

TRADEMARK ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

ETAS ID: TM446032

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|---|---|-----------------------|-------------------------------------|
| SUBMISSION TYPE: | NEW ASSIGNMENT | | |
| NATURE OF CONVEYANCE: | SECURITY INTEREST | | |
| CONVEYING PARTY DATA | | | |
| Name | Formerly | Execution Date | Entity Type |
| DigitalGlobe, Inc. | | 10/05/2017 | Corporation: DELAWARE |
| MacDonald, Dettwiler and Associates Ltd. | | 10/05/2017 | Corporation: CANADA |
| MacDonald, Dettwiler and Associates Corporation | | 10/05/2017 | Corporation: CANADA |
| MacDonald, Dettwiler and Associates, Inc. | | 10/05/2017 | Corporation: CANADA |
| MDA Geospatial Services Inc. | | 10/05/2017 | Corporation: CANADA |
| Space Systems/Loral, LLC | | 10/05/2017 | Limited Liability Company: DELAWARE |
| MDA Information Systems LLC | | 10/05/2017 | Limited Liability Company: DELAWARE |
| RECEIVING PARTY DATA | | | |
| Name: | Royal Bank of Canada, as the Collateral Agent | | |
| Street Address: | Royal Bank Plaza, 200 Bay Street, South Tower, 12th Floor | | |
| City: | Toronto | | |
| State/Country: | CANADA | | |
| Postal Code: | M5J 2W7 | | |
| Entity Type: | Bank: CANADA | | |
| PROPERTY NUMBERS Total: 46 | | | |
| Property Type | Number | Word Mark | |
| Registration Number: | 2177128 | EARTHVIEW | |
| Registration Number: | 2615486 | EARTHSAT | |
| Registration Number: | 4973452 | SSL | |
| Registration Number: | 5027390 | SSL | |
| Registration Number: | 4973453 | SSL | |
| Registration Number: | 4917047 | PCM | |
| Registration Number: | 5006792 | NATURALVUE | |
| Registration Number: | 4766062 | OPTIVISTA | |
| Registration Number: | 2484701 | DIGITALGLOBE | |
| Registration Number: | 2264047 | DIGITALGLOBE | |

CH \$1165.00 2177128

| Property Type | Number | Word Mark |
|----------------------|----------|---------------------------------------|
| Registration Number: | 2136168 | DIGITALGLOBE |
| Registration Number: | 2653714 | DIGITALGLOBE |
| Registration Number: | 2487069 | DIGITALGLOBE.COM |
| Registration Number: | 4158423 | EARTHSERVICE |
| Registration Number: | 4180489 | FIRSTLOOK |
| Registration Number: | 3614695 | IMAGECONNECT |
| Registration Number: | 2593257 | PHOTOMAPPER |
| Registration Number: | 2470721 | SECONDS ON ORBIT |
| Registration Number: | 2385734 | SOO |
| Registration Number: | 4155051 | ELEVATING INSIGHT |
| Registration Number: | 4143830 | ELEVATING INSIGHT |
| Registration Number: | 4155050 | ELEVATING INSIGHT |
| Registration Number: | 4155049 | ELEVATING INSIGHT |
| Registration Number: | 4155048 | ELEVATING INSIGHT |
| Registration Number: | 3529980 | GEOEYE |
| Registration Number: | 3845085 | GEOEYE |
| Registration Number: | 2650079 | IKONOS |
| Registration Number: | 2039409 | ORBIMAGE |
| Registration Number: | 2091116 | ORBVIEW |
| Registration Number: | 3482049 | ROADTRACKER |
| Registration Number: | 2105901 | CARTERRA |
| Registration Number: | 2047487 | CARTERRA |
| Registration Number: | 4265379 | GEOEYE 3D AIRPORTS |
| Registration Number: | 4585810 | WORLDVIEW GLOBAL ALLIANCE |
| Registration Number: | 4816466 | WORLDVIEW |
| Registration Number: | 4816469 | WORLDVIEW |
| Registration Number: | 4816472 | WORLDVIEW |
| Registration Number: | 4653570 | DIGITALGLOBE |
| Registration Number: | 4653569 | SEEING A BETTER WORLD |
| Registration Number: | 5192964 | SEE A BETTER WORLD |
| Serial Number: | 77870723 | EYEQ |
| Serial Number: | 86176604 | LIVING DIGITAL INVENTORY |
| Serial Number: | 86176630 | LIVING DIGITAL INVENTORY OF THE EARTH |
| Serial Number: | 86817700 | GEOHIVE |
| Serial Number: | 87181557 | SECUREWATCH |
| Serial Number: | 87232837 | SPACENET |

CORRESPONDENCE DATA

**TRADEMARK
REEL: 006174 FRAME: 0482**

Fax Number: 2123037064

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.

Phone: 212.318.6824

Email: christinedionne@paulhastings.com

Correspondent Name: Christine Dionne c/o Paul Hastings LLP

Address Line 1: 200 Park Avenue, 28th Floor

Address Line 4: New York, NEW YORK 10463

| | |
|---------------------------|------------------|
| NAME OF SUBMITTER: | CHRISTINE DIONNE |
|---------------------------|------------------|

| | |
|-------------------|--------------------|
| SIGNATURE: | /CHRISTINE DIONNE/ |
|-------------------|--------------------|

| | |
|---------------------|------------|
| DATE SIGNED: | 10/05/2017 |
|---------------------|------------|

Total Attachments: 71

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U.S. PATENT AND TRADEMARK SECURITY AGREEMENT

This U.S. PATENT AND TRADEMARK SECURITY AGREEMENT, dated as of October 5, 2017 (as amended, amended and restated, supplemented or otherwise modified from time to time, this **Agreement**), is made by DIGITALGLOBE, INC., a corporation organized under the laws of Delaware, MACDONALD, DETTWILER AND ASSOCIATES LTD., a corporation organized under the laws of British Columbia, MACDONALD, DETTWILER AND ASSOCIATES CORPORATION, a corporation organized under the laws of Canada, MACDONALD, DETTWILER AND ASSOCIATES INC., a corporation organized under the laws of Ontario, MDA GEOSPATIAL SERVICES INC., a corporation organized under the laws of Canada, SPACE SYSTEMS/LORAL, LLC, a limited liability company organized under the laws of Delaware and MDA INFORMATION SYSTEMS LLC, a limited liability company organized under the laws of Delaware (each such party a **Grantor** and, collectively, the **Grantors**), in favor of ROYAL BANK OF CANADA, in its capacity as collateral agent (the **Agent**) in accordance with the Restated Credit Agreement dated as of October 5, 2017 (the **Credit Agreement**), between MacDonald, Dettwiler and Associates Ltd., as borrower, ROYAL BANK OF CANADA, as administrative agent, and the lenders from time to time party thereto (the **Lenders**), for the benefit of the Lenders pursuant to the Credit Agreement.

WITNESSETH:

WHEREAS, pursuant to the Security (as defined in the Credit Agreement), each Grantor has granted to the Agent a security interest in substantially all of such Grantor's property, including, without limitation, the Collateral (as defined below) referred to in Section 1 below; and

WHEREAS, pursuant to the Credit Agreement, each Grantor has agreed to execute this Agreement in respect of its Collateral for recording with the United States Patent and Trademark Office and any other office in which a security interest in the Collateral may be recorded under the laws of any other applicable jurisdiction.

NOW, THEREFORE, in consideration of the premises and the mutual covenants and agreements hereinafter set forth, each Grantor and the Agent agree as follows:

1 Grant of Security

Each Grantor hereby grants to the Agent for the benefit of the Lenders (as defined in the Credit Agreement) a security interest in and to all of such Grantor's right, title and interest in and to its Patents and Trademarks (each as defined below), whether or not such interest is joint or in common with one or more third parties or another Grantor, including the following (the **Collateral**):

- (a) all present and future United States of America and foreign patents, design patents and certificates of invention that may be developed or acquired by or on behalf of such Grantor, or similar industrial property rights, and applications for any of the foregoing, including, but not limited to, the patents set forth in Schedule A hereto opposite the name of such Grantor, as Schedule A may be supplemented from time to time by supplements to the Security and this Agreement which shall be executed and delivered by such Grantor to the Agent from time to time, and all reissues, divisions, continuations, continuations-in-part, renewals, extensions and reexaminations thereof and amendments thereto (the **Patents**);
- (b) all present and future United States of America and foreign 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, the trademark and service mark registrations, applications, and licenses set forth in Schedule B hereto

opposite the name of such Grantor, as Schedule B may be supplemented from time to time by supplements to the Security and this Agreement which shall be executed and delivered by such Grantor to the Agent from time to time, together with the goodwill connected with the use thereof and symbolized thereby and all extensions and renewals thereof (the **Trademarks**);

- (c) all rights of any kind whatsoever of such Grantor accruing under any of the foregoing provided by applicable law of any jurisdiction, by international treaties and conventions and otherwise throughout the world;
- (d) any and all royalties, fees, income, payments and other proceeds now or hereafter due or payable with respect to any and all of the foregoing; and
- (e) any and all claims and causes of action with respect to any of the foregoing, whether occurring before, on or after the date hereof, including all rights to and claims for damages, restitution and injunctive and other legal and equitable relief for past, present and future infringement, dilution, misappropriation, violation, misuse, breach or default, with the right but no obligation to sue for such legal and equitable relief and to collect, or otherwise recover, any such damages.

2 Security for Obligations

This Agreement secures, and the Collateral is collateral security for, with respect to each Grantor, the prompt and complete payment and performance in full when due, whether at stated maturity, by required prepayment, declaration, acceleration, demand or otherwise of the Obligations (as such term is defined in the Credit Agreement).

3 Scope of Security Interest

To the extent that the creation of the security interest would result in the termination of any agreement, licence or permit of the Grantors or to the extent any such Patent or Trademark would otherwise constitute Excluded Collateral (as defined in the Credit Agreement) (each, a **Restricted Asset**), the security interest will not attach to the Restricted Asset for so long as it remains the Restricted Asset. Notwithstanding anything in this Section 3 to the contrary, each Grantor shall grant to the Agent a security interest in any Collateral that ceases to be a Restricted Asset as a result of obtaining the consent of the other party or otherwise.

4 Recordation

Each Grantor authorizes and agrees that it will, at its own expense, cause this Agreement, and any supplements or amendments thereto, to be recorded at the United States Trademark and Patent Office (and any successor office and any similar office in any United States state). Each Grantor authorizes the United States Commissioner for Patents, the United States Commissioner for Trademarks and any other government officials to record and register this Agreement.

5 Supplemental Security

This Agreement is in addition to and without prejudice to all other security now held or which may hereafter be held by the Agent.

6 Execution in Counterparts

This Agreement may be executed in any number of counterparts, each of which when so executed shall be deemed to be an original and all of which taken together shall constitute one and the same agreement.

7 Grants, Rights and Remedies

This Agreement has been entered into in conjunction with the provisions of the Credit Agreement. Each Grantor does hereby acknowledge and confirm that the grant of the security interest hereunder to, and the rights and remedies of, the Agent with respect to the Collateral are more fully set forth in the Credit Agreement, the terms and provisions of which are incorporated herein by reference as if fully set forth herein.

8 Governing Law

This Agreement shall be governed by, and construed in accordance with, the laws of the State of New York, without regard to conflict of laws principles.

[Signatures follow]

IN WITNESS WHEREOF, the parties hereto have executed this Agreement by their duly authorized officers as of the day and year first above written.

MACDONALD, DETTWILER AND ASSOCIATES
LTD., as a Grantor

Per: _____

Name: ANGELA LAU
Title: SENIOR VICE PRESIDENT, FINANCE
AND CORPORATE SECRETARY

Per: _____

Name:
Title:

MDA INFORMATION SYSTEMS, LLC, as a
Grantor

Per: _____

Name:
Title:

Per: _____

Name:
Title:

DIGITALGLOBE, INC., as a Grantor

Per: _____

Name:
Title:

Per: _____

Name:
Title:

[Signature page to U.S. Patent and Trademark Security Agreement]

IN WITNESS WHEREOF, the parties hereto have executed this Agreement by their duly authorized officers as of the day and year first above written.

MACDONALD, DETTWILER AND ASSOCIATES
LTD., as a Grantor

Per: _____
Name:
Title:

Per: _____
Name:
Title:

MDA INFORMATION SYSTEMS, LLC, as a
Grantor

Per: Michelle Kay
Name: Michelle Kay
Title: Secretary

Per: _____
Name:
Title:

DIGITALGLOBE, INC., as a Grantor

Per: Michelle Kay
Name: Michelle Kay
Title: Secretary

Per: _____
Name:
Title:

SPACE SYSTEMS/LORAL, LLC, as a Grantor

Per: *Michelle Key*
Name: *Michelle Key*
Title: *Secretary*

Per: _____
Name: _____
Title: _____

MACDONALD, DETTWILER AND ASSOCIATES
INC., as a Grantor

Per: _____
Name: _____
Title: _____

Per: _____
Name: _____
Title: _____

MACDONALD, DETTWILER AND ASSOCIATES
CORPORATION, as a Grantor

Per: _____
Name: _____
Title: _____

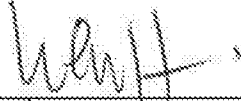
Per: _____
Name: _____
Title: _____

SPACE SYSTEMS/LORAL, LLC, as a Grantor

Per: _____
Name:
Title:

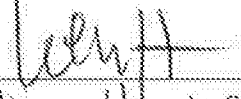
Per: _____
Name:
Title:

MACDONALD, DETTWILER AND ASSOCIATES
INC., as a Grantor

Per: 
Name: William Haworth
Title: Assistant Secretary

Per: _____
Name:
Title:

MACDONALD, DETTWILER AND ASSOCIATES
CORPORATION, as a Grantor

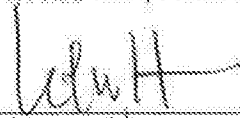
Per: 
Name: William Haworth
Title: Assistant Secretary

Per: _____
Name:
Title:

[Signature page to U.S. Patent and Trademark Security Agreement]

MDA GEOSPATIAL SERVICES INC., as a Grantor

Per:



Name:

William Haworth

Title:

Assistant Secretary

Per:

Name:

Title:

[Signature page to U.S. Patent and Trademark Security Agreement]

ROYAL BANK OF CANADA, as the Collateral Agent

Per:



Name:

Title: Susan, Khokher
Manager, Agency

[Signature page to U.S. Patent and Trademark Security Agreement]

