

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT7137484

SUBMISSION TYPE:	NEW ASSIGNMENT	
NATURE OF CONVEYANCE:	SECURITY INTEREST	
CONVEYING PARTY DATA		
Name		Execution Date
BJ ENERGY SOLUTIONS, LLC		01/24/2022
RECEIVING PARTY DATA		
Name:	BAIWIN FINANCING, LLC	
Street Address:	203 SOUTH 1ST STREET	
City:	LUFKIN	
State/Country:	TEXAS	
Postal Code:	75901	
PROPERTY NUMBERS Total: 90		
Property Type	Number	
Patent Number:	10989180	
Patent Number:	9038865	
Patent Number:	9260253	
Patent Number:	9322397	
Patent Number:	9133779	
Patent Number:	9395049	
Patent Number:	9285260	
Patent Number:	9945365	
Patent Number:	10008880	
Patent Number:	9410546	
Patent Number:	9297252	
Patent Number:	10036233	
Patent Number:	9803467	
Patent Number:	10317875	
Patent Number:	11015536	
Patent Number:	11085544	
Patent Number:	10815764	
Patent Number:	10895202	
Patent Number:	10968837	
Patent Number:	10961908	

Property Type	Number
Patent Number:	10954770
Patent Number:	11022526
Application Number:	17383686
Patent Number:	11193361
Application Number:	17203002
Patent Number:	10907459
Patent Number:	11125066
Patent Number:	11149533
Application Number:	17316865
Patent Number:	11028677
Application Number:	11208879
Patent Number:	11220895
Application Number:	17395298
Patent Number:	11066915
Patent Number:	11208881
Patent Number:	11098651
Application Number:	17182325
Patent Number:	11002189
Patent Number:	11060455
Patent Number:	11156159
Patent Number:	11015594
Patent Number:	11149726
Patent Number:	10961912
Patent Number:	10982596
Patent Number:	11111768
Patent Number:	11174716
Patent Number:	11208953
Patent Number:	11208880
Patent Number:	11015423
Patent Number:	11085281
Patent Number:	11109508
Patent Number:	11129295
Application Number:	15929708
Application Number:	15929710
Application Number:	15929652
Application Number:	15929715
Application Number:	17384045
Application Number:	17383739

Property Type	Number
Application Number:	17383900
Application Number:	17001848
Application Number:	17118790
Application Number:	17387477
Application Number:	17389536
Application Number:	17396906
Application Number:	17396914
Application Number:	17248484
Application Number:	17248485
Application Number:	17301475
Application Number:	17386708
Application Number:	17463596
Application Number:	17244120
Application Number:	17355920
Application Number:	16535131
Application Number:	17403339
Application Number:	17403373
Application Number:	17120460
Application Number:	17469970
Application Number:	17204338
Application Number:	17460754
Application Number:	17460788
Application Number:	17383517
Application Number:	17132066
Application Number:	17367779
Application Number:	17444485
Application Number:	17393594
Application Number:	17173320
Application Number:	17481794
Patent Number:	11066893
Patent Number:	11193360
Application Number:	17386677

CORRESPONDENCE DATA

Fax Number:

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Email: caitlin.cronin.woodward@dgslaw.com

Correspondent Name: CAITLIN CRONIN WOODWARD

Address Line 1: 1550 17TH STREET
Address Line 2: SUITE 500
Address Line 4: DENVER, COLORADO 80202

NAME OF SUBMITTER: CAITLIN CRONIN WOODWARD

SIGNATURE: /Caitlin Cronin Woodward/

DATE SIGNED: 01/24/2022

Total Attachments: 28

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U.S. INTELLECTUAL PROPERTY SECURITY AGREEMENT

This U. S INTELLECTUAL PROPERTY SECURITY AGREEMENT (this “**Agreement**”) is made as of **January 24, 2022** (the “**Effective Date**”) between each of the signatories hereto (collectively, the “**Grantors**”) in favor of **BAIWIN FINANCING, LLC**, as Administrative Agent for the Secured Parties (in such capacity, the “**Administrative Agent**”) (as defined in the Security Agreement referred to below).

RECITALS:

WHEREAS, reference is made to that certain Security Agreement, dated as of January 24, 2022 (as it may be amended, restated, amended and restated, supplemented or otherwise modified from time to time, the “**Security Agreement**”), by and among the Grantors, the other grantors party thereto and the Administrative Agent; and

WHEREAS, under the terms of the Security Agreement, the Grantors have (i) as collateral security for the Secured Obligations, granted to the Administrative Agent a security interest in and continuing lien on all of such Grantor’s right, title and interest in, to and under the Collateral (as defined and more fully set forth in the Security Agreement), including, without limitation, certain Intellectual Property of the Grantors and (ii) agreed to execute this Agreement for recording with the United States Patent and Trademark Office, and other applicable Governmental Authorities.

