This Sheet Has Been Replaced

DECENTRALIZING, CENTRALIZING, LOCATING AND ORIENTING SUBSYSTEMS AND METHODS FOR SUBTERRANEAN MULTILATERAL WELL DRILLING AND COMPLETION

ABSTRACT OF THE DISCLOSURE

A decentralizer for a diverter, a centralizing guide bushing and a downhole-deployable locating and orienting subsystem. The subsystem is capable of three modes of operation: (a) a running mode in which an actuating mandrel is in a first axial limit position with respect to a common mandrel, the actuating mandrel placing first and second double-acting springs in a stowed position wherein locating and orienting keys are retracted radially inwardly with respect to the common mandrel to shield the locating and orienting keys from substantial contact with a surrounding well flow conductor as the common mandrel traverses therethrough, (b) a locating mode in which the actuating mandrel is in an intermediate axial position with respect to the common mandrel, the actuating mandrel placing the first and second double-acting springs in a deployed position resiliently to bias the locating and orienting keys radially outwardly with respect to the common mandrel to seek a locating and orienting profile on an inner surface of a surrounding honed bore within the surrounding well flow conductor, and (c) a set mode in which the actuating mandrel is in a second axial limit position with respect to the common mandrel, the actuating mandrel directly engaging and stiffly retaining the locating and orienting keys in engagement with the locating and orienting profile thereby to fix the common mandrel in a desired location and orientation with respect to the honed bore.

Fig. 2B