

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT5212809

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
LOS ALAMOS NATIONAL SECURITY, LLC	10/29/2018

RECEIVING PARTY DATA

Name:	TRIAD NATIONAL SECURITY, LLC
Street Address:	LOS ALAMOS NATIONAL LABORATORY
Internal Address:	PO BOX 1663, MS A187
City:	LOS ALAMOS
State/Country:	NEW MEXICO
Postal Code:	87545

PROPERTY NUMBERS Total: 25

Property Type	Number
Application Number:	15026001
Application Number:	15026024
Application Number:	15884871
Application Number:	62678639
Application Number:	62679353
Application Number:	62727776
Application Number:	62723612
Application Number:	62743147
Application Number:	62718546
Application Number:	62738073
Patent Number:	9866379
Patent Number:	8483394
Patent Number:	8929554
Patent Number:	9680640
Patent Number:	10044504
Patent Number:	9887976
Patent Number:	9819418
Patent Number:	9287994
Patent Number:	9002009

PATENT

Property Type	Number
Patent Number:	9680641
Patent Number:	10019235
Patent Number:	6748083
Patent Number:	5966224
Patent Number:	9509506
Application Number:	16023472

CORRESPONDENCE DATA

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ATTORNEY DOCKET NUMBER: LANS TO TRIAD

NAME OF SUBMITTER: KEVIN M. FARRELL

SIGNATURE: /Kevin M. Farrell/

DATE SIGNED: 10/30/2018

Total Attachments: 8

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ASSIGNMENT

This ASSIGNMENT ("Assignment"), having an effective date of November 1, 2018, is by and between Los Alamos National Security, LLC, a Delaware Limited Liability Company having its administrative offices located at Los Alamos National Laboratory, P.O. Box 1663, MS A187, Los Alamos, New Mexico, 87545 ("Assignor"), and Triad National Security, LLC, a Delaware Limited Liability Company, having its administrative offices located at Los Alamos National Laboratory, P.O. Box 1663, MS A187, Los Alamos, New Mexico, 87545 (hereafter, together with any successors, legal representatives or assigns thereof, "Assignee").

Whereas, by virtue of Assignments recorded in the United States Patent and Trademark Office, Assignor, is the owner of patents and patent applications listed on Schedules A and B, attached to this Assignment and incorporated herein.

Whereas, Assignee, is desirous of acquiring from Assignor the entire right, title and interest in, to and under the aforesaid patents and patent applications listed on Schedules A and B.

Now, therefore, for good and valuable consideration, the receipt of which is hereby acknowledged, Assignor hereby assigns, transfers, and conveys its entire right, title, and interest in, to and under the patents and patent applications listed on said Schedules A and B (and the inventions therein disclosed) for the United States, its territorial possessions, and in all foreign countries, and in and to any and all inventions and improvements which are disclosed in the patent applications listed in Schedule A and the patents listed in Schedule B and any legal equivalent thereof in a foreign country, including the right to claim priority, and, in and to, all Letters Patent to be obtained for said inventions including any continuation, division, continuation in-part, extension or substitute thereof, in whole or in part, and any reissue, reexamination or extension of said Letters Patent, and all rights (including but not limited to the right to claim priority) under all International Agreements, Treaties, and Conventions for the protection of industrial property in its various forms in every participating country, and including the right to sue or otherwise bring action and to collect and receive damages from infringement of the aforementioned rights, pending applications, and Letters Patent, including for any past infringement thereof, to Assignee, to the full end of the term for which Letters Patent have been granted or may be granted.

Assignor further agrees that Assignor will, without demanding any further consideration therefore, at the request but at the expense of Assignee, do all lawful and just acts, including the execution and acknowledgment of instruments, that may be or become reasonably necessary for obtaining, maintaining, issuing, reissuing, or enforcing patents identified in Schedule B and patent applications listed in Schedule A, together with any patent or patent application issuing therefrom or claiming priority thereto.

The Assignor

Los Alamos National Security, LLC

Signature: Bruce H Cottrell

Print Name: Bruce H. Cottrell

Title: Senior Patent Counsel

Date: Oct. 29, 2018

Witness Signature: Ryan B Kennedy

Print Witness Name: Ryan B Kennedy

Date: 10/29/18

Witness Signature: Sharon Ruminer

Print Witness Name: Sharon Ruminer

Date: 10/29/18

The Assignee

Triad National Security, LLC

Signature: Ryan B Kennedy
Print Name: Ryan B Kennedy
Title: Senior Patent Counsel
Date: 10/29/18

Witness Signature: Sharon Ruminer
Print Witness Name: Sharon Ruminer
Date: 10/29/18

Witness Signature: Bruce H Cottrell
Print Witness Name: Bruce H. Cottrell
Date: Oct. 29, 2018

