ERRATA CORRIGE

Sufficient Conditions for the Optimal Control of a Class of Systems with Continuous Lags¹

S. P. SETHI²

Communicated by J. V. Breakwell

Abstract. Notational errors in Theorem 5.2 of Ref. 1 are corrected.

Key Words. Optimal control, maximum principle, sufficient conditions, integro-differential equations, path constraints, economic applications.

The corrected statement of Theorem 5.2 is as follows.

Theorem 5.2. *Sufficiency Conditions with Jumps in the Adjoint Variables.* Let $\{t_i\}$ be the set of junction points. Furthermore, assume that $\mathbf{Q}[\mathbf{x}, \mathbf{u}^*(t), t] \geq 0$ is a convex set for each $t \in \{t_i\}$. Then, conditions in Theorem 5.1 are also sufficient if we require the adjoint equation (15) to hold, except possibly for $t \in \{t_i\}$, in which case

$$\mathbf{p}^*(t_i^+) = \mathbf{p}^*(t_i^-) - \mathbf{v}^*(t_i)(\partial \mathbf{Q} / \partial \mathbf{x}^*), \quad (29)$$

with $\mathbf{v}^*(t_i) \geq 0$.

Proof. The corresponding changes in the proof of the theorem require replacing (30) on page 551 by

$$J(\mathbf{u}^*) - J(\mathbf{u}) \geq \sum_{\{t_i\}} \mathbf{v}^*(t_i)(\partial \mathbf{Q} / \partial \mathbf{x}^*)[\mathbf{x}(t_i) - \mathbf{x}^*(t_i)]. \quad (30)$$

In addition, the first three lines on page 552 must be replaced by: "Since

¹ Thanks are due to R. Hartl for pointing out the errors to the author.

² Professor of Management Science, Faculty of Management Studies, University of Toronto, Toronto, Canada.

$\mathbf{x}(t_i)$ is a feasible point, and since $\partial \mathbf{Q} / \partial \mathbf{x}^*$ is an inward normal to the set defined by $\mathbf{Q}[\mathbf{x}, \mathbf{u}^*(t_i), t_i] \geq 0$, which is convex, we have

$$(\partial \mathbf{Q} / \partial \mathbf{x}^*)[\mathbf{x}(t_i) - \mathbf{x}^*(t_i)] \geq 0, \quad \text{for each } t_i."$$

References

1. SETHI, S. P., *Sufficient Conditions for the Optimal Control of a Class of Systems with Continuous Lags*, Journal of Optimization Theory and Applications, Vol. 13, No. 5, 1974.