NOW, THEREFORE, in consideration of the premises and the agreements, provisions and covenants herein contained, each Grantor and the Administrative Agent agree as follows:

Section 1. Grant of Security. As collateral security for the Secured Obligations, each Grantor hereby grants to the Administrative Agent a security interest in and continuing lien on all of such Grantor’s right, title and interest in, to and under the following (in each case, other than any Excluded Asset (as defined in the Security Agreement)):

(a) All United States patents and certificates of invention, or similar industrial property, design or plant rights, for any of the foregoing, including, but not limited to: (i) all registrations, provisional and applications referred to in **Schedule 1** hereto; (ii) all reissues, divisions, continuations, continuations-in-part, extensions, renewals, and reexaminations therefor; (iii) all rights corresponding thereto throughout the world; (iv) all inventions and improvements described therein; (v) all rights to sue for past, present and future infringements thereof; and (vi) all Proceeds of the foregoing, including any royalties or income from the Patent Licenses and any and all payments, claims, damages and proceeds of suit (collectively, the “**Patents**”).

(b) All United States trademarks, trade names, corporate names, company names, business names, fictitious business names, Internet domain names, service marks, certification marks, collective marks, logos, other source or business identifiers, designs and general intangibles of a like nature, all registrations and applications for any of the foregoing including, but not limited to (i) the registrations and applications referred to in **Schedule 1** hereto, (ii) all extensions or renewals of any of the foregoing, (iii) all of the goodwill of the business associated with the use of and symbolized by the foregoing, (iv) the right to sue for past, present and future infringement or dilution of any of the foregoing or for any injury to goodwill, and (v) all Proceeds of the foregoing, including any royalties or income from the Trademark Licenses and any and all payments, claims, damages and proceeds of suit (collectively, the “**Trademarks**”).

Section 2. Recordation. Each Grantor authorizes and requests that the Commissioner of Patents and Trademarks and any other applicable government officer record this Agreement.

Section 3. Counterparts. This Agreement may be executed in counterparts (and by different parties hereto in different counterparts), each of which shall constitute an original, but all of which when taken together shall constitute a single contract. Delivery of an executed counterpart of a signature page of this Agreement by facsimile or in electronic (*i.e.*, “pdf” or “tif”) format shall be effective as delivery of a manually executed counterpart of this Agreement.

Section 4. Governing Law. This Agreement and any claims, controversy, dispute or cause of action (whether in contract or tort or otherwise) based upon, arising out of or relating to this Agreement and the transactions contemplated hereby and thereby shall be governed by, and construed in accordance with, the law of the State of Texas.

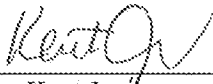
Section 5. Conflict Provision. This Agreement has been entered into in conjunction with the provisions of the Security Agreement and the Credit Agreement. The rights and remedies of each party hereto with respect to the security interest granted herein are without prejudice to, and are in addition to those set forth in the Security Agreement and the Credit Agreement, all terms and provisions of which are incorporated herein by reference. If any provisions of this Intellectual Property Security Agreement are in conflict with the Security Agreement or the Credit Agreement, the provisions of the Security Agreement or the Credit Agreement shall govern.

Section 6. NOTICE OF FINAL AGREEMENT. THIS AGREEMENT AND THE OTHER LOAN DOCUMENTS REPRESENT THE FINAL AGREEMENT AMONG THE PARTIES RELATING TO THE SUBJECT MATTER HEREOF AND THEREOF AND MAY NOT BE CONTRADICTED BY EVIDENCE OF PRIOR, CONTEMPORANEOUS, OR SUBSEQUENT ORAL AGREEMENTS OF THE PARTIES. THERE ARE NO UNWRITTEN ORAL AGREEMENTS AMONG THE PARTIES.

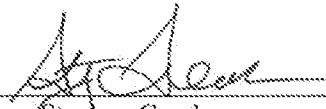
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IN WITNESS WHEREOF, each Grantor and the Administrative Agent have caused this Agreement to be duly executed and delivered by their respective officers thereunto duly authorized as of the date first written above.