**Schedule A
Patents And Patent Applications**

1 U.S. Patents

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
|---------|---------------|--|---------------------------|-------------|-------------------|
| US | 5,289,139 | PUSH-PUSH RING OSCILLATOR | SPACE SYSTEMS/LORAL, INC. | 11/13/1992 | 2/22/1994 |
| US | 5,300,369 | ELECTRIC ENERGY CELL WITH INTERNAL FAILURE COMPENSATION | SPACE SYSTEMS/LORAL, INC. | 7/22/1992 | 4/5/1994 |
| US | 5,317,288 | CONTINUOUSLY ELECTRONICALLY CONTROLLED PHASE SHIFT CIRCUIT | SPACE SYSTEMS/LORAL, INC. | 12/15/1992 | 5/31/1994 |
| US | 5,326,054 | Apogee at constant time-of-day equatorial (ACE) orbit | SPACE SYSTEMS/LORAL, INC. | 1/21/1988 | 7/5/1994 |
| US | 5,328,312 | DUAL LOAD-PATH FASTENER | SPACE SYSTEMS/LORAL, INC. | 12/22/1992 | 7/12/1994 |
| US | 5,332,030 | MULTI-DIRECTIONAL COOLER | SPACE SYSTEMS/LORAL, INC. | 6/25/1992 | 7/26/1994 |
| US | 5,334,844 | OPTICAL ILLUMINATION AND INSPECTION SYSTEM FOR WAFER AND SOLAR CELL DEFECT | SPACE SYSTEMS/LORAL, INC. | 4/5/1993 | 8/2/1994 |
| US | 5,341,147 | METHOD FOR MEASURING AND CORRECTING ANTENNA RF BEAM ALIGNMENT | SPACE SYSTEMS/LORAL, INC. | 9/23/1992 | 8/23/1994 |
| US | 5,345,248 | STAGGERED HELICAL ARRAY ANTENNA | SPACE SYSTEMS/LORAL, INC. | 7/22/1992 | 9/6/1994 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
|---------|---------------|--|------------------------------|-------------|-------------------|
| US | 5,349,532 | SPACECRAFT ATTITUDE CONTROL AND MOMENTUM UNLOADING USING GIMBALED AND THROTTLED | SPACE SYSTEMS/LORAL, INC. | 4/28/1992 | 9/20/1994 |
| US | 5,359,280 | Bilateral power converter for a satellite power system | SPACE SYSTEMS/LORAL, INC. | 2/4/1994 | 10/25/1994 |
| US | 5,384,455 | MEASUREMENT-DIVERSE IMAGING | MIDA INFORMATION SYSTEMS LLC | 4/12/1993 | 1/24/1995 |
| US | 5,389,459 | DISTRIBUTED ENERGY SYSTEM | SPACE SYSTEMS/LORAL INC. | 1/14/1994 | 2/14/1995 |
| US | 5,395,706 | SATELLITE THERMAL/CAPACITY BATTERY | SPACE SYSTEMS/LORAL, INC. | 1/14/1994 | 3/7/1995 |
| US | 5,395,708 | BIMODAL ELECTRIC VEHICLE BATTERY | SPACE SYSTEMS/LORAL, INC. | 1/14/1994 | 3/7/1995 |
| US | 5,397,976 | CONTROL SYSTEM FOR BILATERAL CURRENT SOURCE | SPACE SYSTEMS/LORAL, INC. | 9/28/1993 | 3/14/1995 |
| US | 5,400,252 | SPACECRAFT EAST/WEST ORBIT CONTROL DURING A NORTH OR SOUTH STATIONKEEPING MANEUVER | SPACE SYSTEMS/LORAL, INC. | 12/22/1992 | 3/21/1995 |
| US | 5,422,647 | MOBILE COMMUNICATION SATELLITE PAYLOAD | SPACE SYSTEMS/LORAL, INC. | 5/7/1993 | 6/6/1995 |
| US | 5,429,888 | Battery recharging technique | SPACE SYSTEMS/LORAL, INC. | 11/21/1994 | 7/4/1995 |
| US | 5,446,436 | High voltage high power arc suppressing fuse | SPACE SYSTEMS/LORAL, INC. | 2/15/1994 | 8/29/1995 |
| US | 5,451,975 | FURLABLE SOLID SURFACE REFLECTOR | SPACE SYSTEMS/LORAL, INC. | 2/17/1993 | 9/19/1995 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
|---------|---------------|---|--|-------------|-------------------|
| US | 5,459,669 | CONTROL SYSTEM AND METHOD FOR SPACECRAFT ATTITUDE CONTROL | SPACE SYSTEMS/LORAL, INC. | 2/14/1994 | 10/17/1995 |
| US | 5,471,224 | Frequency selective surface with repeating pattern of concentric closed conductor paths, and antenna having the surface | SPACE SYSTEMS/LORAL, INC. | 11/12/1993 | 11/28/1995 |
| US | 5,472,805 | Carbon/carbon materials useful as NA/S battery container/current collector | SPACE SYSTEMS/LORAL, INC. | 12/7/1987 | 12/5/1995 |
| US | 5,477,132 | Multi-sectioned power converter having current-sharing controller | SPACE SYSTEMS/LORAL, INC. | 7/22/1994 | 12/19/1995 |
| US | 5,484,764 | Plural-mode stacked resonator filter including superconductive material resonators | SPACE SYSTEMS/LORAL, INC. | 11/13/1992 | 1/16/1996 |
| US | 5,486,399 | Self-supporting convex cover for spacecraft | SPACE SYSTEMS/LORAL, LLC | 9/30/1993 | 1/23/1996 |
| US | 5,500,530 | ELECTRO-OPTIC ICE DETECTION | MACDONALD, DETTWILER AND ASSOCIATES INC. | 10/31/1994 | 3/19/1996 |
| US | 5,504,465 | Microwave modulator having adjustable couplers | SPACE SYSTEMS/LORAL, INC. | 8/22/1994 | 4/2/1996 |
| US | 5,510,208 | COMPOSITE BATTERY CELL SLEEVE | SPACE SYSTEMS/LORAL, INC. | 9/28/1994 | 4/23/1996 |
| US | 5,515,016 | High power dielectric resonator filter | SPACE SYSTEMS/LORAL, INC. | 6/6/1994 | 5/7/1996 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
|---------|---------------|--|---------------------------|-------------|-------------------|
| US | 5,517,203 | DIELECTRIC RESONATOR FILTER WITH COUPLING RING AND ANTENNA SYSTEM FORMED THEREFROM | SPACE SYSTEMS/LORAL, INC. | 5/11/1994 | 5/14/1996 |
| US | 5,548,292 | Mobile communication satellite payload | SPACE SYSTEMS/LORAL, INC. | 2/2/1995 | 8/20/1996 |
| US | 5,557,292 | Multiple band folding antenna | SPACE SYSTEMS/LORAL, INC. | 6/22/1994 | 9/17/1996 |
| US | 5,568,904 | Steered perigee velocity augmentation | SPACE SYSTEMS/LORAL, INC. | 8/28/1992 | 10/29/1996 |
| US | 5,576,721 | Composite multi-beam and shaped beam antenna system | SPACE SYSTEMS/LORAL, INC. | 11/21/1994 | 11/19/1996 |
| US | 5,579,018 | REDUNDANT DIFFERENTIAL LINEAR ACTUATOR | SPACE SYSTEMS/LORAL, INC. | 5/11/1995 | 11/26/1996 |
| US | 5,587,714 | Spacecraft antenna pointing error correction | SPACE SYSTEMS/LORAL, INC. | 3/10/1995 | 12/24/1996 |
| US | 5,596,338 | Multifunction antenna assembly | SPACE SYSTEMS/LORAL, INC. | 6/27/1995 | 1/21/1997 |
| US | 5,597,142 | SPACECRAFT ACQUISITION OF ORIENTATION BY SCAN OF EARTH SENSOR FIELD OF VIEW | SPACE SYSTEMS/LORAL, INC. | 3/6/1995 | 1/28/1997 |
| US | 5,610,556 | MULTI-PORT AMPLIFIERS WITH SWITCHLESS REDUNDANCY | SPACE SYSTEMS/LORAL, INC. | 10/31/1995 | 3/11/1997 |
| US | 5,617,006 | RECHARGE PROFILE FOR SPACECRAFT NI/H2 BATTERIES | SPACE SYSTEMS/LORAL, INC. | 4/24/1996 | 4/1/1997 |
| US | 5,618,012 | SATELLITE STABILIZATION SYSTEM | SPACE SYSTEMS/LORAL, INC. | 1/12/1995 | 4/8/1997 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
|---------|---------------|---|--|-------------|-------------------|
| US | 5,623,269 | Mobile communication satellite payload | SPACE SYSTEMS/LORAL, INC. | 2/2/1995 | 4/22/1997 |
| US | 5,644,322 | SPACECRAFT ANTENNA REFLECTORS AND STOWAGE AND RESTRAINT SYSTEM THEREFOR | SPACE SYSTEMS/LORAL, INC. | 6/16/1995 | 7/1/1997 |
| US | 5,649,310 | Signal translation and amplification system including a thermal radiation panel coupled thereto | SPACE SYSTEMS/LORAL, INC. | 6/15/1994 | 7/15/1997 |
| US | 5,652,073 | BIPOLAR CELL DESIGN FOR A GAS DEPOLARIZED BATTERY | SPACE SYSTEMS/LORAL, INC. | 4/3/1996 | 7/29/1997 |
| US | 5,655,735 | Post transition momentum management | SPACE SYSTEMS/LORAL, INC. | 7/3/1995 | 8/12/1997 |
| US | 5,669,586 | SATELLITE GRAVITY GRADIENT COMPENSATION USING ON-ORBIT SOLAR ARRAY REORIENTATION | SPACE SYSTEMS/LORAL, INC. | 12/6/1994 | 9/23/1997 |
| US | 5,673,459 | Deployment hinge apparatus | SPACE SYSTEMS/LORAL, INC. | 9/28/1994 | 10/7/1997 |
| US | 5,684,727 | High-speed correlator | MACDONALD, DETTWILER AND ASSOCIATES LTD. | 2/7/1996 | 11/4/1997 |
| US | 5,686,930 | Ultra lightweight thin membrane antenna reflector | SPACE SYSTEMS/LORAL, INC. | 5/5/1995 | 11/11/1997 |
| US | 5,719,949 | PROCESS AND APPARATUS FOR CROSS-CORRELATING DIGITAL IMAGERY | MDA INFORMATION SYSTEMS LLC | 2/22/1996 | 2/17/1998 |
| US | 5,751,140 | VOLTAGE CONVERTER WITH BATTERY DISCHARGE PROTECTION | SPACE SYSTEMS/LORAL, INC. | 3/25/1997 | 5/12/1998 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
|---------|---------------|---|---------------------------|-------------|-------------------|
| US | 5,752,675 | THRUSTER CONTROL OF YAW WITHOUT YAW MEASUREMENTS | SPACE SYSTEMS/LORAL, INC. | 7/3/1995 | 5/19/1998 |
| US | 5,752,987 | METHOD FOR PRODUCING IMPROVED ELECTROLYTE-RETENTION BIPOLAR CELLS AND BATTERIES | SPACE SYSTEMS/LORAL, INC. | 8/1/1997 | 5/19/1998 |
| US | 5,781,456 | Software select and test | SPACE SYSTEMS/LORAL, INC. | 7/11/1997 | 7/14/1998 |
| US | 5,785,280 | Hybrid solar panel array | SPACE SYSTEMS/LORAL, INC. | 7/20/1995 | 7/28/1998 |
| US | 5,787,368 | Spacecraft yaw control using only wheel speed measurements processed through a simple filter bank | SPACE SYSTEMS/LORAL, INC. | 11/3/1995 | 7/28/1998 |
| US | 5,789,978 | Ku-band linearizer bridge | SPACE SYSTEMS/LORAL, INC. | 11/25/1996 | 8/4/1998 |
| US | 5,790,077 | Antenna geometry for shaped dual reflector antenna | SPACE SYSTEMS/LORAL, INC. | 10/17/1996 | 8/4/1998 |
| US | 5,793,813 | Communication system employing space-based and terrestrial telecommunications equipment | SPACE SYSTEMS/LORAL, INC. | 6/6/1996 | 8/11/1998 |
| US | 5,821,009 | FAULT TOLERANT BIPOLAR GAS ELECTRODE DESIGN FOR A RECHARGEABLE BATTERY | SPACE SYSTEMS/LORAL, INC. | 3/3/1997 | 10/13/1998 |
| US | 5,822,515 | Correction of uncommanded mode changes in a spacecraft subsystem | SPACE SYSTEMS/LORAL, INC. | 2/10/1997 | 10/13/1998 |
| US | 5,826,829 | Spacecraft control system with trihedral momentum bias wheel configuration | SPACE SYSTEMS/LORAL, INC. | 7/15/1996 | 10/27/1998 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
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| US | 5,841,398 | Integrated navigation and communication satellite system | SPACE SYSTEMS/LORAL, LLC | 11/20/1996 | 11/24/1998 |
| US | 5,858,574 | CELLS AND GAS DEPOLARIZED BATTERIES AND METHOD FOR PRODUCING SAME | SPACE SYSTEMS/LORAL, INC. | 7/25/1997 | 1/12/1999 |
| US | 5,862,462 | Power enhancement techniques for high power satellites | SPACE SYSTEMS/LORAL, LLC | 7/12/1996 | 1/19/1999 |
| US | 5,864,320 | SYNCHRONOUS ROTATION DUAL-AXIS MECHANICAL HINGE ASSEMBLIES | SPACE SYSTEMS/LORAL, INC. | 8/6/1996 | 1/26/1999 |
| US | 5,865,401 | TETHERED SPACE PLATFORM ASSEMBLY FOR ISOLATION ORBITING | SPACE SYSTEMS/LORAL, INC | 8/29/1996 | 2/2/1999 |
| US | 5,874,786 | QUAD SPACECRAFT POWER BUS SYSTEMS | SPACE SYSTEMS/LORAL, INC. | 3/20/1997 | 2/23/1999 |
| US | 5,882,817 | CELL DESIGN FOR A BIPOLAR RECHARGEABLE BATTERY | SPACE SYSTEMS/LORAL, INC. | 3/3/1997 | 3/16/1999 |
| US | 5,886,499 | Life extending operational regime for battery | SPACE SYSTEMS/LORAL, INC. | 9/11/1997 | 3/23/1999 |
| US | 5,889,449 | ELECTROMAGNETIC TRANSMISSION LINE ELEMENTS HAVING A BOUNDARY BETWEEN MATERIALS OF HIGH AND LOW DIELECTRIC CONSTANTS | SPACE SYSTEMS/LORAL, INC. | 12/7/1995 | 3/30/1999 |
| US | 5,898,291 | BATTERY CELL BYPASS TOPOLOGY | SPACE SYSTEMS/LORAL, INC. | 1/26/1998 | 4/27/1999 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
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| US | 5,899,945 | Attitude control and navigation system for high resolution imaging | SPACE SYSTEMS/LORAL, LLC | 9/5/1997 | 5/4/1999 |
| US | 5,909,191 | Multiple beam antenna and beamforming network | SPACE SYSTEMS/LORAL, LLC | 10/1/1997 | 6/1/1999 |
| US | 5,923,292 | Dual antenna null elimination | SPACE SYSTEMS/LORAL, INC. | 7/11/1997 | 7/13/1999 |
| US | 5,929,805 | DIFFERENTIAL PHASE MEASUREMENT SCHEME FOR A MULTIPLEXING GPS ATTITUDE RECEIVER | SPACE SYSTEMS/LORAL, INC. | 4/10/1997 | 7/27/1999 |
| US | 5,939,864 | Lithium-ion battery charge control method | SPACE SYSTEMS/LORAL, INC. | 10/28/1998 | 8/17/1999 |
| US | 5,940,034 | Dual RF autotrack control | SPACE SYSTEMS/LORAL, INC. | 8/8/1998 | 8/17/1999 |
| US | 5,945,960 | Method and apparatus for reconfiguring antenna radiation patterns | SPACE SYSTEMS/LORAL, INC. | 12/2/1996 | 8/31/1999 |
| US | 5,948,556 | MASSIVELY PARALLEL SPACECRAFT BATTERY CELL MODULE DESIGN | SPACE SYSTEMS/LORAL, INC. | 10/22/1997 | 9/7/1999 |
| US | 5,949,370 | POSITIONABLE SATELLITE ANTENNA WITH RECONFIGURABLE BEAM | SPACE SYSTEMS/LORAL, INC. | 11/7/1997 | 9/7/1999 |
| US | 5,949,914 | ENHANCING THE RESOLUTION OF MULTI-SPECTRAL IMAGE DATA WITH PANCHROMATIC IMAGE DATA USING SUPER RESOLUTION PAN-SHARPENING | GEOEYE SOLUTIONS INC. | 3/17/1997 | 9/7/1999 |
| US | 5,949,675 | Transient-free gain switching within error threshold | SPACE SYSTEMS/LORAL, INC. | 11/1/1996 | 9/7/1999 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
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| US | 5,957,408 | SATELLITE WITH EAST AND WEST BATTERY RADIATORS | SPACE SYSTEMS/LORAL, INC. | 12/5/1997 | 9/28/1999 |
| US | 5,957,411 | Method using double thruster firings to deadbeat flexible solar array structural oscillation | SPACE SYSTEMS/LORAL, INC. | 12/24/1997 | 9/28/1999 |
| US | 5,963,166 | Precise spacecraft camera image navigation and registration | SPACE SYSTEMS/LORAL, INC. | 7/23/1998 | 10/5/1999 |
| US | 5,966,049 | Broadband linearizer for power amplifiers | SPACE SYSTEMS/LORAL, INC. | 12/1/1998 | 10/12/1999 |
| US | 5,977,910 | Multibeam phased array antenna system | SPACE SYSTEMS/LORAL, INC. | 8/7/1997 | 11/2/1999 |
| US | 5,978,157 | DIELECTRIC BOOTLACE LENS | SPACE SYSTEMS/LORAL, INC. | 9/3/1998 | 11/2/1999 |
| US | 5,978,652 | COMMON DIRECT BROADCASTING SERVICE SYSTEM | SPACE SYSTEMS/LORAL, INC. | 1/10/1997 | 11/2/1999 |
| US | 5,978,716 | SATELLITE IMAGING CONTROL SYSTEM FOR NON-REPEATABLE ERROR | SPACE SYSTEMS/LORAL, INC. | 5/28/1997 | 11/2/1999 |
| US | 5,986,526 | RF MICROWAVE BELLOWES TUNING POST | MACDONALD, DETTWILER AND ASSOCIATES CORPORATION | 3/3/1997 | 11/16/1999 |
| US | 5,992,799 | EARTH BASED SPACECRAFT ORBIT AND ATTITUDE CONTROL USING A LOOK-AHEAD THRUSTER SELECTION LOGIC AND MAGNETIC TORQUERS | SPACE SYSTEMS/LORAL, INC. | 2/18/1997 | 11/30/1999 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
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| US | 5,993,993 | UNREGULATED SPACECRAFT ELECTRICAL BUS | SPACE SYSTEMS/LORAL, INC. | 11/30/1999 | 4/6/1998 |
| US | 5,996,942 | Autonomous solar torque management | SPACE SYSTEMS/LORAL, INC. | 9/22/1997 | 12/7/1999 |
| US | 5,999,047 | LINEARIZER FOR USE WITH RF POWER AMPLIFIERS | SPACE SYSTEMS/LORAL, INC. | 7/31/1998 | 12/7/1999 |
| US | 6,000,661 | Autonomous spacecraft payload base motion estimation and correction | SPACE SYSTEMS/LORAL, INC. | 9/22/1997 | 12/14/1999 |
| US | 6,005,184 | SOLAR PANELS HAVING IMPROVED HEAT DISSIPATION PROPERTIES | SPACE SYSTEMS/LORAL, INC. | 7/11/1997 | 12/21/1999 |
| US | 6,008,448 | SOLAR PANEL ARRAY WITH STEPPED TAPER | SPACE SYSTEMS/LORAL, INC. | 10/15/1998 | 12/28/1999 |
| US | 6,008,706 | Wide band contiguous multiplexer having a contiguous diplexer | SPACE SYSTEMS/LORAL, LLC | 9/9/1998 | 12/28/1999 |
| US | 6,010,096 | Deployment restraint and sequencing device | SPACE SYSTEMS/LORAL, INC. | 7/22/1998 | 1/4/2000 |
| US | 6,011,512 | Thinned multiple beam phased array antenna | SPACE SYSTEMS/LORAL, INC. | 2/25/1998 | 1/4/2000 |
| US | 6,012,000 | Simplified onboard attitude control based on star sensing | SPACE SYSTEMS/LORAL, INC. | 1/14/1998 | 1/4/2000 |
| US | 6,014,013 | Battery charge management architecture | SPACE SYSTEMS/LORAL, INC. | 12/16/1998 | 1/11/2000 |
| US | 6,018,703 | Software select and test | SPACE SYSTEMS/LORAL, INC. | 6/18/1998 | 1/25/2000 |

