Further, Eq. (14) of Ref. 1 is incorrect; in fact, it should read as

$$\pi = \bar{\pi}_2 \exp(-C_1 \psi) \begin{bmatrix} -\rho_0 q_0/(1+M_f^2)_0 \\ 1 \\ -1/(q_0 Q_0) \\ -\rho_0 q_0 M_{f0}^2/(1+M_{f0}^2) \\ -\rho_0 q_0/(c_0^2(1+M_f^2)_0) \end{bmatrix}$$

where $\bar{\pi}_2 = \lim_{\psi \to 0} \pi_2$.

Further, Eq. (15) of Ref. 1 is incorrect; it should read as $n_{\phi\psi} = -C_2 \pi_2$, where

$$C_2 = [(2-\gamma) q_0 M_{f0}^2 M_0^2 + c_0 M_0 (1+M_f^2)_0^{5/2} (2(1+M_f^2)_0 + M_0^2(\gamma - 1))]/[2c_0^2 (1+M_f^2)_0^{3/2} (M^2 - M_f^2 - 1)_0^{3/2}]$$

Since for real gases $1 < \gamma < 2$, it follows that C_2 is positive.

Thus the behavior of the wave amplitude given by Eq. (19) of Ref. 1 depends critically on the sign of C_1. For instance:

1) When $\operatorname{sgn} a(0) = -\operatorname{sgn} C_2$, then it follows that for $C_1 > 0$, $\lim_{s \to \infty} a(s) = 0$ (i.e., the wave damps out); and for $C_1 < 0$, $\lim_{s \to \infty} a(s) = C_1/C_2$, i.e., the wave ultimately takes a stable wave form.

2) When $\operatorname{sgn} a(0) = \operatorname{sgn} C_2$, then i) for $C_1 > 0$, there exists a positive critical amplitude a_c given by $a_c = C_1/C_2$, such that for $a(0) < a_c$, $a \to 0$ as $s \to \infty$; for $a(0) > a_c$, $a \to \infty$ as $s \to s_c$ (i.e., the wave culminates into a shock wave), where s_c is given by

$$s_c = \frac{1}{C_1} \ell n \left(1 - \frac{a_c}{a(0)}\right)^{-1}$$

and for $a(0) = a_c$, $a = a_c$; ii) for $C_1 < 0$, all waves, no matter how small be their initial amplitude, grow into shock waves at $s = s_c$ (i.e., $a(s) \to \infty$ as $s \to s_c$), where s_c is as given by

$$s_c = (1/|C_1|(\ell n) 1 + (|C_1|/C_2 a(0)))$$

References

[1] Ram, R. and Pandey, B. D., "Propagation of Weak MHD Waves in Steady Hypersonic Flows with Radiation," *AIAA Journal*, Vol. 18, July 1980, pp. 855-857.

[2] Jeffrey, A. and Taniuti, T., *Non-Linear Wave Propagation*, Academic Press, New York, 1964.

AIAA 81-4333

Comment on "Karman Vortex Shedding and the Effect on Body Motion"

P. K. Stansby*
University of Manchester, Manchester, England

ERICSSON[1] refers to the writer's experimental investigation of the locking-on of vortex shedding due to the cross-stream vibration of a circular cylinder.[2] Locking-on at submultiples of the cylinder frequency was reported and a physical explanation was given. However, Ericsson states that the locking-on at half the cylinder frequency (secondary locking-on), observed by the writer, was, in effect, an illusion. This is asserted because secondary locking-on was observed with an amplitude of vibration of 10% of a diameter but not with 29% of a diameter and locking-on had previously been shown to occur more readily with larger amplitudes. The term "locking-on" implies that cylinder motion controls the wake frequency and this definitely occurred (at the lower amplitude); the spectrum of the hot-wire signal outside the wake showed a narrow band at half the cylinder frequency and a marked increase in variance over a small range of cylinder frequencies. (Without locking-on the spectrum at the vortex shedding frequency shows a much wider band.) The mean base suction also showed a small but distinct increase.[3] That secondary locking-on was not observed at the larger amplitude was almost certainly because the frequency range for "stronger" tertiary locking-on (at one third of the cylinder frequency) had increased sufficiently to envelope the range for "weak" secondary locking-on.

Received Feb. 17, 1981.

*Simon Engineering Laboratories.

References

[1] Ericsson, L. E., "Karman Vortex Shedding and the Effect on Body Motion," *AIAA Journal*, Vol. 18, Aug. 1980, pp. 935-944.

[2] Stansby, P. K., "The Locking-On of Vortex Shedding Due to the Cross-Stream Vibration of Circular Cylinders in Uniform and Shear Flows," *Journal of Fluid Mechanics*, Vol. 74, April 1976, pp. 641-666.

[3] Stansby, P. K., "Base Pressure of Oscillating Circular Cylinders," *Journal of Engineering Mechanics Division, ASCE*, Vol. 102, Aug. 1976, pp. 591-600.

AIAA 81-4334

Errata: Solution of the Three-Dimensional Navier-Stokes Equations on a Vector Processor

Lawrence W. Spradley,* John F. Stalnaker,† and Alan W. Ratliff‡
Lockheed-Huntsville Research and Engineering Center, Huntsville, Ala.

[AIAA J, **19**, 1302-1308 (1981)]

TWO page numbers in this article have inadvertently been switched. Page 1305 should be page 1306, and page 1306 is page 1305.

Received Oct. 21, 1981.

*Staff Engineer. Member AIAA.
†Scientist, Associate Research. Member AIAA.
‡Group Engineer.