BJ ENERGY SOLUTIONS, LLC, a Delaware limited liability company, as a Grantor

By: 
Name: Kent Jansson
Title: Vice President

BAIWIN FINANCING, LLC, a Texas limited liability
company, as Administrative Agent

By: 
Name: Stephen Greak
Title: Managing Member and Treasurer

SCHEDULE 1 TO
U.S. INTELLECTUAL PROPERTY SECURITY AGREEMENT

COLLATERAL IDENTIFICATION

(a) Collateral Identification

(iii) United States registrations of and applications for Patents, Trademarks, and Copyrights

Grantor	Patents	Issue Date	Status	Application or Patent No.
BJ Energy Solutions, LLC	Power Sources and Transmission Networks for Auxiliary Equipment Onboard Hydraulic Fracturing Units and Associated Methods	4/27/2021	Issued	10,989,180
BJ Energy Solutions, LLC	Power Sources and Transmission Networks for Auxiliary Equipment Onboard Hydraulic Fracturing Units and Associated Methods	n/a	Expired	62/899,971
BJ Energy Solutions, LLC	Apparatus and Methods for Assisting in Controlling the Discharge of Material onto a Conveyor from a Dispenser	5/26/2015	Issued	9,038,865
BJ Energy Solutions, LLC	Apparatus and Methods for Assisting in Controlling Material Discharged from a Conveyor	2/16/2016	Issued	9,260,253
BJ Energy Solutions, LLC	Fracturing Pump Assembly and Method Thereof	4/26/2016	Issued	9,322,397

Grantor	Patents	Issue Date	Status	Application or Patent No.
BJ Energy Solutions, LLC	Apparatus and Methods for Providing Blended Natural Gas to at Least One Engine	9/15/2015	Issued	9,133,779
BJ Energy Solutions, LLC	Apparatus and Methods for Delivering a High Volume of Fluid into an Underground Well Bore from a Mobile Pumping Unit	7/19/2016	Issued	9,395,049
BJ Energy Solutions, LLC	Apparatus and Methods for Measuring and or Adjusting the Height of Material in the Bin of a Hopper Assembly	3/15/2016	Issued	9,285,260
BJ Energy Solutions, LLC	Fixed Frequency High-Pressure High Reliability Pump Drive	4/17/2018	Issued	9,945,365
BJ Energy Solutions, LLC	Modular Hybrid Low Emissions Power for Hydrocarbon Extraction	6/26/2018	Issued	10,008,880
BJ Energy Solutions, LLC	Reciprocating Pump Cavitation Detection and Avoidance	8/9/2016	Issued	9,410,546
BJ Energy Solutions, LLC	Use of Long Chain Amines and Difunctional Compounds as Tracers	3/29/2016	Issued	9,297,252
BJ Energy Solutions, LLC	Method and System for Automatically Adjusting one or More Operational Parameters in a Borehole	7/31/2018	Issued	10,036,233

Grantor	Patents	Issue Date	Status	Application or Patent No.
BJ Energy Solutions, LLC	Well Screen-Out Prediction and Prevention	10/31/2017	Issued	9,803,467
BJ Energy Solutions, LLC	Pump Integrity Detection, Monitoring and Alarm Generation	6/11/2019	Issued	10,317,875
BJ Energy Solutions, LLC	Identifying a Component Used in a Well Operation Using a Leaky Coaxial Antenna		Abandoned	15/149,957
BJ Energy Solutions, LLC	Turbine Engine Exhaust Duct System and Methods for Noise Dampening and Attenuation		Expired	62/704,567
BJ Energy Solutions, LLC	Turbine Engine Exhaust Duct System and Methods for Noise Dampening and Attenuation		Expired	62/899,957
BJ Energy Solutions, LLC	Mobile Gas Turbine Inlet Air Conditioning System and Associated Methods		Expired	62/704,565
BJ Energy Solutions, LLC	Mobile Gas Turbine Inlet Air Conditioning System and Associated Methods		Expired	62/900,291
BJ Energy Solutions, LLC	Methods and Systems for Supplying Fuel to Gas Turbine Engines	5/25/2021	Issued	11,015,536
BJ Energy Solutions, LLC	Methods and Systems for Supplying Fuel to Gas Turbine Engines		Expired	62/704,395

Grantor	Patents	Issue Date	Status	Application or Patent No.
BJ Energy Solutions, LLC	Methods and Systems for Supplying Fuel to Gas Turbine Engines		Expired	62/899,966
BJ Energy Solutions, LLC	Fluid End for Frac Pump	8/10/2021	Issued	11,085,544
BJ Energy Solutions, LLC	Blender for Frac Fluids		Abandoned	16/026,254
BJ Energy Solutions, LLC	Frac Fluids for Far Field Diversion		Abandoned	16/111,407
BJ Energy Solutions, LLC	Fuel, Communications, And Power Connection Systems and Related Methods - Fuel Line Connection System and Methods for Same		Pending	15/929,708
BJ Energy Solutions, LLC	Fuel, Communications, and Power Connection Systems and Related Methods - Onboarding Connections and Hoses		Pending	15/929,710
BJ Energy Solutions, LLC	Fuel, Communications, And Power Connection Systems and Related Methods - Fuel Line Connection System and Methods for Same		Expired	62/704,401
BJ Energy Solutions, LLC	Fuel, Communications, and Power Connection Systems and Related Methods - Onboarding		Expired	62/900,100