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| US | 6,023,291 | Satellite camera attitude determination and image navigation by means of earth edge and landmark measurement | SPACE SYSTEMS/LORAL, INC. | 9/29/1997 | 2/8/2000 |
| US | 6,025,696 | BATTERY CELL BYPASS MODULE | SPACE SYSTEMS/LORAL, INC. | 3/27/1998 | 2/15/2000 |
| US | 6,029,438 | DRIVE CIRCUIT FOR ELECTRIC PROPULSION THRUSTER | SPACE SYSTEMS/LORAL, INC. | 10/15/1997 | 2/29/2000 |
| US | 6,032,904 | MULTIPLE USAGE THRUSTER MOUNTING CONFIGURATION | SPACE SYSTEMS/LORAL, INC. | 2/23/1998 | 3/7/2000 |
| US | 6,034,322 | Solar cell assembly | SPACE SYSTEMS/LORAL, INC. | 7/1/1999 | 3/7/2000 |
| US | 6,034,506 | LITHIUM ION SATELLITE BATTERY CHARGE CONTROL CIRCUIT | SPACE SYSTEMS/LORAL, INC. | 1/16/1998 | 3/7/2000 |
| US | 6,037,909 | DEPLOYED PAYLOAD FOR A COMMUNICATIONS SPACECRAFT | SPACE SYSTEMS/LORAL, INC. | 3/21/1997 | 3/14/2000 |
| US | 6,049,312 | Antenna system with plural reflectors | SPACE SYSTEMS/LORAL, INC. | 2/11/1998 | 4/11/2000 |
| US | 6,052,630 | Thruster optimized pair selection | SPACE SYSTEMS/LORAL, INC. | 12/17/1996 | 4/18/2000 |
| US | 6,053,455 | Spacecraft attitude control system using low thrust thrusters | SPACE SYSTEMS/LORAL, INC. | 1/22/1998 | 4/25/2000 |
| US | 6,065,791 | Collet End Effector | MACDONALD DETTWILER SPACE AND ADVANCED ROBOTICS LTD. | 6/1/1998 | 5/23/2000 |
| US | 6,073,887 | High power spacecraft with full utilization of all spacecraft surfaces | SPACE SYSTEMS/LORAL, LLC | 7/16/1997 | 6/13/2000 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
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| US | 6,081,244 | METHOD AND APPARATUS FOR AN UNFURLABLE ISOMETRIC ANTENNA REFLECTOR | SPACE SYSTEMS/LORAL, INC. | 6/27/2000 | 12/14/1998 |
| US | 6,118,342 | System and method for providing precise RF amplified gain control over temperature | SPACE SYSTEMS/LORAL, INC. | 4/13/1999 | 9/12/2000 |
| US | 6,125,310 | THRUSTER ON TIME SIGNALING WITH FLEXURE COMPENSATION AVOIDANCE | SPACE SYSTEMS/LORAL, INC. | 7/18/1997 | 9/26/2000 |
| US | 6,125,329 | METHOD, SYSTEM AND PROGRAMMED MEDIUM FOR MASSIVE GEODETIC BLOCK TRIANGULATION IN SATELLITE IMAGING | MIDA INFORMATION SYSTEMS LLC | 6/17/1998 | 9/26/2000 |
| US | 6,133,818 | Redundant fuse wire release device | SPACE SYSTEMS/LORAL, INC. | 8/11/1999 | 10/17/2000 |
| US | 6,135,394 | Practical method and apparatus for satellite stationkeeping | SPACE SYSTEMS/LORAL, LLC | 12/8/1998 | 10/24/2000 |
| US | 6,137,451 | Multiple beam by shaped reflector antenna | SPACE SYSTEMS/LORAL, INC. | 10/30/1997 | 10/24/2000 |
| US | 6,137,454 | UNFURLABLE SPARSE ARRAY REFLECTOR SYSTEM | SPACE SYSTEMS/LORAL, INC. | 9/8/1999 | 10/24/2000 |
| US | 6,138,952 | Transient free actuator switching | SPACE SYSTEMS/LORAL, INC. | 6/11/1999 | 10/31/2000 |
| US | 6,141,606 | Wheel speed control system for spacecraft with rejection of null space wheel momentum | SPACE SYSTEMS/LORAL, INC. | 7/28/1998 | 10/31/2000 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
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| US | 6,142,422 | Method to reorient a spacecraft using only initial single axis attitude knowledge | SPACE SYSTEMS/LORAL, LLC | 6/21/1999 | 11/7/2000 |
| US | 6,147,656 | Active multiple beam antennas | SPACE SYSTEMS/LORAL, INC. | 4/1/1999 | 11/14/2000 |
| US | 6,154,692 | Spacecraft yaw pointing for inclined orbits | SPACE SYSTEMS/LORAL, INC. | 9/17/1998 | 11/28/2000 |
| US | 6,157,161 | Low cost battery charging systems | SPACE SYSTEMS/LORAL, INC. | 7/27/1999 | 12/5/2000 |
| US | 6,169,513 | Thinned multiple beam phased array antenna | SPACE SYSTEMS/LORAL, LLC | 11/8/1999 | 1/2/2001 |
| US | 6,169,668 | Zero voltage switching isolated boost converters | SPACE SYSTEMS/LORAL, INC. | 10/27/1999 | 1/2/2001 |
| US | 6,182,441 | Drive circuit for electric propulsion thruster | SPACE SYSTEMS/LORAL, LLC | 2/4/2000 | 2/6/2001 |
| US | 6,186,446 | Solar array control for electric propulsion system | SPACE SYSTEMS/LORAL, INC. | 6/8/1999 | 2/13/2001 |
| US | 6,188,279 | Low cost miniature broadband linearizer | SPACE SYSTEMS/LORAL, INC. | 11/3/1999 | 2/13/2001 |
| US | 6,191,664 | Microwave multiplexer with tunable manifold and method of adjustment | SPACE SYSTEMS/LORAL, INC. | 5/24/1999 | 2/20/2001 |
| US | 6,196,501 | Satellite architecture with deployable electrical equipment | SPACE SYSTEMS/LORAL, INC. | 10/7/1998 | 3/6/2001 |
| US | 6,198,455 | Variable beamwidth antenna systems | SPACE SYSTEMS/LORAL, INC. | 3/21/2000 | 3/6/2001 |

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| US | 6,201,508 | INJECTION-MOLDED PHASED ARRAY ANTENNA SYSTEM | SPACE SYSTEMS/LORAL, INC. | 12/13/1999 | 3/13/2001 |
| US | 6,205,378 | Adaptive mass expulsion attitude control system | SPACE SYSTEMS/LORAL, INC. | 7/29/1999 | 3/20/2001 |
| US | 6,207,315 | THREE DIMENSIONAL BATTERY FOR SPACE APPLICATIONS | SPACE SYSTEMS/LORAL, INC. | 6/15/1998 | 3/27/2001 |
| US | 6,208,039 | Apparatus to control multiple parallel batteries to share load current | SPACE SYSTEMS/LORAL, INC. | 8/17/1999 | 3/27/2001 |
| US | 6,211,838 | High efficiency dual polarized horn antenna | SPACE SYSTEMS/LORAL, INC. | 2/2/2000 | 4/3/2001 |
| US | 6,237,876 | Methods for using satellite state vector prediction to provide three-axis satellite attitude control | SPACE SYSTEMS/LORAL, INC. | 7/28/2000 | 5/29/2001 |
| US | 6,238,820 | BATTERY CELL SLEEVE FOR SPACECRAFT APPLICATIONS | SPACE SYSTEMS/LORAL, INC. | 2/4/1998 | 5/29/2001 |
| US | 6,242,976 | Low cost linearized channel amplifier for use with high power amplifiers | SPACE SYSTEMS/LORAL, INC. | 6/9/1999 | 6/5/2001 |
| US | 6,243,048 | Gregorian reflector antenna system having a subreflector optimized for an elliptical antenna aperture | SPACE SYSTEMS/LORAL, INC. | 2/4/2000 | 6/5/2001 |
| US | 6,248,950 | Solar array augmented electrostatic discharge for spacecraft in geosynchronous earth orbit | SPACE SYSTEMS/LORAL, LLC | 2/21/1998 | 6/19/2001 |

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| US | 6,253,125 | Method and apparatus for generating orbital data | SPACE SYSTEMS/LORAL, INC. | 3/1/2000 | 6/26/2001 |
| US | 6,261,716 | Battery cell sleeve for spacecraft applications | SPACE SYSTEMS/LORAL, INC. | 10/22/1998 | 7/17/2001 |
| US | 6,281,769 | Electromagnetic transmission line elements having a boundary between materials of high and low dielectric constants | SPACE SYSTEMS/LORAL, LLC | 12/8/1998 | 8/28/2001 |
| US | 6,285,928 | Onboard attitude control using reaction wheels | SPACE SYSTEMS/LORAL, INC. | 1/6/2000 | 9/4/2001 |
| US | 6,286,591 | Thermal harness using thermal conductive fiber and polymer matrix materials | SPACE SYSTEMS/LORAL, INC. | 11/8/1999 | 9/11/2001 |
| US | 6,291,099 | Battery system | SPACE SYSTEMS/LORAL, LLC | 5/29/2000 | 9/18/2001 |
| US | 6,292,722 | Magnetic torquer control with thruster augmentation | SPACE SYSTEMS/LORAL, INC. | 2/24/2000 | 9/18/2001 |
| US | 6,296,207 | Combined stationkeeping and momentum management | SPACE SYSTEMS/LORAL, INC. | 1/27/1999 | 10/2/2001 |
| US | 6,297,715 | General response, dual-mode, dielectric resonator loaded cavity filter | SPACE SYSTEMS/LORAL, INC. | 3/27/1999 | 10/2/2001 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
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| US | 6,301,225 | CONFIGURABLE COMMUNICATION APPARATUS THAT PERMITS USE OF UNUSED MULTIPLEXER CHANNELS WHEN OPERATING IN HIGH POWER MODE | SPACE SYSTEMS/LORAL, INC. | 4/18/1998 | 10/9/2001 |
| US | 6,304,228 | Stepped waveguide slot array with phase control and satellite communication system employing same | SPACE SYSTEMS/LORAL, INC. | 10/6/2000 | 10/16/2001 |
| US | 6,308,919 | Spacecraft having a dual reflector holddown for deploying multiple reflectors in a single release event | SPACE SYSTEMS/LORAL, INC. | 4/25/2000 | 10/30/2001 |
| US | 6,311,769 | Thermal interface materials using thermally conductive fiber and polymeric materials | SPACE SYSTEMS/LORAL, INC. | 11/8/1999 | 11/6/2001 |
| US | 6,311,929 | Spacecraft and appendage stepping methods that improve spacecraft attitude pointing and cancel solar array slew disturbances | SPACE SYSTEMS/LORAL, INC. | 11/26/1999 | 11/6/2001 |
| US | 6,311,932 | Yaw steering momentum system | SPACE SYSTEMS/LORAL, INC. | 11/30/1999 | 11/6/2001 |
| US | 6,312,849 | Method for producing a battery cell structure | SPACE SYSTEMS/LORAL, INC. | 7/26/1999 | 11/6/2001 |
| US | 6,314,344 | Automated orbit compensation system and method | SPACE SYSTEMS/LORAL, INC. | 3/17/2000 | 11/6/2001 |
| US | 6,316,925 | Solar array peak power tracker | SPACE SYSTEMS/LORAL, INC. | 5/29/1996 | 11/13/2001 |

