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Kubrom Teka* (kubrom.teka@oswego.edu), Mathematics Department, 217 Snygg Hall, SUNY Oswego, Oswego, NY 13126, and **Ivan Blank**. *Nondivergence form elliptic obstacle problem with VMO principal coefficients.*

We study the obstacle problem with an elliptic operator in nondivergence form with principal coefficients in VMO. We develop all of the basic theory of existence, uniqueness, optimal regularity, and nondegeneracy of the solutions. These results, in turn, allow us to begin the study of the regularity of the free boundary, and we show existence of a nonunique blowup limits, a basic measure stability result, and a measure-theoretic version of the Caffarelli alternative. (Received September 22, 2012)