Grantor	Patents	Issue Date	Status	Application or Patent No.
	Connections and Hoses			
BJ Energy Solutions, LLC	Fuel, Communications, And Power Connection Systems and Related Methods - Fuel Line Connection System and Methods for Same		Expired	62/900,112
BJ Energy Solutions, LLC	Methods and Systems for Operating a Fleet of Pumps	10/27/2020	Issued	10,815,764
BJ Energy Solutions, LLC	Methods and Systems for Operating a Fleet of Pumps		Expired	62/899,951
BJ Energy Solutions, LLC	Devices and Related Methods for Hydraulic Fracturing	7/20/2021	Issued	11,066,893
BJ Energy Solutions, LLC	Systems and Method for Use of Single Mass Flywheel Alongside Torsional Vibration Damper Assembly for Single Acting Reciprocating Pump		Expired	62/704,560
BJ Energy Solutions, LLC	Systems and Method for Use of Single Mass Flywheel Alongside Torsional Vibration Damper Assembly for Single Acting Reciprocating Pump		Expired	62/899,963
BJ Energy Solutions, LLC	Direct Drive Unit Removal System	1/19/2021	Issued	10,895,202

Grantor	Patents	Issue Date	Status	Application or Patent No.
	and Associated Methods			
BJ Energy Solutions, LLC	Drive Equipment and Methods for Mobile Fracturing Transportation Platforms		Expired	62/705,055
BJ Energy Solutions, LLC	Direct Drive Unit Removal System and Associated Methods		Expired	62/899,975
BJ Energy Solutions, LLC	Modular Hybrid Low Emissions Power for Hydrocarbon Extraction		Pending	16/745,724
BJ Energy Solutions, LLC	Fixed Frequency High-Pressure High Reliability Pump Drive		Pending	16/850,787
BJ Energy Solutions, LLC	Energy Recovery for High Power Pumping Systems and Methods Using Exhaust Gas Heat to Generate Thermoelectric Power		Expired	62/705,358
BJ Energy Solutions, LLC	Cover for Fluid Systems and Related Methods		Pending	15/929,652
BJ Energy Solutions, LLC	Cover for Fluid Systems and Related Methods		Expired	62/704,462
BJ Energy Solutions, LLC	Cover for Fluid Systems and Related Methods		Expired	62/704,476
BJ Energy Solutions, LLC	Method and System of Operating a Dual Shaft Gas Turbine in a Direct Drive Turbine Fracking Unit		Expired	62/705,334
BJ Energy Solutions, LLC	Systems and Methods Utilizing Turbine	4/6/2021	Issued	10,968,837

Grantor	Patents	Issue Date	Status	Application or Patent No.
	Compressor Discharge for Hydrostatic Manifold Purge			
BJ Energy Solutions, LLC	Systems and Methods Utilizing Turbine Compressor Discharge for Hydrostatic Manifold Purge		Expired	62/704,539
BJ Energy Solutions, LLC	Systems and Methods to Enhance Intake Air Flow to a Gas Turbine Engine of a Hydraulic Fracturing Unit	3/30/2021	Issued	10,961,908
BJ Energy Solutions, LLC	Bi-Fuel Reciprocating Engine to Power Onboard Fracturing Pump Auxiliary Systems and Related Methods		Expired	62/704,774
BJ Energy Solutions, LLC	Systems and Methods to Enhance Intake Air Flow to a Gas Turbine Engine of a Hydraulic Fracturing Unit		Expired	62/704,987
BJ Energy Solutions, LLC	Bi-Fuel Reciprocating Engine to Power Onboard Fracturing Pump Auxiliary Systems and Related Methods		Expired	62/705,188
BJ Energy Solutions, LLC	Systems and Methods for Exchanging Fracturing Components of a Hydraulic Fracturing Unit	3/23/2021	Issued	10,954,770