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| US | 6,317,660 | Method for using satellite state vector prediction to provide satellite sensor automatic scan inhibit and/or sensor switching | SPACE SYSTEMS/LORAL, LLC | 5/25/2000 | 11/13/2001 |
| US | 6,317,661 | Argument for perigee correction with longitude control for inclined, eccentric, geosynchronous satellites | SPACE SYSTEMS/LORAL, INC. | 6/6/2000 | 11/13/2001 |
| US | 6,318,676 | EQUATORIAL-NORMAL BODY-STABILIZED SPACECRAFT AND CONTROL METHOD FOR INCLINED ORBIT OPERATION | SPACE SYSTEMS/LORAL, INC. | 1/10/2000 | 11/20/2001 |
| US | 6,320,490 | Integrated planar transformer and inductor assembly | SPACE SYSTEMS/LORAL, INC. | 8/13/1999 | 11/20/2001 |
| US | 6,332,590 | Photoemission based spacecraft charging sensor | SPACE SYSTEMS/LORAL INC. | 12/23/1998 | 12/25/2001 |
| US | 6,341,750 | Spacecraft motion estimation using a gimballed momentum wheel | SPACE SYSTEMS/LORAL, INC. | 5/3/2000 | 1/29/2002 |
| US | 6,341,933 | HINGED SCOOP END EFFECTOR | MACDONALD, DETTWILER AND ASSOCIATES INC. | 6/4/1999 | 1/29/2002 |
| US | 6,350,185 | Grit blast nozzle for surface preparation of tube | SPACE SYSTEMS/LORAL, INC. | 2/9/2000 | 2/26/2002 |
| US | 6,356,171 | Planar general response dual-mode cavity filter | SPACE SYSTEMS/LORAL, INC. | 3/27/1999 | 3/12/2002 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
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| US | 6,356,245 | Microwave strip transmission lines, beamforming networks and antennas and methods for preparing the same | SPACE SYSTEMS/LORAL, INC. | 4/1/1999 | 3/12/2002 |
| US | 6,360,993 | EXPENDABLE LAUNCH VEHICLE | SPACE SYSTEMS/LORAL, INC. | 4/9/1999 | 3/26/2002 |
| US | 6,366,255 | Main reflector and subreflector deployment and storage systems | SPACE SYSTEMS/LORAL, INC. | 9/15/2000 | 4/2/2002 |
| US | 6,366,681 | ANALYSIS OF MULTISPECTRAL DATA FOR EXTRACTION OF CHLOROPHYLL CONTENT | GEOEYE SOLUTIONS INC. | 4/7/1999 | 4/2/2002 |
| US | 6,367,509 | Thermal harness using encased carbon-based fiber and end attachment brackets | SPACE SYSTEMS/LORAL, INC. | 4/27/2001 | 4/9/2002 |
| US | 6,378,809 | Aft deployable thermal radiators for spacecraft | SPACE SYSTEMS/LORAL, INC. | 9/16/1998 | 4/30/2002 |
| US | 6,380,834 | Planar magnetic assembly | SPACE SYSTEMS/LORAL, INC. | 3/1/2000 | 4/30/2002 |
| US | 6,381,520 | SUN SEEKING SOLAR ARRAY CONTROL SYSTEM AND METHOD | SPACE SYSTEMS/LORAL, INC. | 7/10/2000 | 4/30/2002 |
| US | 6,383,679 | SELF-TUNING CHARGE CONTROLLER FOR NICKEL HYDROGEN BATTERIES | SPACE SYSTEMS/LORAL, INC. | 11/10/1999 | 5/7/2002 |
| US | 6,388,427 | BATTERY TEMPERATURE DERIVATIVE CHARGING | SPACE SYSTEMS/LORAL, INC. | 9/10/2001 | 5/14/2002 |
| US | 6,392,611 | Array fed multiple beam array reflector antenna systems and method | SPACE SYSTEMS/LORAL, INC. | 8/17/2000 | 5/21/2002 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
|---------|---------------|--|---|-------------|-------------------|
| US | 6,396,453 | HIGH PERFORMANCE MULTIMODE HORN | MACDONALD, DETTWILER AND ASSOCIATES CORPORATION | 4/16/2001 | 5/28/2002 |
| US | 6,397,039 | Satellite communication system using multiple ground station RF power control in a single downlink beam | SPACE SYSTEMS/LORAL, INC. | 9/14/1998 | 5/28/2002 |
| US | 6,398,902 | Method of end bonding tubular sections and bonding a flange on the end of tubular sections | SPACE SYSTEMS/LORAL, INC. | 2/14/2000 | 6/4/2002 |
| US | 6,400,696 | Bent-pipe satellite system which couples a LAN to a gateway and uses a dynamic assignment/multiple access protocol | SPACE SYSTEMS/LORAL, INC | 11/7/2000 | 6/4/2002 |
| US | 6,408,085 | SYSTEM FOR MATCHING NODES OF SPATIAL DATA SOURCES | GEOEYE SOLUTIONS INC. | 7/22/1998 | 6/18/2002 |
| US | 6,411,262 | Shaped reflector antenna system configuration for use on a communication satellite | SPACE SYSTEMS/LORAL, INC. | 8/22/2000 | 6/25/2002 |
| US | 6,414,646 | Variable beamwidth and zoom contour beam antenna systems | SPACE SYSTEMS/LORAL, INC. | 1/2/2001 | 7/2/2002 |
| US | 6,424,314 | FOUR AXIS BOOM FOR MOUNTING REFLECTOR ON SATELLITE | SPACE SYSTEMS/LORAL, INC. | 5/16/2001 | 7/23/2002 |
| US | 6,434,501 | Automatic network analyzer having noise/NPR test capability | SPACE SYSTEMS/LORAL, INC. | 3/21/2000 | 8/13/2002 |
| US | 6,439,507 | Closed-loop spacecraft orbit control | SPACE SYSTEMS/LORAL, INC. | 5/5/2000 | 8/27/2002 |

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| US | 6,441,794 | Dual function subreflector for communication satellite antenna | SPACE SYSTEMS/LORAL, INC. | 8/13/2001 | 8/27/2002 |
| US | 6,445,981 | Controller and control method for satellite orbit-keeping maneuvers | SPACE SYSTEMS/LORAL, INC. | 3/2/2000 | 9/3/2002 |
| US | 6,448,940 | Triple reflector antenna deployment and storage systems | SPACE SYSTEMS/LORAL, INC. | 3/20/2001 | 9/10/2002 |
| US | 6,448,943 | ANTENNA SYSTEM HAVING AN IMPROVED ANTENNA SUPPORT STRUCTURE | SPACE SYSTEMS/LORAL, INC. | 7/6/2001 | 9/10/2002 |
| US | 6,450,453 | Active steering of an appendage on a spacecraft using piezoelectric actuators | SPACE SYSTEMS/LORAL, INC. | 10/6/2000 | 9/17/2002 |
| US | 6,450,454 | SPACECRAFT ATTACK AND DISTRESS EJECTABLE RECORDER | SPACE SYSTEMS/LORAL, INC. | 12/29/2000 | 9/17/2002 |
| US | 6,454,217 | Method and apparatus for rate integration supplement for attitude referencing with quaternion differencing | SPACE SYSTEMS/LORAL, INC. | 9/28/2000 | 9/24/2002 |
| US | 6,456,824 | Satellite communication system using RF power sharing for multiple fees or beams in downlinks | SPACE SYSTEMS/LORAL, INC. | 9/14/1998 | 9/24/2002 |

