

Title (en)
HYDRAULIC DELAY TOE VALVE SYSTEM AND METHOD

Title (de)
HYDRAULISCHES VERZÖGERUNGSSPITZENVENTILSYSTEM UND VERFAHREN

Title (fr)
SYSTÈME ET PROCÉDÉ DE SOUPAPE D'ORTEIL DE RETARD HYDRAULIQUE

Publication
EP 3138993 A3 20170419 (EN)

Application
EP 16185314 A 20160823

Priority
US 201514840473 A 20150831

Abstract (en)
[origin: EP3138993A2] An apparatus and method for providing a time delay in injection of pressured fluid into a geologic formation. In one aspect the invention is a toe valve activated by fluid pressure that opens ports after a predetermined time interval to allow fluid to pass from a well casing to a formation. The controlled time delay enables casing integrity testing before fluid is passed through the ports. This time delay also allows multiple valves to be used in the same well casing and provide a focused jetting action to better penetrate a concrete casing lining.

IPC 8 full level
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E21B 43/20 (2013.01 - CN); **E21B 34/14** (2013.01 - CN EP US); **E21B 2200/06** (2020.05 - EP)

Citation (search report)
• [X] US 2014251619 A1 20140911 - GEORGE KEVIN R [US], et al
• [X] CA 2892128 A1 20150724 - GEODYNAMICS INC [US]

Cited by
CN113153253A; CN109296348A; CN111021990A; US12006803B2; WO2021127789A1

Designated contracting state (EPC)
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)
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DOCDB simple family (publication)
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CN 106481309 A 20170308; CN 106481309 B 20210507; EP 3219906 A1 20170920; EP 3219906 B1 20191009

DOCDB simple family (application)
EP 16185314 A 20160823; CA 2939553 A 20160822; CN 201610780139 A 20160830; EP 17165433 A 20160823