Grantor	Patents	Issue Date	Status	Application or Patent No.
BJ Energy Solutions, LLC	Enclosure Assembly for Enhanced Cooling of Direct Drive Unit and Related Methods		Expired	62/704,981
BJ Energy Solutions, LLC	Enclosure Assembly for Enhanced Cooling of Direct Drive Unit and Related Methods		Expired	62/705,042
BJ Energy Solutions, LLC	Onboard Heater of Auxiliary Systems Using Exhaust Gases and Associated Methods		Pending	15/929,715
BJ Energy Solutions, LLC	Onboard Heater of Auxiliary Systems Using Exhaust Gases and Associated Methods		Expired	62/704,556
BJ Energy Solutions, LLC	Systems and Methods to Operate Hydraulic Fracturing Units Using Automatic Flow Rate and/or Pressure Control		Expired	62/705,328
BJ Energy Solutions, LLC	Systems and Methods to Autonomously Operate Hydraulic Fracturing Units		Expired	62/705,354
BJ Energy Solutions, LLC	Systems and Methods Providing a Configurable Staged Rate Increase Function to Operate Hydraulic Fracturing Units		Expired	62/705,369
BJ Energy Solutions, LLC	Use of A Pump Profiler and Health Monitoring		Expired	62/705,357

Grantor	Patents	Issue Date	Status	Application or Patent No.
	Function to Operate Hydraulic Fracturing Pumps and Associated Methods			
BJ Energy Solutions, LLC	Systems and Methods to Monitor, Detect, and/or Intervene Relative to Cavitation and Pulsation Events During a Hydraulic Fracturing Operation		Expired	62/705,376
BJ Energy Solutions, LLC	Stage Profiles for Operations of Hydraulic Systems and Associated Methods		Expired	62/705,332
BJ Energy Solutions, LLC	Stage Profiles for Operations of Hydraulic Systems and Associated Methods		Expired	62/705,356
BJ Energy Solutions, LLC	Automated Diagnostics of Electronic Instrumentation in a System Diagnostics for Fracturing a Well and Associated Methods		Expired	62/705,375
BJ Energy Solutions, LLC	Systems and Methods for Monitoring the Condition of a Fracturing Component Section of a Hydraulic Fracturing Unit	6/1/2021	Issued	11,022,526
BJ Energy Solutions, LLC	Methods and Systems for Detection and		Expired	62/705,050

Grantor	Patents	Issue Date	Status	Application or Patent No.
	Mitigation of Well Screen Out			
BJ Energy Solutions, LLC	Methods, Systems, and Devices for Energy Dissipation and Proppant Suspension by Induced Vortex Flow in Mono-Bore Manifolds		Expired	62/705,850
BJ Energy Solutions, LLC	Fuel, Communications, and Power Connection Systems and Related Methods		Pending	17/384,045
BJ Energy Solutions, LLC	Fuel, Communications, And Power Connection Systems		Allowed	17/383,686
BJ Energy Solutions, LLC	Fuel, Communications, And Power Connection Methods		Pending	17/383,739
BJ Energy Solutions, LLC	Onboard Heater of Auxiliary Systems Using Exhaust Gases and Associated Methods		Pending	17/383,900
BJ Energy Solutions, LLC	Onboard Heater of Auxiliary Systems Using Exhaust Gases and Associated Methods		Pending	17/492,833
BJ Energy Solutions, LLC	Methods, Systems, and Devices for Energy Dissipation and Proppant Suspension by Induced Vortex		Expired	63/201,721

Grantor	Patents	Issue Date	Status	Application or Patent No.
	Flow in Mono-Bore Manifolds			
BJ Energy Solutions, LLC	Methods, Systems, and Devices for Energy Dissipation and Proppant Suspension by Induced Vortex Flow in Mono-Bore Manifolds	12/7/2021	Issued	11,193,360
BJ Energy Solutions, LLC	Methods, Systems, and Devices for Energy Dissipation and Proppant Suspension by Induced Vortex Flow in Mono-Bore Manifolds	12/7/2021	Issued	11,193,361
BJ Energy Solutions, LLC	Methods, Systems, and Devices to Enhance Fracturing Fluid Delivery to Subsurface Formations During High-Pressure Fracturing Operations		Allowed	17/509,252
BJ Energy Solutions, LLC	Methods, Systems, and Devices to Enhance Fracturing Fluid Delivery to Subsurface Formations During High-Pressure Fracturing Operations		Pending	17/509,292
BJ Energy Solutions, LLC	Methods, Systems, and Devices to Enhance Fracturing Fluid Delivery to Subsurface		Pending	17/556,026