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|---------|---------------|--|---|-------------|-------------------|
| US | 6,456,907 | System and method for limiting the effects of actuator saturation to certain body axes of spacecraft | SPACE SYSTEMS/LORAL, INC. | 1/31/2000 | 9/24/2002 |
| US | 6,464,174 | ROUND-TRIP ORBITAL OPERATION OF A SPACECRAFT | SPACE SYSTEMS/LORAL, INC. | 6/21/2000 | 10/15/2002 |
| US | 6,472,951 | Microwave multiplexer with manifold spacing adjustment | SPACE SYSTEMS/LORAL, INC. | 1/5/2000 | 10/29/2002 |
| US | 6,476,686 | Dielectric resonator equalizer | SPACE SYSTEMS/LORAL, INC. | 9/21/2001 | 11/5/2002 |
| US | 6,476,772 | Waveguide slot array capable of radiating shaped beams | SPACE SYSTEMS/LORAL, INC. | 5/29/2000 | 11/5/2002 |
| US | 6,477,450 | Noise screen for attitude control system | SPACE SYSTEMS/LORAL, INC. | 5/29/2000 | 11/5/2002 |
| US | 6,478,257 | Phase change material thermal control for electric propulsion | SPACE SYSTEMS/LORAL, INC. | 6/15/2001 | 11/12/2002 |
| US | 6,478,258 | Spacecraft multiple loop heat pipe thermal system for internal equipment panel applications | SPACE SYSTEMS/LORAL, INC. | 11/21/2000 | 11/12/2002 |
| US | 6,492,955 | STEERABLE ANTENNA SYSTEM WITH FIXED FEED SOURCE | MACDONALD, DETTWILER AND ASSOCIATES CORPORATION | 10/2/2001 | 12/10/2002 |
| US | 6,496,682 | Satellite communication system employing unique spot beam antenna design | SPACE SYSTEMS/LORAL, INC. | 9/14/1998 | 12/17/2002 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
|---------|---------------|--|---------------------------|-------------|-------------------|
| US | 6,501,434 | Multi-band corrugated antenna feed horn with a hexagonal aperture and antenna array using same | SPACE SYSTEMS/LORAL, INC. | 11/15/2001 | 12/31/2002 |
| US | 6,515,579 | Switching apparatus for routing communication channels through a satellite payload | SPACE SYSTEMS/LORAL, INC. | 9/30/1998 | 2/4/2003 |
| US | 6,517,029 | Friction and stiction compensation for spacecraft attitude control | SPACE SYSTEMS/LORAL, INC. | 9/13/2000 | 2/11/2003 |
| US | 6,522,306 | Hybrid horn for dual Ka-band communications | SPACE SYSTEMS/LORAL, INC. | 10/19/2001 | 2/18/2003 |
| US | 6,543,723 | Electric orbit raising with variable thrust | SPACE SYSTEMS/LORAL, INC. | 9/4/2001 | 4/8/2003 |
| US | 6,553,286 | Spacecraft constellation formation keeping using inter-spacecraft distance measurement | SPACE SYSTEMS/LORAL, INC. | 8/16/2001 | 4/22/2003 |
| US | 6,559,742 | Flexible waveguide with rounded corrugations | SPACE SYSTEMS/LORAL, INC. | 3/27/2001 | 5/6/2003 |
| US | 6,563,404 | Voltage tunable patch filter element with dielectrically loaded slot | SPACE SYSTEMS/LORAL, INC. | 6/13/2001 | 5/13/2003 |
| US | 6,570,535 | Single-receiver multiple-antenna RF autotrack control | SPACE SYSTEMS/LORAL, INC. | 3/13/2002 | 5/27/2003 |
| US | 6,581,880 | Energy managed electric propulsion methods and systems for stationkeeping satellites | SPACE SYSTEMS/LORAL, INC. | 10/15/2001 | 6/24/2003 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
|---------|---------------|--|---------------------------|-------------|-------------------|
| US | 6,583,692 | Multiple passband filter | SPACE SYSTEMS/LORAL, INC. | 5/8/2001 | 6/24/2003 |
| US | 6,583,994 | Method and apparatus for soft switched AC power distribution | SPACE SYSTEMS/LORAL, INC. | 6/19/2001 | 6/24/2003 |
| US | 6,591,899 | Spacecraft multi-directional loop heat pipe thermal system | SPACE SYSTEMS/LORAL, INC. | 11/21/2000 | 7/15/2003 |
| US | 6,623,826 | Passive intermodulation free multilayer thermal blanket | SPACE SYSTEMS/LORAL, INC. | 10/29/2001 | 9/23/2003 |
| US | 6,672,544 | Satellite harmonic torque estimator | SPACE SYSTEMS/LORAL, INC. | 3/1/2002 | 1/6/2004 |
| US | 6,691,955 | Spacecraft having a momentum wheel configuration that prevents zero wheel speeds | SPACE SYSTEMS/LORAL, INC. | 11/27/2001 | 2/17/2004 |
| US | 6,695,251 | Method and system for synchronized forward and Aft thrust vector control | SPACE SYSTEMS/LORAL, INC. | 6/19/2001 | 2/24/2004 |
| US | 6,720,918 | Antenna distortion estimation and compensation | SPACE SYSTEMS/LORAL, INC. | 9/17/2002 | 8/13/2004 |
| US | 6,725,277 | CDMA code address data routing system and method | SPACE SYSTEMS/LORAL, INC. | 3/11/2002 | 4/20/2004 |
| US | 6,735,348 | APPARATUSES AND METHODS FOR MAPPING IMAGE COORDINATES TO GROUND COORDINATES | GEOEYE SOLUTIONS INC. | 5/1/2001 | 5/11/2004 |
| US | 6,735,501 | Satellite commanding using remotely controlled modulation of satellite on-board telemetry parameters | SPACE SYSTEMS/LORAL, INC. | 3/30/2000 | 5/11/2004 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
|---------|---------------|--|---|-------------|-------------------|
| US | 6,747,604 | STEERABLE OFFSET ANTENNA WITH FIXED FEED SOURCE | MACDONALD, DETTWILER AND ASSOCIATES CORPORATION | 10/8/2002 | 6/8/2004 |
| US | 6,749,533 | GEARBOX | MACDONALD, DETTWILER AND ASSOCIATES INC. | 5/24/2002 | 6/15/2004 |
| US | 6,776,220 | Spacecraft radiator system using crossing heat pipes | SPACE SYSTEMS/LORAL, INC. | 8/19/1999 | 8/17/2004 |
| US | 6,854,510 | Spacecraft radiator system and method using cross-coupled deployable thermal radiators | SPACE SYSTEMS/LORAL, INC. | 4/24/2001 | 2/15/2005 |
| US | 6,879,808 | Broadband communication systems and methods using low and high bandwidth request and broadcast links | SPACE SYSTEMS/LORAL, INC. | 11/15/2000 | 4/12/2005 |
| US | 6,883,588 | Spacecraft radiator system using a heat pump | SPACE SYSTEMS/LORAL, INC. | 7/24/2000 | 4/26/2005 |
| US | 6,898,428 | Satellite communication system with gateway switch networks | SPACE SYSTEMS/LORAL, INC. | 5/31/2001 | 5/24/2005 |
| US | 6,929,591 | TOOL STORAGE HOLSTER | MACDONALD, DETTWILER AND ASSOCIATES INC. | 12/16/2002 | 8/16/2005 |
| US | 6,969,030 | Spacecraft Docking Mechanism | MACDONALD, DETTWILER AND ASSOCIATES INC. | 7/14/2004 | 11/29/2005 |
| US | 7,028,953 | Two-sided deployable thermal radiator system and method | SPACE SYSTEMS/LORAL, INC. | 11/11/2001 | 4/18/2006 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
|---------|---------------|--|---|-------------|-------------------|
| US | 7,068,816 | METHOD FOR USING REMOTELY SENSED DATA TO PROVIDE AGRICULTURAL INFORMATION | DIGITALGLOBE, INC. | 1/15/2002 | 6/27/2006 |
| US | 7,038,636 | HELICAL ANTENNA | MACDONALD, DETTWILER ASSOCIATES CORPORATION | 6/16/2004 | 12/23/2004 |
| US | 7,113,851 | Practical orbit raising system and method for geosynchronous satellites | SPACE SYSTEMS/LORAL, INC. | 6/9/1999 | 9/26/2006 |
| US | 7,138,959 | METHOD FOR IMPROVING ISOLATION OF AN ANTENNA MOUNTED ON A STRUCTURE | MACDONALD, DETTWILER ASSOCIATES CORPORATION | 12/30/2003 | 11/21/2006 |
| US | 7,183,990 | APERATURE ILLUMINATION CONTROL MEMBRANE | MACDONALD, DETTWILER ASSOCIATES CORPORATION | 2/3/2005 | 2/27/2007 |
| US | 7,219,132 | Dynamic Resource Allocation Architecture for Differentiated Services over Broadband Communication Networks | SPACE SYSTEMS/LORAL, INC. | 3/30/2001 | 5/15/2007 |
| US | 7,236,142 | ELECTROMAGNETIC BANDGAP DEVICE FOR ANTENNA STRUCTURES | MACDONALD, DETTWILER ASSOCIATES CORPORATION | 10/3/2005 | 6/26/2007 |
| US | 7,236,646 | TONAL BALANCING OF MULTIPLE IMAGES | GEOEYE SOLUTIONS INC. | 4/25/2003 | 6/26/2007 |
| US | 7,269,299 | IMAGE WARP | GEOEYE SOLUTIONS INC. | 10/10/2003 | 9/11/2007 |
| US | 7,317,844 | TONAL BALANCING OF MULTIPLE IMAGES | GEOEYE SOLUTIONS INC. | 5/24/2007 | 1/8/2008 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
|---------|---------------|--|---|-------------|-------------------|
| US | 7,363,960 | Heat transfer of a remote heat source using a loop heat pipe | SPACE SYSTEMS/LORAL, INC. | 3/30/2001 | 4/29/2008 |
| US | 7,421,151 | ESTIMATION OF COEFFICIENTS FOR A RATIONAL POLYNOMIAL CAMERA MODEL | GEOEYE SOLUTIONS INC. | 5/18/2004 | 9/2/2008 |
| US | 7,474,272 | PARASITIC ELEMENT FOR HELICAL ANTENNA | MACDONALD, DETTWILER AND ASSOCIATES CORPORATION | 6/27/2007 | 1/6/2009 |
| US | 7,613,362 | IMAGE WARP | GEOEYE SOLUTIONS INC. | 8/7/2007 | 11/3/2009 |
| US | 7,660,430 | METHOD AND APPARATUS FOR DETERMINATION OF WATER PERVIOUS SURFACES | DIGITALGLOBE, INC. | 5/23/2005 | 2/9/2010 |
| US | 7,653,218 | SEMI-AUTOMATIC EXTRACTION OF LINEAR FEATURES FROM MULTISPECTRAL IMAGE DATA | GEOEYE SOLUTIONS INC. | 6/18/2007 | 1/26/2010 |
| US | 7,715,651 | METHOD AND APPARATUS FOR ENHANCING A DIGITAL IMAGE | DIGITALGLOBE, INC. | 5/11/2009 | 5/11/2010 |
| US | 7,756,615 | TRAFFIC MANAGEMENT SYSTEM BASED ON A PASSAGEWAY ENVIRONMENT | MACDONALD, DETTWILER AND ASSOCIATES INC. | 7/26/2006 | 7/13/2010 |
| US | 7,783,734 | Satellite communications system for providing global, high quality movement of very large data files | MACDONALD, DETTWILER AND ASSOCIATES LTD. | 1/1/2005 | 8/24/2010 |
| US | 7,787,819 | Ground Based Beam Forming for Satellite Communications Systems | SPACE SYSTEMS/LORAL, INC. | 8/25/2006 | 8/31/2010 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
|---------|---------------|--|--|-------------|-------------------|
| US | 7,792,070 | Multi-Beam Satellite Network to Maximize Bandwidth Utilization | SPACE SYSTEMS/LORAL, INC. | 8/8/2007 | 9/7/2010 |
| US | 7,860,301 | 3-D IMAGING SYSTEM | MACDONALD, DETTWILER AND ASSOCIATES INC. | 2/13/2006 | 12/28/2010 |
| US | 7,874,519 | Spacecraft Three-Axis Earth Acquisition from Sun Direction Measurement | SPACE SYSTEMS/LORAL, INC. | 2/22/2007 | 1/25/2011 |
| US | 7,889,129 | Lightweight space-fed active phased array antenna system | MACDONALD, DETTWILER AND ASSOCIATES LTD. | 5/7/2008 | 2/15/2011 |
| US | 7,996,110 | Surgical robot and robotic controller | MACDONALD, DETTWILER AND ASSOCIATES INC. | 11/20/2006 | 8/9/2011 |
| US | 8,021,069 | Redundant Radial Release Apparatus | SPACE SYSTEMS/LORAL, INC. | 2/22/2007 | 1/25/2011 |
| US | 8,031,909 | Method and Apparatus for Producing 3D Model of an Underground | MACDONALD, DETTWILER AND ASSOCIATES INC. | 12/18/2009 | 10/4/2011 |
| US | 8,031,933 | METHOD AND APPARATUS FOR PRODUCING 3D MODEL OF AN ENVIRONMENT | MACDONALD, DETTWILER AND ASSOCIATES INC. | 12/18/2009 | 10/4/2011 |
| US | 8,074,935 | ROBOTIC SATELLITE REFUELLING METHOD AND SYSTEM | MACDONALD, DETTWILER AND ASSOCIATES INC. | 3/10/2008 | 12/13/2011 |
| US | 8,090,491 | Guidance, Navigation, and Control System for an Underground Mining Vehicle | MACDONALD, DETTWILER AND ASSOCIATES, INC | 12/21/2007 | 1/3/2012 |
| US | 8,135,338 | Satellite System with Enhanced Payload Capacity | SPACE SYSTEMS/LORAL, INC. | 12/24/2008 | 3/13/2012 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
|---------|---------------|--|--|-------------|-------------------|
| US | 8,155,391 | SEMI-AUTOMATIC EXTRACTION OF LINEAR FEATURES FROM IMAGE DATA | GEOEYE SOLUTIONS INC. | 10/27/2009 | 4/10/2012 |
| US | 8,160,575 | Methods for testing multibeam satellite system using input power telemetry and output noise power | SPACE SYSTEMS/LORAL, INC. | 7/23/2001 | 4/17/2012 |
| US | 8,179,313 | Antenna Tracking Profile Estimation | SPACE SYSTEMS/LORAL, INC. | 5/13/2010 | 5/15/2012 |
| US | 8,181,911 | Satellite Refueling System and Method | MACDONALD DETTWILER AND ASSOCIATES INC. | 8/2/2011 | 5/22/2011 |
| US | 8,196,870 | Robotic Satellite Refueling Tool | MACDONALD DETTWILER AND ASSOCIATES INC. | 12/12/2011 | 6/12/2012 |
| US | 8,260,483 | Guidance, Navigation, and Control System for a Vehicle | MACDONALD, DETTWILER AND ASSOCIATES INC | 8/12/2011 | 9/4/2012 |
| US | 8,270,899 | Ground Based Beam Forming for Satellite Communications Systems | SPACE SYSTEMS/LORAL, INC. | 8/13/2010 | 9/18/2012 |
| US | 8,301,377 | Image navigation method using parametric systematic error correction | SPACE SYSTEMS/LORAL, LLC | 5/14/2010 | 10/30/2012 |
| US | 8,412,851 | Satellite communications system for providing global, high quality movement of very large data files | MACDONALD, DETTWILER AND ASSOCIATES LTD. | 8/4/2010 | 4/2/2013 |
| US | 8,444,631 | SURGICAL MANIPULATOR WITH RIGHT-ANGLE PULLEY DRIVE MECHANISMS | MACDONALD, DETTWILER AND ASSOCIATES INC. | 12/22/2008 | 5/21/2013 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
|---------|---------------|--|--|-------------|-------------------|
| US | 8,447,296 | Methods for testing multibeam satellite systems using input power telemetry and output noise power | SPACE SYSTEMS/LORAL, INC. | 2/27/2012 | 5/21/2013 |
| US | 8,448,902 | Satellite Having Multiple Aspect Ratios | SPACE SYSTEMS/LORAL, INC. | 2/11/2011 | 5/28/2013 |
| US | 8,448,904 | Robotic Satellite Refueling Tool | MACDONALD, DETTWILER AND ASSOCIATES INC. | 5/14/2012 | 5/28/2013 |
| US | 8,482,894 | Source Driver Current Fold-Back Protection | SPACE SYSTEMS/LORAL, INC. | 3/21/2011 | 7/9/2013 |
| US | 8,488,845 | SEMI-AUTOMATIC EXTRACTION OF LINEAR FEATURES FROM IMAGE DATA | GEOEYE SOLUTIONS INC. | 3/12/2012 | 7/16/2013 |
| US | 8,491,603 | SURGICAL MANIPULATOR | MACDONALD, DETTWILER AND ASSOCIATES INC. | 6/14/2007 | 7/23/2013 |
| US | 8,515,576 | Surgical robot and robotic controller | MACDONALD, DETTWILER AND ASSOCIATES INC. | 8/8/2011 | 8/20/2013 |
| US | 8,532,368 | METHOD AND APPARATUS FOR PRODUCING 3D MODEL OF AN ENVIRONMENT | MACDONALD, DETTWILER AND ASSOCIATES INC. | 8/15/2011 | 9/10/2013 |
| US | 8,548,248 | Correlated land change system and method | MIDA INFORMATION SYSTEMS LLC | 4/28/2011 | 10/1/2013 |
| US | 8,568,053 | RADIAL RELEASE DEVICE | SPACE SYSTEMS/LORAL, LLC | 4/14/2008 | 10/29/2013 |
| US | 8,594,375 | ADVANCED CLOUD COVER ASSESSMENT | DIGITALGLOBE, INC. | 5/20/2011 | 11/26/2013 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
|---------|---------------|--|--|-------------|-------------------|
| US | 8,660,482 | Broadband satellite with dual frequency conversion and bandwidth aggregation | SPACE SYSTEMS/LORAL, INC. | 4/25/2011 | 2/25/2014 |
| US | 8,682,079 | AUTOMATIC EXTRACTION OF BUILT-UP FOOTPRINTS FROM HIGH RESOLUTION OVERHEAD IMAGERY THROUGH MANIPULATION OF ALPHA-TREE DATA STRUCTURES | DIGITALGLOBE, INC. | 11/25/2013 | 3/25/2014 |
| US | 8,693,730 | Method of Real-Time Tracking of Moving/Flexible Surfaces | MACDONALD, DETTWILER AND ASSOCIATES INC. | 11/15/2012 | 4/8/2014 |
| US | 8,702,341 | Scalable Common Interface Plate System (SCIPS) | MACDONALD, DETTWILER AND ASSOCIATES INC. | 2/15/2011 | 4/22/2014 |
| US | 8,732,916 | Band Clamp with Redundant Load Path | SPACE SYSTEMS/LORAL, INC. | 6/20/2011 | 5/27/2014 |
| US | 8,761,026 | COMPACT MICROSTRIP HYBRID COUPLED INPUT MULTIPLEXER | SPACE SYSTEMS/LORAL, LLC | 4/25/2013 | 6/24/2014 |
| US | 8,761,506 | PAN SHARPENING DIGITAL IMAGERY | DIGITALGLOBE, INC. | 4/20/2012 | 6/24/2014 |
| US | 8,763,957 | Spacecraft Transfer Orbit Techniques | SPACE SYSTEMS/LORAL, INC. | 10/8/2012 | 7/1/2014 |
| US | 8,737,733 | HYPERSHERICAL PAN SHARPENING | DIGITALGLOBE, INC. | 4/20/2012 | 5/27/2014 |
| US | 8,789,796 | High Capacity Broadband Satellite | SPACE SYSTEMS/LORAL, INC. | 5/5/2011 | 7/29/2014 |
| US | 8,800,935 | Spacecraft payload positioning with respect to a virtual pivot point | SPACE SYSTEMS/LORAL, INC. | 3/9/2011 | 8/12/2014 |
| US | 8,868,263 | Spacecraft Momentum Management Using Solar Array | SPACE SYSTEMS/LORAL, INC. | 5/25/2011 | 10/21/2014 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
|---------|---------------|---|--|-------------|-------------------|
| US | 8,872,714 | Low Profile Wide Beam Antenna | SPACE SYSTEMS/LORAL, INC. | 5/17/2012 | 10/28/2014 |
| US | 8,876,062 | SHAPE MEMORY ALLOY PRE-LOADED DEPLOYMENT HINGE | SPACE SYSTEMS/LORAL, INC. | 10/31/2012 | 11/4/2014 |
| US | 8,894,017 | FLEXIBLE ARRAY SUPPORT STRUCTURE | SPACE SYSTEMS/LORAL, LLC | 12/28/2012 | 11/4/2014 |
| US | 8,899,527 | Propellant Transfer System and Method for Resupply of Propellant to On-Orbit Spacecraft | MACDONALD, DETTWILER AND ASSOCIATES INC. | 11/15/2012 | 12/2/2014 |
| US | 8,907,742 | Electrostatic discharge control for a multi-cavity microwave filter | SPACE SYSTEMS/LORAL, INC. | 4/9/2012 | 12/9/2014 |
| US | 8,913,826 | ADVANCED CLOUD COVER ASSESSMENT FOR PANCHROMATIC IMAGES | DIGITALGLOBE, INC. | 7/31/2013 | 12/16/2014 |
| US | 8,914,258 | RF feed element design optimization using secondary pattern | SPACE SYSTEMS/LORAL, INC. | 6/28/2011 | 12/16/2014 |
| US | 8,915,473 | Hold-down Mechanism for a Spacecraft Appendage | SPACE SYSTEMS/LORAL, INC. | 9/20/2011 | 12/23/2014 |
| US | 8,915,474 | SOLAR PANEL SEQUENCING MECHANISM | SPACE SYSTEMS/LORAL, INC. | 9/21/2012 | 12/9/2014 |
| US | 8,952,769 | Dual Mode Dielectric Resonator Loaded Cavity Filter | SPACE SYSTEMS/LORAL, INC. | 9/28/2011 | 2/10/2015 |
| US | 8,973,641 | ROLL-UP CONTAMINATION COVER | SPACE SYSTEMS/LORAL, INC. | 10/31/2012 | 3/10/2015 |
| US | 8,996,051 | Satellite System Resource Allocation Optimization | SPACE SYSTEMS/LORAL, LLC | 3/11/2013 | 3/31/2015 |

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| US | 8,998,146 | SPACECRAFT MOMENTUM UNLOAD AND STATION-KEEPING TECHNIQUES | SPACE SYSTEMS/LORAL, LLC | 11/21/2012 | 4/7/2015 |
| US | 9,000,288 | Current collector bar and grid pattern for a photovoltaic solar cell | SPACE SYSTEMS/LORAL, INC. | 7/22/2011 | 4/7/2015 |
| US | 9,001,311 | USING PARALLAX IN REMOTE SENSING TO DETERMINE CLOUD FEATURE HEIGHT | DIGITALGLOBE, INC. | 3/15/2013 | 4/7/2015 |
| US | 9,004,409 | Extendable Antenna Reflector Deployment Structure | SPACE SYSTEMS/LORAL, INC. | 8/23/2011 | 4/14/2015 |
| US | 9,019,039 | Frequency and Bandwidth Tunable Microwave Filter | SPACE SYSTEMS/LORAL, INC. | 10/4/2012 | 4/28/2015 |
| US | 9,030,271 | Microstrip Manifold Coupled Multiplexer | SPACE SYSTEMS/LORAL, INC. | 12/29/2011 | 5/12/2015 |
| US | 9,031,325 | AUTOMATIC EXTRACTION OF BUILT-UP FOOTPRINTS FROM HIGH RESOLUTION OVERHEAD IMAGERY THROUGH MANIPULATION OF ALPHA-TREE DATA STRUCTURES | DIGITALGLOBE, INC. | 8/29/2013 | 5/12/2015 |
| US | 9,032,000 | SYSTEM AND METHOD FOR GEOLOCATION OF SOCIAL MEDIA POSTS | DIGITALGLOBE, INC. | 3/15/2013 | 5/12/2015 |
| US | 9,042,674 | AUTOMATED GEOSPATIAL IMAGE MOSAIC GENERATION | DIGITALGLOBE, INC. | 3/15/2013 | 5/26/2015 |
| US | 9,045,239 | Spacecraft Payload Orientation Steering | SPACE SYSTEMS/LORAL, INC. | 12/2/2009 | 6/2/2015 |

