Classification of magnetic configurations for the cloverleaf divertor D.D. RYUTOV, M.V. UMANSKY, LLNL — The cloverleaf divertor [D.D. Ryutov, M.V. Umansky, Phys. Plas., 20, 092509, 2013] is based on magnetic configuration with the third-order poloidal field null. If the currents in the divertor coils are somewhat different from those required for the generation of the third-order null, the latter splits into three closely-spaced first-order nulls. One can move these nulls around by changing the currents in the divertor coils. A large variety of configurations can be created. In this study we provide general topological classification of all configurations possible in the case of the coils situated at sufficiently large distance from the nulls. It turns out that these configurations can be identified by a single dimensionless parameter, analogously to what has been done for the snowflake divertor [D.D. Ryutov, M.A. Makowski, M.V. Umansky, PPCF, 52, 105001, 2010]. In addition to this general classification, we evaluate the length scales of the field variation in each of the three nulls, as well as connection lengths and local magnetic shear for a variety of configurations. Work performed for U.S. DOE by LLNL under Contract DE-AC52-07NA27344.

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