Grantor	Patents	Issue Date	Status	Application or Patent No.
	Formations During High-Pressure Fracturing Operations			
BJ Energy Solutions, LLC	Frac Fluids for Far Field Diversion		Pending	17/001,848
BJ Energy Solutions, LLC	Frac Fluids for Far Field Diversion		Pending	17/393,594
BJ Energy Solutions, LLC	Power Sources and Transmission Networks for Auxiliary Equipment Onboard Hydraulic Fracturing Units and Associated Methods		Allowed	17/203,002
BJ Energy Solutions, LLC	Power Sources and Transmission Networks for Auxiliary Equipment Onboard Hydraulic Fracturing Units and Associated Methods		Pending	17/555,815
BJ Energy Solutions, LLC	Methods and Systems for Operating a Fleet of Pumps	2/2/2021	Issued	10,907,459
BJ Energy Solutions, LLC	Methods and Systems for Operating a Fleet of Pumps		Pending	17/118,790
BJ Energy Solutions, LLC	Methods and Systems for Operating a Fleet of Pumps		Pending	17/387,477
BJ Energy Solutions, LLC	Methods and Systems for Operating a Fleet of Pumps		Pending	17/389,536

Grantor	Patents	Issue Date	Status	Application or Patent No.
BJ Energy Solutions, LLC	Method and System of Operating a Dual Shaft Gas Turbine in a Direct Drive Turbine Fracking Unit	9/21/2021	Issued	11,125,066
BJ Energy Solutions, LLC	Systems and Methods to Operate a Dual-Shaft Gas Turbine Engine for Hydraulic Fracturing		Pending	17/396,906
BJ Energy Solutions, LLC	Systems and Methods to Operate a Dual-Shaft Gas Turbine Engine for Hydraulic Fracturing		Pending	17/396,914
BJ Energy Solutions, LLC	Systems and Methods to Operate Hydraulic Fracturing Units Using Automatic Flow Rate and/or Pressure Control		Pending	17/248,484
BJ Energy Solutions, LLC	Systems and Methods to Autonomously Operate Hydraulic Fracturing Units		Pending	17/173,320
BJ Energy Solutions, LLC	Systems and Methods Providing a Configurable Staged Rate Increase Function to Operate Hydraulic Fracturing Units		Expired	62/705,649
BJ Energy Solutions, LLC	Systems and Methods		Pending	17/248,485

Grantor	Patents	Issue Date	Status	Application or Patent No.
	Providing a Configurable Staged Rate Increase Function to Operate Hydraulic Fracturing Units			
BJ Energy Solutions, LLC	Use of A Pump Profiler and Health Monitoring Function to Operate Hydraulic Fracturing Pumps and Associated Methods		Expired	62/705,628
BJ Energy Solutions, LLC	Use of A Pump Profiler and Health Monitoring Function to Operate Hydraulic Fracturing Pumps and Associated Methods		Pending	17/301,475
BJ Energy Solutions, LLC	Systems and Methods of Utilization of a Hydraulic Fracturing Unit Profile to Operate Hydraulic Fracturing Units		Pending	17/386,677
BJ Energy Solutions, LLC	Systems and Methods of Utilization of a Hydraulic Fracturing Unit Profile to Operate Hydraulic Fracturing Units		Pending	17/386,708
BJ Energy Solutions, LLC	Systems and Methods to Monitor, Detect, and/or Intervene Relative to Cavitation and	10/19/2021	Issued	11,149,533

Grantor	Patents	Issue Date	Status	Application or Patent No.
	Pulsation Events During a Hydraulic Fracturing Operation			
BJ Energy Solutions, LLC	Systems and Methods to Monitor, Detect, and/or Intervene Relative to Cavitation and Pulsation Events During a Hydraulic Fracturing Operation		Allowed	17/316,865
BJ Energy Solutions, LLC	Systems and Methods to Monitor, Detect, and/or Intervene Relative to Cavitation and Pulsation Events During a Hydraulic Fracturing Operation		Pending	17/463,596
BJ Energy Solutions, LLC	Stage Profiles for Operations of Hydraulic Systems and Associated Methods	6/8/2021	Issued	11,028,677
BJ Energy Solutions, LLC	Stage Profiles for Operations of Hydraulic Systems and Associated Methods	12/28/2021	Issued	11,208,879
BJ Energy Solutions, LLC	Stage Profiles for Operations of Hydraulic Systems and Associated Methods		Allowed	17/500,217

Grantor	Patents	Issue Date	Status	Application or Patent No.
BJ Energy Solutions, LLC	Stage Profiles for Operations of Hydraulic Systems and Associated Methods		Pending	17/555,919
BJ Energy Solutions, LLC	Automated Diagnostics of Electronic Instrumentation in a System Diagnostics for Fracturing a Well and Associated Methods	1/11/2022	Issued	11,220,895
BJ Energy Solutions, LLC	Automated Diagnostics of Electronic Instrumentation in a System Diagnostics for Fracturing a Well and Associated Methods		Allowed	17/395,298
BJ Energy Solutions, LLC	Automated Diagnostics of Electronic Instrumentation in a System Diagnostics for Fracturing a Well and Associated Methods		Pending	17/551,359
BJ Energy Solutions, LLC	Systems and Methods for Monitoring the Condition of a Fracturing Component Section of a Hydraulic Fracturing Unit		Pending	17/244,120
BJ Energy Solutions, LLC	Methods and Systems for	7/20/2021	Issued	11,066,915