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|---------|---------------|---|---|-------------|-------------------|
| US | 9,059,682 | ORTHOMODE JUNCTION ASSEMBLY WITH ASSOCIATED FILTERS FOR USE IN AN ANTENNA FEED SYSTEM | MACDONALD, DETTWILER AND ASSOCIATES CORPORATION | 8/23/2013 | 6/16/2015 |
| US | 9,085,377 | Redundant Fuse Wire Release Device | SPACE SYSTEMS/LORAL, INC | 5/17/2011 | 7/21/2015 |
| US | 9,093,742 | WIDE SCAN STEERABLE ANTENNA WITH NO KEY-HOLE | MACDONALD, DETTWILER AND ASSOCIATES CORPORATION | 10/16/2012 | 7/28/2015 |
| US | 9,101,267 | Method of Real-Time Tracking of Moving/Flexible Surfaces | MACDONALD, DETTWILER AND ASSOCIATES INC. | 3/21/2014 | 8/11/2015 |
| US | 9,108,747 | Tool for Accessing Satellite Fill/Drain valves During Propellant Resupply | MACDONALD, DETTWILER AND ASSOCIATES INC. | 12/5/2012 | 7/18/2015 |
| US | 9,108,748 | Satellite Orbit Raising Using Electric Propulsion | SPACE SYSTEMS/LORAL, INC. | 10/20/2010 | 8/18/2015 |
| US | 9,108,749 | Spacecraft Momentum Management | SPACE SYSTEMS/LORAL, INC. | 12/15/2011 | 8/18/2015 |
| US | 9,115,867 | DUAL REFLECTOR SYSTEM FOR LINEAR LAMP ILLUMINATORS | MACDONALD, DETTWILER AND ASSOCIATES INC. | 10/19/2010 | 8/25/2015 |
| US | 9,122,708 | CROWDSOURCED SEARCH AND LOCATE PLATFORM | DIGITALGLOBE, INC. | 8/26/2013 | 9/1/2015 |
| US | 9,122,930 | AUTOMATED REMOTE CAR COUNTING | DIGITALGLOBE, INC. | 12/3/2013 | 9/1/2015 |
| US | 9,128,959 | CROWDSOURCED SEARCH AND LOCATE PLATFORM | DIGITALGLOBE, INC. | 10/8/2013 | 9/8/2015 |

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| US | 9,135,505 | AUTOMATED GEOSPATIAL IMAGE MOSAIC GENERATION WITH AUTOMATIC CUTLINE GENERATION | DIGITALGLOBE, INC. | 7/26/2013 | 9/15/2015 |
| US | 9,136,606 | Electrically large stepped-wall and smooth-wall horn for spot beam applications | SPACE SYSTEMS/LORAL, INC. | 12/3/2010 | 9/15/2015 |
| US | 9,141,872 | AUTOMATED AND SCALABLE OBJECT AND FEATURE EXTRACTION FROM IMAGERY | DIGITALGLOBE, INC. | 9/11/2013 | 9/22/2015 |
| US | 9,145,216 | Chemical/Electric Optimized Propulsion System | SPACE SYSTEMS/LORAL, INC. | 8/31/2011 | 9/29/2015 |
| US | 9,147,132 | CLASSIFICATION OF LAND BASED ON ANALYSIS OF REMOTELY-SENSED EARTH IMAGES | DIGITALGLOBE, INC. | 9/11/2013 | 9/29/2015 |
| US | 9,153,877 | High-efficiency Multi-beam Antenna | SPACE SYSTEMS/LORAL, INC. | 12/20/2011 | 10/6/2015 |
| US | 9,172,128 | ANTENNA POINTING SYSTEM | MACDONALD, DETTWILER AND ASSOCIATES CORPORATION | 12/21/2012 | 10/27/2015 |
| US | 9,174,396 | METHOD OF MAKING CHARGE DISSIPATIVE SURFACES OF POLYMERIC MATERIALS WITH LOW TEMPERATURE DEPENDENCE OF SURFACE RESISTIVITY AND LOW RF LOSS | MACDONALD, DETTWILER AND ASSOCIATES CORPORATION | 7/3/2013 | 11/3/2015 |
| US | 9,180,982 | Preload Release Fastener and Release System Using Same | SPACE SYSTEMS/LORAL, INC. | 8/24/2011 | 11/10/2015 |

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| US | 9,195,876 | OIL TANK FARM STORAGE MONITORING | DIGITALGLOBE, INC. | 12/3/2013 | 11/24/2015 |
| US | 9,202,259 | AUTOMATED GEOSPATIAL IMAGE MOSAIC GENERATION WITH AUTOMATIC SOURCE SELECTION | DIGITALGLOBE, INC. | 7/26/2013 | 12/1/2015 |
| US | 9,230,169 | GENERATION OF HIGH RESOLUTION POPULATION DENSITY DATA SETS THROUGH EXPLOITATION OF HIGH RESOLUTION OVERHEAD IMAGERY DATA AND LOW RESOLUTION POPULATION DENSITY DATA SETS | DIGITALGLOBE, INC. | 10/25/2013 | 1/5/2016 |
| US | 9,230,168 | AUTOMATIC GENERATION OF BUILT-UP LAYERS FROM HIGH RESOLUTION SATELLITE IMAGE DATA | DIGITALGLOBE, INC. | 7/31/2013 | 1/5/2016 |
| US | 9,242,743 | SIDE-BY-SIDE MULTIPLE LAUNCH CONFIGURATION | SPACE SYSTEMS/LORAL, LLC | 12/16/2013 | 1/26/2016 |
| US | 9,248,922 | Reflector Deployment Techniques for Satellites | SPACE SYSTEMS/LORAL, INC. | 8/23/2011 | 2/2/2016 |
| US | 9,251,419 | AUTOMATED METRIC INFORMATION NETWORK | DIGITALGLOBE, INC. | 2/7/2013 | 2/2/2016 |
| US | 9,259,271 | AUTOMATED IN-BORE MR GUIDED ROBOTIC DIAGNOSTIC AND THERAPEUTIC SYSTEM | MACDONALD, DETTWILER AND ASSOCIATES INC. | 3/7/2013 | 2/16/2016 |
| US | 9,260,206 | Propellant Transfer System and Method for Resupply of Propellant to On-Orbit Spacecraft | MACDONALD, DETTWILER AND ASSOCIATES INC. | 12/1/2014 | 2/16/2016 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
|---------|---------------|--|--|-------------|-------------------|
| US | 9,275,297 | TECHNIQUES FOR IDENTIFYING PARKING LOTS IN REMOTELY-SENSED IMAGES BY IDENTIFYING PARKING ROWS | DIGITALGLOBE, INC. | 10/14/2013 | 3/1/2016 |
| US | 9,285,481 | A Wearable Object Locator and Imaging System | MACDONALD, DETTWILER AND ASSOCIATES INC. | 8/20/2012 | 3/15/2016 |
| US | 9,333,041 | SURGICAL MANIPULATOR WITH RIGHT-ANGLE PULLEY DRIVE MECHANISMS | MACDONALD, DETTWILER AND ASSOCIATES INC. | 5/21/2013 | 5/10/2016 |
| US | 9,336,441 | BATHYMETRIC TECHNIQUES USING SATELLITE IMAGERY | DIGITALGLOBE, INC. | 7/24/2013 | 5/10/2016 |
| US | 9,339,935 | Scalable Common Interface Plate System (SCIPS) | MACDONALD, DETTWILER AND ASSOCIATES INC. | 3/7/2014 | 5/17/2016 |
| US | 9,352,856 | AXIALLY GROOVED CROSSING HEAT PIPES | SPACE SYSTEMS/LORAL, LLC | 12/4/2013 | 5/31/2016 |
| US | 9,365,299 | HIGHLY INCLINED ELLIPTICAL ORBIT LAUNCH AND ORBIT ACQUISITION TECHNIQUES | SPACE SYSTEMS/LORAL, LLC | 6/9/2014 | 6/14/2016 |
| US | 9,367,895 | AUTOMATED SLIVER REMOVAL IN ORTHOMOSAIC GENERATION | DIGITALGLOBE, INC. | 3/19/2014 | 6/14/2016 |
| US | 9,368,851 | WAVEGUIDE T-SWITCH | SPACE SYSTEMS/LORAL, LLC | 12/27/2012 | 6/14/2016 |
| US | 9,369,883 | Satellite communications system for providing global, high quality movement of very large data files | MACDONALD, DETTWILER AND ASSOCIATES LTD. | 3/28/2013 | 6/14/2016 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
|---------|---------------|---|--|-------------|-------------------|
| US | 9,396,391 | AUTOMATED GEOSPATIAL IMAGE MOSAIC GENERATION WITH MULTIPLE ZOOM LEVEL SUPPORT | DIGITALGLOBE, INC. | 6/17/2014 | 7/19/2016 |
| US | 9,396,528 | ATMOSPHERIC COMPENSATION IN SATELLITE IMAGERY | DIGITALGLOBE, INC. | 3/15/2013 | 7/19/2016 |
| US | 9,399,295 | Spacecraft Capture Mechanism | MACDONALD, DETTWILER AND ASSOCIATES INC. | 3/19/2013 | 7/26/2016 |
| US | 9,476,715 | NAVIGATIONAL ROUTE SELECTION TO MITIGATE PROBABILITY MOBILE TERMINAL LOSES COMMUNICATION CAPABILITY | SPACE SYSTEMS/LORAL, LLC | 2/26/2015 | 10/25/2016 |
| US | 9,495,618 | OBJECT DETECTION WITH TEXTURAL TO SPECTRAL DOMAIN ADAPTATION | DIGITALGLOBE, INC. | 8/6/2015 | 11/15/2016 |
| US | 9,523,633 | NONDESTRUCTIVE PROOF LOADING OF HONEYCOMB PANELS | SPACE SYSTEMS/LORAL, LLC | 7/31/2014 | 12/20/2016 |
| US | 9,529,824 | SYSTEM AND METHOD FOR MULTI RESOLUTION AND MULTI TEMPORAL IMAGE SEARCH | DIGITALGLOBE, INC. | 11/27/2013 | 12/27/2016 |
| US | 9,531,048 | Mode Filter | SPACE SYSTEMS/LORAL, LLC | 3/13/2013 | 12/27/2016 |
| US | 9,533,774 | HIGHLY INCLINED ELLIPTICAL ORBIT LAUNCH AND ORBIT ACQUISITION TECHNIQUES | SPACE SYSTEMS/LORAL, LLC | 5/26/2016 | 1/3/2017 |
| US | 9,537,209 | Antenna Array with Reduced Mutual Coupling Between Array Elements | SPACE SYSTEMS/LORAL, LLC | 5/16/2013 | 1/3/2017 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
|---------|---------------|---|--|-------------|-------------------|
| US | 9,546,510 | HINGE WITH SPRING PRE-LOAD TRANSFER MECHANISM | SPACE SYSTEMS/LORAL, LLC | 1/13/2015 | 1/17/2017 |
| US | 9,550,585 | HIGHLY INCLINED ELLIPTICAL ORBIT LAUNCH AND ORBIT ACQUISITION TECHNIQUES | SPACE SYSTEMS/LORAL, LLC | 6/9/2014 | 1/24/2017 |
| US | 9,560,092 | CROWDSOURCED IMAGE ANALYSIS PLATFORM | DIGITALGLOBE, INC. | 10/8/2013 | 1/31/2017 |
| US | 9,567,111 | Tool for Accessing Satellite Fill/Drain valves During Propellant Resupply | MACDONALD, DETTWILER AND ASSOCIATES INC. | 6/19/2015 | 2/14/2017 |
| US | 9,569,690 | AUTOMATED AND SCALABLE OBJECT AND FEATURE EXTRACTION FROM IMAGERY | DIGITALGLOBE, INC. | 8/14/2015 | 2/14/2017 |
| US | 9,589,210 | BROAD AREA GEOSPATIAL OBJECT DETECTION USING AUTOGENERATED DEEP LEARNING MODELS | DIGITALGLOBE, INC. | 8/26/2015 | 3/7/2017 |
| US | 9,589,334 | AUTOMATED TONAL BALANCING | DIGITALGLOBE, INC. | 5/8/2015 | 3/7/2017 |
| US | 9,600,740 | SEMI-AUTOMATED EDITING OF ORTHOMOSAICS BUILT FROM REMOTELY-SENSED IMAGERY, SYSTEM AND METHODS FOR | DIGITALGLOBE, INC. | 6/3/2015 | 3/21/2017 |
| US | 9,606,044 | DEPRESSURIZATION TEST METHOD USING PRESSURE VESSEL | SPACE SYSTEMS/LORAL, LLC | 3/21/2014 | 3/28/2017 |
| US | 9,608,716 | SATELLITE TRANSMIT ANTENNA GROUND-BASED POINTING | SPACE SYSTEMS/LORAL, LLC | 4/6/2016 | 3/28/2017 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
|---------|---------------|--|--------------------------|-------------|-------------------|
| US | 9,619,710 | AUTOMATED REMOTE CAR COUNTING | DIGITALGLOBE, INC. | 3/9/2016 | 4/11/2017 |
| US | 9,619,711 | MULTI-SPECTRAL IMAGE LABELING WITH RADIOMETRIC ATTRIBUTE VECTORS OF IMAGE SPACE REPRESENTATION COMPONENTS | DIGITALGLOBE, INC. | 11/29/2014 | 4/11/2017 |
| US | 9,619,734 | CLASSIFICATION OF LAND BASED ON ANALYSIS OF REMOTELY-SENSED EARTH IMAGES | DIGITALGLOBE, INC. | 8/27/2015 | 4/11/2017 |
| US | 9,621,255 | CHANNELIZER SUPPLEMENTED SPACECRAFT TELEMETRY AND COMMAND FUNCTIONALITY | SPACE SYSTEMS/LORAL, LLC | 11/12/2015 | 4/11/2017 |
| US | 9,626,565 | AUTOMATED CONVERSION OF TWO-DIMENSIONAL HYDROLOGY VECTOR MODELS INTO VALID THREE-DIMENSIONAL HYDROLOGY VECTOR MODELS | DIGITALGLOBE, INC. | 7/1/2015 | 4/18/2017 |
| US | 9,627,565 | INTEGRAL CORNER BYPASS DIODE INTERCONNECTING CONFIGURATION FOR MULTIPLE SOLAR CELLS | SPACE SYSTEMS/LORAL, LLC | 11/27/2013 | 4/18/2017 |
| US | 9,639,755 | AUTOMATED COMPOUND STRUCTURE CHARACTERIZATION IN OVERHEAD IMAGERY | DIGITALGLOBE, INC. | 1/24/2014 | 5/2/2017 |
| US | 9,640,288 | FLEXIBLE RADIATION SHIELD | SPACE SYSTEMS/LORAL, LLC | 11/30/2015 | 5/2/2017 |
| US | 9,641,144 | SOLID STATE TRAVELING WAVE AMPLIFIER FOR SPACE APPLICATIONS | SPACE SYSTEMS/LORAL, LLC | 6/3/2015 | 5/2/2017 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
|---------|---------------|--|--|-------------|-------------------|
| US | 9,642,107 | MULTI-CHANNEL CALIBRATION SATELLITE | SPACE SYSTEMS/LORAL, LLC | 8/1/2016 | 5/2/2017 |
| US | 9,663,251 | THRUSTER SUPPORT MECHANISM FOR SATELLITE PROPULSION | SPACE SYSTEMS/LORAL, LLC | 12/22/2014 | 5/30/2017 |
| US | 9,669,950 | Spacecraft Capture Mechanism | MACDONALD, DETTWILER AND ASSOCIATES INC. | 5/2/2015 | 6/6/2017 |
| US | 9,672,424 | GENERATION OF HIGH RESOLUTION POPULATION DENSITY THROUGH EXPLOITATION OF HIGH RESOLUTION OVERHEAD IMAGERY DATA AND LOW RESOLUTION POPULATION DENSITY DATA SETS | DIGITALGLOBE, INC. | 12/21/2015 | 6/6/2017 |
| US | 9,676,096 | ROBOTIC SERVICING MULTIFUNCTIONAL TOOL | MACDONALD DETTWILER AND ASSOCIATES INC. | 10/15/2012 | 6/13/2017 |
| US | 9,677,602 | CAGING MECHANISM FOR A SINGLE- OR MULTI-AXIS POSITIONING MECHANISM | SPACE SYSTEMS/LORAL, LLC | 11/25/2013 | 6/13/2017 |
| US | 9,685,710 | REFLECTIVE AND PERMEABLE METALLIZED LAMINATE | SPACE SYSTEMS/LORAL, LLC | 1/22/2014 | 6/20/2017 |
| US | 9,688,422 | Tool for Accessing Satellite Fill/Drain valves During Propellant Resupply | MACDONALD, DETTWILER AND ASSOCIATES INC. | 6/19/2015 | 6/27/2017 |
| US | 9,705,171 | A DIELECTRIC FILTER AND MULTIPLEXER HAVING A COMMON WALL WITH A CENTRALLY LOCATED COUPLING IRIS AND A LARGER PERIPHERAL APERTURE ADJUSTABLE BY A TUNNING SCREW | SPACE SYSTEMS/LORAL, LLC | 4/8/2015 | 7/11/2017 |