Schedule A: Pending Applications
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Case Number	SubCase	Country	Client	Application Number	Status
Case Type				Filing Date	Publication Date
LAN-002	01	European Patent Convention	Los Alamos National Security, LLC	11829926.2	Pending
PCT				29-Sep-2011	
Title: SECURE MULTI-PARTY COMMUNICATION WITH QUANTUM KEY DISTRIBUTION MANAGED BY TRUSTED AUTHORITY					
LAN-003	02	United States of America	Los Alamos National Security, LLC	16/023472	Pending
DIV				29-Jun-2018	
Title: LONG-HAUL HIGH RATE QUANTUM KEY DISTRIBUTION					
LAN-005	01	Canada	Los Alamos National Security, LLC	2883313	Pending
PCT				16-Aug-2013	
Title: MULTI-FACTOR AUTHENTICATION USING QUANTUM COMMUNICATION					
LAN-005	01	European Patent Convention	Los Alamos National Security, LLC	13833805.8	Pending
PCT				16-Aug-2013	
Title: MULTI-FACTOR AUTHENTICATION USING QUANTUM COMMUNICATION					
LAN-006	01	Canada	Los Alamos National Security, LLC	2882288	Pending
PCT				16-Aug-2013	
Title: QUANTUM COMMUNICATIONS SYSTEM WITH INTEGRATED PHOTONIC DEVICES					
LAN-006	01	European Patent Convention	Los Alamos National Security, LLC	13837039.0	Allowed
PCT				16-Aug-2013	24-June-2015
Title: QUANTUM COMMUNICATIONS SYSTEM WITH INTEGRATED PHOTONIC DEVICES					
LAN-007	01	Canada	Los Alamos National Security, LLC	2882851	Pending
PCT				16-Aug-2013	
Title: SCALABLE SOFTWARE ARCHITECTURE FOR QUANTUM CRYPTOGRAPHIC KEY MANAGEMENT					
LAN-010	01	European Patent Convention	Los Alamos National Security, LLC	11829925.4	Pending
PCT				29-Sep-2011	
Title: QUANTUM KEY DISTRIBUTION USING CARD BASE STATION AND TRUSTED AUTHORITY					
LAN-011	02	United States of America	Los Alamos National Security, LLC	15/026001	Published
PCT				30-Mar-2016	28-July-2016
Title: QUANTUM-SECURED COMMUNICATIONS OVERLAY FOR OPTICAL FIBER COMMUNICATIONS NETWORKS					
LAN-012	02	United States of America	Los Alamos National Security, LLC	15/026024	Published
PCT				30-Mar-2016	25-August-2016
Title: STREAMING AUTHENTICATION AND MULTI-LEVEL SECURITY FOR COMMUNICATIONS NETWORKS USING QUANTUM CRYPTOGRAPHY					

Schedule A: Pending Applications
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Case Number Case Type	SubCase	Country Client	Application Number Filing Date	Status Publication Date
LAN-013 PCT	01	Canada Los Alamos National Security, LLC	2991785 22-Jul-2016	Pending
Title: QUANTUM RANDOM NUMBER GENERATORS				
LAN-013 PCT	01	European Patent Convention Los Alamos National Security, LLC	16831127.2 27-Jul-2016	Published 06-June-2018
Title: QUANTUM RANDOM NUMBER GENERATORS				
LAN-013 PCT	01	Japan Los Alamos National Security, LLC	2018-504261 22-Jul-2016	Pending
Title: QUANTUM RANDOM NUMBER GENERATORS				
LAN-013 PCT	01	Korea, Republic of Los Alamos National Security, LLC	10-2018-7003905 22-Jul-2016	Pending
Title: QUANTUM RANDOM NUMBER GENERATORS				
LAN-013 CON	02	United States of America Los Alamos National Security, LLC	15/884871 31-Jan-2018	Published 23-August-2018
Title: QUANTUM RANDOM NUMBER GENERATORS				
LAN-017 PRO	01	United States of America Los Alamos National Security, LLC	62/678639 31-May-2018	Pending
Title: TUNABLE ROOM-TEMPERATURE SINGLE-PHOTON EMISSION AT TELECOM WAVELENGTHS FROM SP3 DEFECTS IN CARBON NANOTUBES				
LAN-019 PRO	01	United States of America Los Alamos National Security, LLC	62/679553 01-Jun-2018	Pending
Title: TELLURIUM ISOLATION				
LAN-022 PRO	01	United States of America Los Alamos National Security, LLC	62/727776 06-Sep-2018	Pending
Title: LASER ADDITIVE MANUFACTURING OF FERRITOMARTENSITIC STEEL WITH IMPROVED HIGH TEMPERATURE STRENGTH				
LAN-025 PRO	01	United States of America Los Alamos National Security, LLC	62/723612 28-Aug-2018	Pending
Title: HIGH EXPLOSIVES MOCKS				