Grantor	Patents	Issue Date	Status	Application or Patent No.
	Detection and Mitigation of Well Screen Out			
BJ Energy Solutions, LLC	Methods and Systems for Detection and Mitigation of Well Screen Out	12/28/2021	Issued	11,208,881
BJ Energy Solutions, LLC	Methods and Systems for Detection and Mitigation of Well Screen Out		Pending	17/355,920
BJ Energy Solutions, LLC	Methods and Systems for Detection and Mitigation of Well Screen Out		Pending	17/506,794
BJ Energy Solutions, LLC	Fluid End for Frac Pump		Expired	62/530,587
BJ Energy Solutions, LLC	Liner for Frac Pump Suction Manifold		Pending	16/535,131
BJ Energy Solutions, LLC	Turbine Engine Exhaust Duct System and Methods for Noise Dampening and Attenuation	3/30/2021	Issued	11,098,651
BJ Energy Solutions, LLC	Turbine Engine Exhaust Duct System and Methods for Noise Dampening and Attenuation	8/24/2021	Issued	17/182,294
BJ Energy Solutions, LLC	Turbine Engine Exhaust Duct System and Methods for Noise		Allowed	17/182,325

Grantor	Patents	Issue Date	Status	Application or Patent No.
	Dampening and Attenuation			
BJ Energy Solutions, LLC	Turbine Engine Exhaust Duct System and Methods for Noise Dampening and Attenuation		Pending	17/498,916
BJ Energy Solutions, LLC	Methods for Noise Dampening and Attenuation of Turbine Engine		Pending	17/502,120
BJ Energy Solutions, LLC	Turbine Engine Exhaust Duct System and Methods for Noise Dampening and Attenuation		Pending	17/519,827
BJ Energy Solutions, LLC	Mobile Gas Turbine Inlet Air Conditioning System and Associated Methods	5/11/2021	Issued	11,002,189
BJ Energy Solutions, LLC	Mobile Gas Turbine Inlet Air Conditioning System and Associated Methods	7/13/2021	Issued	11,060,455
BJ Energy Solutions, LLC	Mobile Gas Turbine Inlet Air Conditioning System and Associated Methods	10/26/2021	Issued	11,156,159
BJ Energy Solutions, LLC	Mobile Gas Turbine Inlet Air Conditioning System and Associated Methods		Pending	17/403,339
BJ Energy Solutions, LLC	Mobile Gas Turbine Inlet Air		Pending	17/403,373

Grantor	Patents	Issue Date	Status	Application or Patent No.
	Conditioning System and Associated Methods			
BJ Energy Solutions, LLC	Methods and Systems for Supplying Fuel to Gas Turbine Engines		Pending	17/120,460
BJ Energy Solutions, LLC	Systems and Method for Use of Single Mass Flywheel Alongside Torsional Vibration Damper Assembly for Single Acting Reciprocating Pump	5/25/2021	Issued	11,015,594
BJ Energy Solutions, LLC	Systems and Method for Use of Single Mass Flywheel Alongside Torsional Vibration Damper Assembly for Single Acting Reciprocating Pump	8/17/2021	Issued	11,015,594
BJ Energy Solutions, LLC	Systems and Method for Use of Single Mass Flywheel Alongside Torsional Vibration Damper Assembly for Single Acting Reciprocating Pump	10/19/2021	Issued	11,149,726
BJ Energy Solutions, LLC	Systems and Method for Use of		Pending	17/469,970

Grantor	Patents	Issue Date	Status	Application or Patent No.
	Single Mass Flywheel Alongside Torsional Vibration Damper Assembly for Single Acting Reciprocating Pump			
BJ Energy Solutions, LLC	Direct Drive Unit Removal System and Associated Methods	3/30/2021	Issued	10,961,912
BJ Energy Solutions, LLC	Direct Drive Unit Removal System and Associated Methods	4/20/2021	Issued	10,982,596
BJ Energy Solutions, LLC	Direct Drive Unit Removal System and Associated Methods		Pending	17/204,338
BJ Energy Solutions, LLC	Drive Equipment and Methods for Mobile Fracturing Transportation Platforms	9/7/2021	Issued	11,111,768
BJ Energy Solutions, LLC	Drive Equipment and Methods for Mobile Fracturing Transportation Platforms	11/16/2021	Issued	11,174,716
BJ Energy Solutions, LLC	Drive Equipment and Methods for Mobile Fracturing Transportation Platforms		Pending	17/460,754
BJ Energy Solutions, LLC	Drive Equipment and Methods for Mobile Fracturing Transportation Platforms		Pending	17/460,788
BJ Energy Solutions, LLC	Energy Recovery for High Power		Pending	17/304,322