| Country | Patent Number | Title | Owner of Record | Filing Date | Patent Issue Date |
|---------|---------------|--|--------------------------|-------------|-------------------|
| US | 9,714,777 | HEAT PIPE AND RADIATOR SYSTEM WITH THERMOELECTRIC COOLER | SPACE SYSTEMS/LORAL, LLC | 2/18/2014 | 7/25/2017 |

2 U.S. Patent Applications

| Country | Application Number | Title | Owner of Record | Filing Date | Issue Date |
|---------|--------------------|--|---------------------------|-------------|------------|
| US | 09/327,815 | METHOD AND APPARATUS FOR FORMING COMPOSITE HONEYCOMB CORE | SPACE SYSTEMS/LORAL, INC. | 6/8/1999 | |
| US | 09/333,607 | ATTITUDE CORRECTION OF DISTURBANCES RELATIVE TO A SPACECRAFT ATTITUDE SENSOR | SPACE SYSTEMS/LORAL, INC. | 6/15/1999 | |
| US | 09/739,942 | Method and system for providing satellite communications | SPACE SYSTEMS/LORAL, INC. | 12/18/2000 | |
| US | 09/756,569 | OPTICAL CHANNELIZER AND ROUTER AND ROUTING METHOD | SPACE SYSTEMS/LORAL, INC. | 1/8/2001 | |
| US | 09/771,766 | Embedded heat pipe sandwich panel constructed using dissimilar materials | SPACE SYSTEMS/LORAL, INC. | 1/29/2001 | |
| US | 09/819,348 | Post-amplification linearization | SPACE SYSTEMS/LORAL, INC. | 3/28/2001 | |
| US | 09/819,781 | Pre-amplification software linearizer | SPACE SYSTEMS/LORAL, INC. | 3/28/2001 | |
| US | 09/823,072 | Spacecraft radiator system and method using east west coupled radiators | SPACE SYSTEMS/LORAL, INC. | 3/30/2001 | |

| Country | Application Number | Title | Owner of Record | Filing Date | Issue Date |
|---------|--------------------|--|---------------------------|-------------|------------|
| US | 09/845,370 | Spacecraft dependent on non-intrusive servicing | SPACE SYSTEMS/LORAL, INC. | 4/30/2001 | |
| US | 09/854,252 | High efficiency corrugated horn and flat top multiple beam antenna | SPACE SYSTEMS/LORAL, INC. | 5/11/2001 | |
| US | 09/879,523 | Method and apparatus for dynamic frequency bandwidth allocation | SPACE SYSTEMS/LORAL, INC. | 6/12/2001 | |
| US | 09/880,487 | Amplitude adjustable dual mode dielectric resonator filter assembly | SPACE SYSTEMS/LORAL, INC. | 6/13/2001 | |
| US | 09/906,902 | BRACKET-LIKE STRUCTURAL MEMBER | SPACE SYSTEMS/LORAL, INC. | 7/16/2001 | |
| US | 09/920,920 | Built-in test stimulation for antenna array | SPACE SYSTEMS/LORAL, INC. | 8/2/2001 | |
| US | 09/933,443 | Shock filtering apparatus | SPACE SYSTEMS/LORAL, INC. | 8/20/2001 | |
| US | 09/961,607 | Spacecraft having a nonuniform body shape | SPACE SYSTEMS/LORAL, INC. | 9/24/2001 | |
| US | 09/981,469 | Technique for joining tubular members | SPACE SYSTEMS/LORAL, INC. | 10/17/2001 | |
| US | 09/990,958 | Microwave filter with reduced penetration of tuning screws | SPACE SYSTEMS/LORAL INC. | 11/16/2001 | |
| US | 10/001,491 | MICROWAVE FILTER CAVITY WITH SPURIOUS MODE SUPPRESSION | SPACE SYSTEMS/LORAL, INC. | 10/31/2001 | |
| US | 10/001,492 | Highly dimensionally stable honeycomb core and sandwich structures for spacecraft applications | SPACE SYSTEMS/LORAL, INC. | 10/31/2001 | |
| US | 10/027,826 | Filter cavity with corrugated wall | SPACE SYSTEMS/LORAL, INC. | 10/18/2001 | |

| Country | Application Number | Title | Owner of Record | Filing Date | Issue Date |
|---------|--------------------|--|---------------------------|-------------|------------|
| US | 10/038,336 | INVERTED SPLIT-SPOOL RELEASE DEVICES | SPACE SYSTEMS/LORAL, INC. | 10/22/2001 | |
| US | 10/060,637 | TUNING OF MANIFOLD FILTER ASSEMBLY WITH FILTERS TUNED PRIOR TO CONNECTION TO THE MANIFOLD | SPACE SYSTEMS/LORAL, INC. | 1/30/2002 | |
| US | 10/073,699 | High availability broadband communications satellite system using satellite constellations in elliptical orbits inclined to the equatorial plane | SPACE SYSTEMS/LORAL, INC. | 2/11/2002 | |
| US | 10/094,674 | MULTI-BEAM SATELLITE COLLOCATION AND CHANNEL POWER ALLOCATION | SPACE SYSTEMS/LORAL, INC. | 3/11/2002 | |
| US | 10/103,586 | MULTIPLE CHANNEL ROUTING MULTIPLEXER | SPACE SYSTEMS/LORAL, INC. | 3/20/2002 | |
| US | 10/137,963 | Monolithic electrical system and heat sink assembly | SPACE SYSTEMS/LORAL, INC. | 5/3/2002 | |
| US | 10/177,467 | SUB-REFLECTOR SHAPING IN AN UNFURLABLE REFLECTOR ANTENNA SYSTEM | SPACE SYSTEMS/LORAL, INC. | 6/20/2002 | |
| US | 10/201,243 | System and method for orbiting spacecraft servicing | SPACE SYSTEMS/LORAL, INC. | 7/23/2002 | |
| US | 10/225,972 | Method for optimizing spacecraft yaw pointing to minimize geometric pointing error in antenna systems | SPACE SYSTEMS/LORAL, INC. | 8/22/2002 | |
| US | 10/272,253 | Direct-to-home-and-mobile satellite internet | SPACE SYSTEMS/LORAL, INC. | 10/15/2002 | |

| Country | Application Number | Title | Owner of Record | Filing Date | Issue Date |
|---------|--------------------|--|---|-------------|------------|
| US | 10/292,140 | Scalable satellite area coverage | SPACE SYSTEMS/LORAL, INC. | 11/12/2002 | |
| US | 10/304,612 | Real-time active phase control for high power amplifier combining for space applications | SPACE SYSTEMS/LORAL, INC. | 11/25/2002 | |
| US | 10/320,076 | Microwave frequency antenna reflector | SPACE SYSTEMS/LORAL, INC. | 12/16/2002 | |
| US | 10/325,412 | Lightweight truss joint connection | SPACE SYSTEMS/LORAL, INC. | 12/19/2002 | |
| US | 10/331,869 | COMPOSITE MICROWAVE MULTIPLEXER WITH LOW COEFFICIENT OF THERMAL EXPANSION AND METHOD OF MANUFACTURE | SPACE SYSTEMS/LORAL, INC. | 12/30/2002 | |
| US | 11/599,868 | IMAGE NAVIGATION SYSTEM USING PARAMETRIC SYSTEMATIC ERROR CORRECTION | SPACE SYSTEMS/LORAL, INC. | 11/15/2006 | |
| US | 12/458,486 | Method of making charge dissipative surfaces of polymeric materials with low temperature dependence of surface resistivity and low RF loss | MACDONALD, DETTWILER AND ASSOCIATES CORPORATION | 7/14/2009 | |
| US | 12/458,490 | Orthonode junction assembly with associated filters for use in an antenna feed system | MACDONALD, DETTWILER AND ASSOCIATES CORPORATION | 7/14/2009 | |
| US | 12/687,661 | COLLATERAL VALIDATION SYSTEM | MACDONALD, DETTWILER AND ASSOCIATES CORPORATION | 1/14/2010 | |
| US | 13/122,545 | OPTICAL ALIGNMENT SYSTEM, SUCH AS FOR AN ORBITING CAMERA | MACDONALD, DETTWILER AND ASSOCIATES LTD. | 6/16/2011 | |

| Country | Application Number | Title | Owner of Record | Filing Date | Issue Date |
|---------|--------------------|---|--------------------------|-------------|------------|
| US | 13/240,079 | Antenna system with multiple independently steerable shaped beams | SPACE SYSTEMS/LORAL, LLC | 9/27/2011 | |
| US | 13/692,551 | Resonant Circuit with Improved Capacitor Quality Factor | SPACE SYSTEMS/LORAL, LLC | 12/3/2012 | |
| US | 13/715,483 | DUAL-Q IMAGING SYSTEM | DIGITALGLOBE, INC. | 12/14/2012 | |
| US | 13/844,309 | MODELED ATMOSPHERIC CORRECTION OBJECTS | DIGITALGLOBE, INC. | 3/15/2013 | |
| US | 13/844,493 | ESTIMATION OF FINE STRUCTURE WITHIN PIXELS IN SATELLITE IMAGERY | DIGITALGLOBE, INC. | 3/15/2013 | |
| US | 13/942,356 | SEMI-AUTOMATIC EXTRACTION OF LINEAR FEATURES FROM IMAGE DATA INCLUDING PATH WIDTH ATTRIBUTION | GEOEYE SOLUTIONS INC. | 7/15/2013 | |
| US | 14/012,915 | RADIAL RELEASE DEVICE | SPACE SYSTEMS/LORAL, LLC | 8/28/2013 | |
| US | 14/596,101 | INCREMENTAL DEPLOYMENT DEVICE | SPACE SYSTEMS/LORAL, LLC | 1/13/2015 | |
| US | 14/627,936 | SPACECRAFT WITH AERODYNAMIC CONTROL | SPACE SYSTEMS/LORAL, LLC | 2/20/2015 | |
| US | 14/632,482 | DYNAMIC LINK ADAPTION AND/OR DYNAMIC ALLOCATION OF COMMUNICATION RESOURCES OF A COMMUNICATION SYSTEM BASED ON EXTERNAL INTERFERENCE INFORMATION RECEIVED FROM EXTERNAL INTERFERENCE INFORMATION SOURCES | SPACE SYSTEMS/LORAL, LLC | 2/26/2015 | |

| Country | Application Number | Title | Owner of Record | Filing Date | Issue Date |
|---------|--------------------|---|--|-------------|------------|
| US | 14/642,486 | ON-ORBIT ASSEMBLY OF COMMUNICATION SATELLITES | SPACE SYSTEMS/LORAL, LLC | 3/9/2015 | |
| US | 14/659,222 | COMMUNICATION SYSTEM WITH MULTI BAND GATEWAY | SPACE SYSTEMS/LORAL, LLC | 3/16/2015 | |
| US | 14/670,141 | REDUNDANT TELEMETRY TRANSMISSION PATH | SPACE SYSTEMS/LORAL, LLC | 3/26/2015 | |
| US | 14/681,043 | ADVANCED SEMI-AUTOMATED VECTOR EDITING IN TWO AND THREE DIMENSIONS | DIGITALGLOBE, INC. | 4/7/2015 | |
| US | 14/680,495 | CROWDSOURCED FEATURE IDENTIFICATION AND ORTHORECTIFICATION | DIGITALGLOBE, INC. | 4/7/2015 | |
| US | 14/680,665 | LARGE SCALE CROWDSOURCING OF MAP DATA CLEANUP AND CORRECTION, SYSTEM AND METHOD FOR | DIGITALGLOBE, INC. | 4/7/2015 | |
| US | 14/684,124 | BROADBAND SATELLITE PAYLOAD ARCHITECTURE | SPACE SYSTEMS/LORAL, LLC | 4/10/2015 | |
| US | 14/685,302 | BROADBAND SATELLITE PAYLOAD ARCHITECTURE | SPACE SYSTEMS/LORAL, LLC | 4/13/2015 | |
| US | 14/716,795 | Payload Ejection Mechanism | MACDONALD, DETTWILER AND ASSOCIATES INC. | 5/19/2015 | |
| US | 14/730,176 | SOME AUTOMATED AND SEMI-AUTOMATED TOOLS FOR LINEAR FEATURE EXTRACTION IN TWO AND THREE DIMENSIONS | DIGITALGLOBE, INC. | 6/3/2015 | |
| US | 14/734,996 | ALL FRONT CONTACT SOLAR CELL | SPACE SYSTEMS/LORAL, LLC | 6/9/2015 | |

