Rate and Diffusion Pattern of Plunging Liquid Jets." *Chem. Engrg. Science*, Vol. 36, pp. 1161-1172.

MANASSEH, R., and CHANSON, H. (2001). "Void-Fraction and Acoustic Characteristics of Gas Bubbles Entrained by a Circular Plunging Jet." *Proc. 4th Intl Conf. Multiphase Flow*, ICMF'01, New Orléans, USA, E.E. MICHAELIDES editor, Paper 347, 12 pages (CD-ROM).

MONTES, J.S. (1998). "Hydraulics of Open Channel Flow." *ASCE Press*, New-York, USA, 697 pages.

MOURSALI, E., MARIE, J.L., and BATAILLE, J. (1995). "An Upward Turbulent Bubbly Boundary Layer along a Vertical Flat Plate." *Intl Jl of Multiphase Flow*, Vol. 21, No. 1, pp. 107-117.

Open University Course Team (1995). "Seawater : its Composition, properties and Behaviour." *Butterworth-Heinemann*, Oxford, UK, 2nd edition, 168 pages.

RILEY, J.P., and SKIRROW, G. (1965). "Chemical Oceanography." *Academic Press*, London, UK, 3 volumes.

SAWARAGI, T. (1995). "Coastal Engineering - Waves, Beaches, Wave-Structure Interactions." *Elsevier*, Developments in Geotechnical Engineering Series, No. 78, Amsterdam, The Netherlands, 479 pages.

SENE, K.J. (1984). "Aspects of Bubbly Two-Phase Flow." *Ph.D. thesis*, Trinity College, Cambridge, UK, Dec..

SENE, K.J. (1988). "Air Entrainment by Plunging Jets." *Chem. Eng. Science*, Vol. 43, No. 10, pp. 2615-2623.

SPIEGEL, M.R. (1974). "Mathematical Handbook of Formulas and Tables." *McGraw-Hill Inc.*, New York, USA.

TOOMBES, L. (2002). "Experimental Study of Air-Water Flow Properties on low-gradient Stepped Cascades." *Ph.D. thesis*, Dept of Civil Engineering, University of Queensland, Brisbane, Australia.

USBR (1987). "Design of Small Dams." *Bureau of Reclamation*, US Department of the Interior, Denver CO, USA, 3rd edition.

VAN DE DONK, J. (1981). "Water aeration with Plunging Jets." *Ph.D. thesis*, TH Delft, The Netherlands, 168 pages.

VAN DE SANDE, E. (1974). "Air Entrainment by Plunging Water Jets." *Ph.D. thesis*, TH Delft, The Netherlands, 123 pages.

VAN DE SANDE, E., and SMITH, J.M. (1973). "Surface Entrainment of Air by High Velocity Water Jets." *Chem. Eng. Science*, Vol. 28, pp. 1161-1168.

WOOD, I.R. (1991). "Air Entrainment in Free-Surface Flows." *IAHR Hydraulic Structures Design Manual No. 4*, Hydraulic Design Considerations, Balkema Publ., Rotterdam, The Netherlands, 149 pages.

YASUDA, Y. (2001). *Personal communication*, Nov. 1.

Internet references

CHANSON, H. (1997). "Air Bubble Entrainment in Free-Surface Turbulent Shear Flows (*Academic Press*) - Corrections and Updates." *Internet resource*.
Internet address : {http://www.uq.edu.au/~e2hchans/reprints/book2.htm}

CHANSON, H., and MANASSEH, R. (2000). "Air Entrainment at a Circular Plunging Jet. Physical and Acoustic Characteristics - Internet Database." *Internet resource*.
Internet address : {http://www.uq.edu.au/~e2hchans/bubble/}

CUMMINGS, P.D., and CHANSON, H. (1997). "Air Entrainment in the Developing Flow Region of Plunging Jets. Extended Electronic Manuscript." *Jl of Fluids Engineering - Data Bank*, ASME (Electronic Files : 6,904 kBytes) (ISSN 0098-2202).
Internet address : {http://www.uq.edu.au/~e2hchans/data/jfe97.html}

Internet resources

{http://www.uq.edu.au/~e2hchans/photo.html}	Gallery of photographs
{http://www.uq.edu.au/~e2hchans/url_menu.html}	Internet technical resources in engineering
{http://www.uq.edu.au/~e2hchans/reprints.html}	Reprints of hydraulic engineering papers
{http://133.15.188.58/content/content..html}	Omotehama network : Enshu coastline (Enshu-naga)
{http://www.browniescoastwatch.com/}	Brownies' Coastwatch (Queensland and Northern New South Wales coastlines)

The present research report :

CHANSON, H., AOKI, S., and HOQUE, A. (2002). "Similitude of Air Bubble Entrainment and Dispersion in Vertical Circular Plunging Jet Flows. An Experimental Study with Freshwater, Salty Freshwater and

Seawater." *Coastal/Ocean Engineering Report*, No. COE02-1, Dept. of Architecture and Civil Eng., Toyohashi University of Technology, Japan, 2002.

is also available on the Internet at the URL :

{http://www.uq.edu.au/~e2hchans/reprints/tut02.zip}

The Zip file contains four PDF files : tut02_1.pdf (table of contents), tut02_2.pdf (main report), tut02_3.pdf (appendices) and tut02_4.pdf (references).