Grantor	Patents	Issue Date	Status	Application or Patent No.
	Pumping Systems and Methods Using Exhaust Gas Heat to Generate Thermoelectric Power			
BJ Energy Solutions, LLC	Cover for Fluid Systems and Related Methods		Pending	17/383,517
BJ Energy Solutions, LLC	Systems and Methods Utilizing Turbine Compressor Discharge for Hydrostatic Manifold Purge		Pending	17/132,066
BJ Energy Solutions, LLC	Systems and Methods to Enhance Intake Air Flow to a Gas Turbine Engine of a Hydraulic Fracturing Unit	12/28/2021	Issued	11,208,953
BJ Energy Solutions, LLC	Systems and Methods to Enhance Intake Air Flow to a Gas Turbine Engine of a Hydraulic Fracturing Unit		Pending	17/528,988
BJ Energy Solutions, LLC	Bi-Fuel Reciprocating Engine to Power Onboard Fracturing Pump Auxiliary Systems and Related Methods	12/28/2021	Issued	11,208,880
BJ Energy Solutions, LLC	Bi-Fuel Reciprocating Engine to Power Direct Drive		Pending	17/481,794

Grantor	Patents	Issue Date	Status	Application or Patent No.
	Turbine Fracturing Pumps Onboard Auxiliary Systems and Related Methods			
BJ Energy Solutions, LLC	Systems and Methods for Exchanging Fracturing Components of a Hydraulic Fracturing Unit	5/25/2021	Issued	11,015,423
BJ Energy Solutions, LLC	Systems and Methods for Exchanging Fracturing Components of a Hydraulic Fracturing Unit	8/10/2021	Issued	11,085,281
BJ Energy Solutions, LLC	Systems and Methods for Exchanging Fracturing Components of a Hydraulic Fracturing Unit		Pending	17/367,779
BJ Energy Solutions, LLC	Systems and Methods for Exchanging Fracturing Components of a Hydraulic Fracturing Unit		Pending	17/576,932
BJ Energy Solutions, LLC	Enclosure Assembly for Enhanced Cooling of Direct Drive Unit and Related Methods	8/31/2021	Issued	11,109,508
BJ Energy Solutions, LLC	Enclosure Assembly for Enhanced Cooling of Direct Drive	9/21/2021	Issued	11,129,295

Grantor	Patents	Issue Date	Status	Application or Patent No.
	Unit and Related Methods			
BJ Energy Solutions, LLC	Enclosure Assembly for Enhanced Cooling of Direct Drive Unit and Related Methods		Pending	17/444,485
BJ Energy Solutions, LLC	Deployment Devices and Related Methods for Hydraulic Fracturing Systems	8/10/2021	Issued	11,085,266

Grantor	Trademarks	Filing Date	Status	Application or Registration No.
BJ Energy Solutions, LLC	TITAN	December 10, 2019	Pending	88/977,897
BJ Energy Solutions, LLC	TITAN	December 10, 2019	Pending	88/977,898
BJ Energy Solutions, LLC	TITAN5	December 10, 2019	Pending	88/977,899
BJ Energy Solutions, LLC	TITAN5	December 10, 2019	Pending	88/977,900
BJ Energy Solutions, LLC	BJ	March 20, 1953	Registered	584646
BJ Energy Solutions, LLC	BJ	July 18, 1990	Registered	1696528
BJ Energy Solutions, LLC	FACTS	June 19, 2020	Registered	6591403
BJ Energy Solutions, LLC	THINFRAC	April 11, 2017	Registered	6463767
BJ Energy Solutions, LLC	RHEOFRAC	March 9, 2017	Registered	6471169
BJ Energy Solutions, LLC	FRACARE	March 9, 2017	Registered	5587103

Grantor	Trademarks	Filing Date	Status	Application or Registration No
BJ Energy Solutions, LLC	RESCARE	March 9, 2017	Registered	5587104
BJ Energy Solutions, LLC	SAVANT	September 22, 2017	Registered	5921473
BJ Energy Solutions, LLC	VISCOFRAC	June 14, 2021	Pending	90/771,641
BJ Energy Solutions, LLC	REACH	May 8, 2021	Pending	90/698,097