Schedule A: Pending Applications
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Case Number	SubCase	Country	Client	Application Number	Status
Case Type				Filing Date	Publication Date
LAN-024	01	United States of America	Los Alamos National Security, LLC	62/743147	Pending
PRO				09-Oct-2018	
Title: PEPTOID SIDEROPHORE ANALOGUES FOR SELECTIVE METAL CHELATION					
LAN-025	01	United States of America	Los Alamos National Security, LLC	62/718546	Pending
PRO				14-Aug-2018	
Title: DATA TRANSMISSION FRAMING					
LAN-026	01	United States of America	Los Alamos National Security, LLC	62/738073	Pending
PRO				28-Sep-2018	
Title: HIGH-SENSITIVITY MULTI-CHANNEL ATOMIC MAGNETOMETER					

Schedule B: Granted Patents
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Case Number	SubCase	Country	Client	Patent Number	Issue Date	Status	Expiration Date
LAN-001	01	United States of America	Los Alamos National Security, LLC	9866379	09-Jan-2018	Granted	13-September-2032
ORD			Title: POLARIZATION TRACKING SYSTEM FOR FREE-SPACE OPTICAL COMMUNICATION, INCLUDING QUANTUM COMMUNICATION				
LAN-002	01	United States of America	Los Alamos National Security, LLC	8483394	09-Jul-2013	Granted	24-June-2031
PRI			Title: SECURE MULTI-PARTY COMMUNICATION WITH QUANTUM KEY DISTRIBUTION MANAGED BY TRUSTED AUTHORITY				
LAN-002	02	United States of America	Los Alamos National Security, LLC	8929554	06-Jan-2015	Granted	30-September-2030
CON			Title: SECURE MULTI-PARTY COMMUNICATION WITH QUANTUM KEY DISTRIBUTION MANAGED BY TRUSTED AUTHORITY				
LAN-002	03	United States of America	Los Alamos National Security, LLC	9680640	13-Jun-2017	Granted	13-February-2031
CON			Title: SECURE MULTI-PARTY COMMUNICATION WITH QUANTUM KEY DISTRIBUTION MANAGED BY TRUSTED AUTHORITY				
LAN-003	01	United States of America	Los Alamos National Security, LLC	10044504	07-Aug-2018	Granted	13-March-2037
ORD			Title: LONG-HAUL HIGH RATE QUANTUM KEY DISTRIBUTION				
LAN-005	02	United States of America	Los Alamos National Security, LLC	9887976	06-Feb-2018	Granted	16-August-2033
PCT			Title: MULTI-FACTOR AUTHENTICATION USING QUANTUM COMMUNICATION				
LAN-006	01	United States of America	Los Alamos National Security, LLC	9819418	14-Nov-2017	Granted	16-August-2033
PCT			Title: QUANTUM COMMUNICATIONS SYSTEM WITH INTEGRATED PHOTONIC DEVICES				
LAN-009	01	United States of America	Los Alamos National Security, LLC	9287994	15-Mar-2016	Granted	06-April-2034
ORD			Title: GREAT CIRCLE SOLUTION TO POLARIZATION-BASED QUANTUM COMMUNICATION (QC) IN OPTICAL FIBER				
LAN-010	01	United States of America	Los Alamos National Security, LLC	9802809	07-Apr-2015	Granted	14-September-2032
PRI			Title: QUANTUM KEY DISTRIBUTION USING CARD, BASE STATION AND TRUSTED AUTHORITY				
LAN-010	02	United States of America	Los Alamos National Security, LLC	9686641	13-Jun-2017	Granted	30-September-2030
CON			Title: QUANTUM KEY DISTRIBUTION USING CARD, BASE STATION AND TRUSTED AUTHORITY				

Schedule B: Granted Patents

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Case Number Case Type	Sub/Case	Country Client	Patent Number Issue Date	Status Expiration Date
LAN-013 CIP	01	United States of America Los Alamos National Security, LLC	10019235 10-Jul-2018	Granted 21-November-2032
Title: QUANTUM RANDOM NUMBER GENERATORS				
LAN-014 ORD	01	United States of America Los Alamos National Security, LLC	6748083 08-Jun-2004	Granted 23-January-2023
Title: METHOD AND APPARATUS FOR FREE-SPACE QUANTUM KEY DISTRIBUTION IN DAYLIGHT				
LAN-015 ORD	01	United States of America Los Alamos National Security, LLC	5966224 12-Oct-1999	Granted 20-May-2017
Title: SECURE COMMUNICATIONS WITH LOW-ORBIT SPACECRAFT USING QUANTUM CRYPTOGRAPHY				
LAN-016 ORD	01	United States of America Los Alamos National Security, LLC	9509506 29-Nov-2016	Granted 17-February-2035
Title: QUANTUM KEY MANAGEMENT				

PATENT

REEL: 047354 FRAME: 0830

RECORDED: 10/30/2018