| Country | Application Number | Title | Owner of Record | Filing Date | Issue Date |
|---------|--------------------|---|--------------------------|-------------|------------|
| US | 14/788,651 | ENHANCED GEOSPATIAL MODELING USING RASTER DATA | DIGITALGLOBE, INC. | 6/30/2015 | |
| US | 14/789,877 | AUTOMATED SEAMLINE CONSTRUCTION FOR HIGH-QUALITY HIGH-RESOLUTION ORTHOMOSAICS | DIGITALGLOBE, INC. | 7/1/2015 | |
| US | 14/810,382 | GLOBAL-SCALE OBJECT DETECTION USING SATELLITE IMAGERY | DIGITALGLOBE, INC. | 7/27/2015 | |
| US | 14/800,644 | INTEGRATED ARCHITECTURE FOR NEAR - REAL-TIME SATELLITE IMAGING APPLICATIONS | DIGITALGLOBE, INC. | 7/15/2015 | |
| US | 14/801,740 | COMBINING GEOGRAPHICAL AND ECONOMIC DATA EXTRACTED FROM SATELLITE IMAGERY FOR USE IN PREDICTIVE MODELING, SYSTEM AND METHOD FOR | DIGITALGLOBE, INC. | 7/16/2015 | |
| US | 14/820,408 | REVERSE WIRELESS BROADBAND SYSTEM | SPACE SYSTEMS/LORAL, LLC | 8/6/2015 | |
| US | 14/864,669 | HIGH-FREQUENCY CAVITY RESONATOR FILTER WITH DIAMETRICALLY-OPPOSED HEAT TRANSFER LEGS | SPACE SYSTEMS/LORAL, LLC | 9/24/2015 | |
| US | 14/865,774 | BEAMFORMING CALIBRATION | SPACE SYSTEMS/LORAL, LLC | 9/25/2015 | |
| US | 14/868,076 | BRAZING OF HIGH TEMPERATURE WIRE TO ELECTRICAL CONTACT | SPACE SYSTEMS/LORAL, LLC | 9/28/2015 | |
| US | 14/875,491 | SATELLITE WITH TRANSITION BEAM SIZE | SPACE SYSTEMS/LORAL, LLC | 10/5/2015 | |
| US | 14/918,337 | SELF-BALANCING SOLAR ARRAY | SPACE SYSTEMS/LORAL, LLC | 10/20/2015 | |

| Country | Application Number | Title | Owner of Record | Filing Date | Issue Date |
|---------|--------------------|--|--------------------------|-------------|------------|
| US | 14/937,208 | FLEXIBLE PROPUSSION SYSTEM | SPACE SYSTEMS/LORAL, LLC | 11/10/2015 | |
| US | 14/939,445 | HIGH CAPACITY SPACECRAFT | SPACE SYSTEMS/LORAL, LLC | 11/12/2015 | |
| US | 14/941,504 | GLOBAL-SCALE DAMAGE DETECTION USING SATELLITE IMAGERY | DIGITALGLOBE, INC. | 11/13/2015 | |
| US | 14/962,941 | SPACECRAFT WITH RIGID ANTENNA REFLECTOR DEPLOYED VIA LINEAR EXTENSION BOOM | SPACE SYSTEMS/LORAL, LLC | 12/8/2015 | |
| US | 14/965,620 | DIGITAL PAYLOAD WITH VARIABLE HIGH POWER AMPLIFIERS | SPACE SYSTEMS/LORAL, LLC | 12/11/2015 | |
| US | 14/968,725 | DUAL-POLARIZED, DUAL-BAND, COMPACT BEAM FORMING NETWORK | SPACE SYSTEMS/LORAL, LLC | 12/14/2015 | |
| US | 14/969,839 | RIBBON CABLE WITH INTEGRATED DIODE | SPACE SYSTEMS/LORAL, LLC | 12/15/2015 | |
| US | 14/972,736 | PRE AND POST ORBIT MANEUVER PULSES TO REDUCE FLEXURAL OSCILLATIONS | SPACE SYSTEMS/LORAL, LLC | 12/17/2015 | |
| US | 14/973,186 | BATTERY CHARGE MANAGEMENT FOR GEOSYNCHRONOUS SPACECRAFT | SPACE SYSTEMS/LORAL, LLC | 12/17/2015 | |
| US | 14/984,613 | AUTOMATED METRIC INFORMATION NETWORK | DIGITALGLOBE, INC. | 12/30/2015 | |
| US | 14/989,612 | NON-BLOCKING SWITCH MATRIX | SPACE SYSTEMS/LORAL, LLC | 1/6/2016 | |

| Country | Application Number | Title | Owner of Record | Filing Date | Issue Date |
|---------|--------------------|--|--------------------------|-------------|------------|
| US | 14/993,074 | AUTOMATED REGISTRATION OF THREE-DIMENSIONAL VECTORS TO THREE-DIMENSIONAL LINEAR FEATURES IN REMOTELY-SENSED DATA | DIGITALGLOBE, INC. | 1/11/2016 | |
| US | 14/995,070 | WAVEGUIDE HINGE | SPACE SYSTEMS/LORAL, LLC | 1/13/2016 | |
| US | 14/996,831 | AUTOMATIC EXTRACTION OF BUILT-UP FOOTPRINTS FROM HIGH RESOLUTION OVERHEAD IMAGERY THROUGH MANIPULATION OF ALPHA-TREE DATA STRUCTURES | DIGITALGLOBE, INC. | 1/15/2016 | |
| US | 15/040,780 | AUTOMATED SLIVER REMOVAL IN ORTHOMOSAIC GENERATION | DIGITALGLOBE, INC. | 2/10/2016 | |
| US | 15/053,993 | TRUSS STRUCTURE OPTIMIZATION TECHNIQUES | SPACE SYSTEMS/LORAL, LLC | 2/25/2016 | |
| US | 15/053,998 | Truss Structure | SPACE SYSTEMS/LORAL, LLC | 2/25/2016 | |
| US | 15/077,886 | ENHANCED CROWDSOURCED SEARCH AND LOCATE PLATFORM | DIGITALGLOBE, INC. | 3/22/2016 | |
| US | 15/093,040 | BATHYMETRIC TECHNIQUES USING SATELLITE IMAGERY | DIGITALGLOBE, INC. | 4/7/2016 | |
| US | 15/098,122 | SATELLITE STACKED LAUNCH AND ORBIT RAISING OPTIMIZATION | SPACE SYSTEMS/LORAL, LLC | 4/13/2016 | |
| US | 15/144,487 | FLEXIBLE BANDWIDTH ASSIGNMENT TO SPOT BEAMS | SPACE SYSTEMS/LORAL, LLC | 5/2/2016 | |

| Country | Application Number | Title | Owner of Record | Filing Date | Issue Date |
|---------|--------------------|--|--------------------------|-------------|------------|
| US | 15/160,258 | STOWAGE, DEPLOYMENT AND POSITIONING OF RIGID ANTENNA REFLECTORS ON A SPACECRAFT | SPACE SYSTEMS/LORAL, LLC | 5/20/2016 | |
| US | 15/163,465 | PROTECTED OVERLAY OF ASSIGNED FREQUENCY CHANNELS | SPACE SYSTEMS/LORAL, LLC | 5/24/2016 | |
| US | 15/172,825 | SATELLITE SYSTEM USING TIME DOMAIN BEAM HOPPING | SPACE SYSTEMS/LORAL, LLC | 6/3/2016 | |
| US | 15/172,859 | SYNCHRONIZATION FOR SATELLITE SYSTEM | SPACE SYSTEMS/LORAL, LLC | 6/3/2016 | |
| US | 15/172,882 | SATELLITE SYSTEM WITH DIFFERENT FREQUENCY PLAN AT THE EQUATOR | SPACE SYSTEMS/LORAL, LLC | 6/3/2016 | |
| US | 15/172,965 | SATELLITE SYSTEM WITH SINGLE POLARIZATION PATH | SPACE SYSTEMS/LORAL, LLC | 6/3/2016 | |
| US | 15/172,978 | SATELLITE SYSTEM WITH STEERABLE GATEWAY BEAMS | SPACE SYSTEMS/LORAL, LLC | 6/3/2016 | |
| US | 15/173,038 | SATELLITE SYSTEM HAVING TERMINALS IN HOPPING BEAMS COMMUNICATING WITH MORE THAN ONE GATEWAY | SPACE SYSTEMS/LORAL, LLC | 6/3/2016 | |
| US | 15/173,054 | SATELLITE SYSTEM WITH BEAM HOPPING PLAN THAT TAKES INTO ACCOUNT THE NEEDS OF GATEWAYS AND SUBSCRIBER TERMINALS | SPACE SYSTEMS/LORAL, LLC | 6/3/2016 | |
| US | 15/173,083 | SATELLITE SYSTEM BEAM TO BEAM HANDOVER | SPACE SYSTEMS/LORAL, LLC | 6/3/2016 | |

| Country | Application Number | Title | Owner of Record | Filing Date | Issue Date |
|---------|--------------------|--|--|-------------|------------|
| US | 15/173,097 | SATELLITE SYSTEM WITH HANDOVER FOR MULTIPLE GATEWAYS | SPACE SYSTEMS/LORAL, LLC | 6/3/2016 | |
| US | 15/186,171 | ATMOSPHERIC COMPENSATION IN SATELLITE IMAGERY | DIGITALGLOBE, INC. | 6/17/2016 | |
| US | 15/194,541 | SYNTHESIZING TRAINING DATA FOR BROAD AREA GEOSPATIAL OBJECT DETECTION | DIGITALGLOBE, INC. | 6/27/2016 | |
| US | 15/201,208 | WAVEGUIDE TO MICROSTRIP LINE N-PORT POWER SPLITTER/COMBINER | SPACE SYSTEMS/LORAL, LLC | 7/1/2016 | |
| US | 15/204,307 | AUTOMATED GEOSPATIAL IMAGE MOSAIC GENERATION WITH MULTIPLE ZOOM LEVEL SUPPORT | DIGITALGLOBE, INC. | 7/7/2016 | |
| US | 15/218,009 | SATELLITE SYSTEM WITH ROLLING WAVE HANDOVERS | SPACE SYSTEMS/LORAL, LLC | 7/23/2016 | |
| US | 15/219,017 | Spacecraft Capture Mechanism | MACDONALD, DETTWILER AND ASSOCIATES INC. | 7/25/2016 | |
| US | 15/221,273 | SATELLITE DIVERSITY | SPACE SYSTEMS/LORAL, LLC | 7/27/2016 | |
| US | 15/225,525 | DIGITAL BEAMFORMING ARCHITECTURE | SPACE SYSTEMS/LORAL, LLC | 8/1/2016 | |
| US | 15/247,052 | CLOUD MASK DATA ACQUISITION AND DISTRIBUTION USING GEOSYNCHRONOUS COMMUNICATIONS OR BROADCAST SATELLITES | SPACE SYSTEMS/LORAL, LLC | 8/25/2016 | |
| US | 15/261,696 | HIGHLY INCLINED ELLIPTICAL ORBIT LAUNCH AND ORBIT ACQUISITION TECHNIQUES | SPACE SYSTEMS/LORAL, LLC | 9/9/2016 | |

| Country | Application Number | Title | Owner of Record | Filing Date | Issue Date |
|---------|--------------------|---|--------------------------|-------------|------------|
| US | 15/263,209 | ARTICULATION TECHNIQUES FOR A SPACECRAFT SOLAR ARRAY | SPACE SYSTEMS/LORAL, LLC | 9/12/2016 | |
| US | 15/267,828 | ACCESS SWITCH NETWORK WITH REDUNDANCY | SPACE SYSTEMS/LORAL, LLC | 9/16/2016 | |
| US | 15/180,444 | ORTHOMODE TRANSDUCER | SPACE SYSTEMS/LORAL, LLC | 9/27/2016 | |
| US | 15/277,505 | LOW COST LAUNCH VEHICLE FAIRING | SPACE SYSTEMS/LORAL, LLC | 9/27/2016 | |
| US | 15/336,541 | SPACECRAFT EXOSKELETON TRUSS STRUCTURE | SPACE SYSTEMS/LORAL, LLC | 10/27/2016 | |
| US | 15/351,233 | SMALLSAT PAYLOAD CONFIGURATION | SPACE SYSTEMS/LORAL, LLC | 11/14/2016 | |
| US | 15/352,471 | EFFICIENT STATIONKEEPING STRATEGY FOR THE THREE APOGEE (TAP) ORBIT | SPACE SYSTEMS/LORAL, LLC | 11/15/2016 | |
| US | 15/364,115 | MULTIPOINT AMPLIFIERS (MPAS) USING OUTPUT FILTERING TO IMPROVE PERFORMANCE OVER LIFE | SPACE SYSTEMS/LORAL, LLC | 11/29/2016 | |
| US | 15/372,276 | FLEXIBLE RADIO FREQUENCY CONVERTERS FOR DIGITAL PAYLOADS | SPACE SYSTEMS/LORAL, LLC | 12/7/2016 | |
| US | 15/374,528 | Enhanced Radiator | SPACE SYSTEMS/LORAL, LLC | 12/9/2016 | |
| US | 15/388,269 | SATELLITE CONSTELLATION SWITCHING | SPACE SYSTEMS/LORAL, LLC | 12/22/2016 | |
| US | 15/394,512 | HIGH THROUGHPUT SATELLITE SYSTEM WITH OPTICAL FEEDER UPLINK BEAMS AND RF SERVICE DOWNLINK BEAMS | SPACE SYSTEMS/LORAL, LLC | 12/29/2016 | |

| Country | Application Number | Title | Owner of Record | Filing Date | Issue Date |
|---------|--------------------|---|---|-------------|------------|
| US | 15/394,602 | HIGH THROUGHPUT SATELLITE SYSTEM WITH RF SERVICE UPLINK BEAMS AND OPTICAL FEEDER DOWNLINK BEAMS | SPACE SYSTEMS/LORAL, LLC | 12/29/2016 | |
| US | 15/418,154 | Compact and Lightweight TEM-Line Network for RF components of Antenna systems | MACDONALD, DETTWILER AND ASSOCIATES CORPORATION | 1/27/2017 | |
| US | 15/420,364 | AUTOMATED COMPOUND STRUCTURE CHARACTERIZATION IN OVERHEAD IMAGERY | DIGITALGLOBE, INC. | 1/31/2017 | |
| US | 15/438,620 | IMAGING ARRAY FED REFLECTOR | SPACE SYSTEMS/LORAL, LLC | 2/21/2017 | |
| US | 15/441,032 | INCLINED GEOSYNCHRONOUS ORBIT SPACECRAFT CONSTELLATIONS | SPACE SYSTEMS/LORAL, LLC | 2/23/2017 | |
| US | 15/441,037 | STATIONKEEPING TECHNIQUES FOR SPACECRAFT IN INCLINED GEOSYNCHRONOUS ORBIT | SPACE SYSTEMS/LORAL, LLC | 2/23/2017 | |
| US | 15/441,040 | EFFICIENT ORBITAL STORAGE AND DEPLOYMENT FOR SPACECRAFT IN INCLINED GEOSYNCHRONOUS ORBIT | SPACE SYSTEMS/LORAL, LLC | 2/23/2017 | |
| US | 15/445,949 | AUTOMATED TONAL BALANCING | DIGITALGLOBE, INC. | 2/28/2017 | |
| US | 15/445,797 | CHANNELIZER SUPPLEMENTED SPACECRAFT TELEMETRY AND COMMAND FUNCTIONALITY | SPACE SYSTEMS/LORAL, LLC | 2/28/2017 | |

| Country | Application Number | Title | Owner of Record | Filing Date | Issue Date |
|---------|--------------------|--|---|-------------|------------|
| US | 15/461,372 | SATELLITE SYSTEM THAT PRODUCES OPTICAL INTER-SATELLITE LINK (ISL) BASED ON OPTICAL ISL RECEIVED FROM ANOTHER SATELLITE | SPACE SYSTEMS/LORAL, LLC | 3/16/2017 | |
| US | 15/461.377 | SATELLITE SYSTEM THAT PRODUCES OPTICAL INTER-SATELLITE LINK (ISL) BEAM BASED ON RF FEEDER UPLINK BEAM | SPACE SYSTEMS/LORAL, LLC | 3/16/2017 | |
| US | 15/465,581 | SYSTEMS AND METHODS FOR SEMI-AUTOMATED EDITING OF ORTHONOSAICS BUILT FROM REMOTELY-SENSED IMAGERY | DIGITALGLOBE, INC. | 3/21/2017 | |
| US | 15/466,610 | SPACECRAFT DESIGN WITH MULTIPLE THERMAL ZONES | SPACE SYSTEMS/LORAL, LLC | 3/21/2017 | |
| US | 15/467,612 | ASYMMETRIC THRUSTER GIMBAL CONFIGURATION | SPACE SYSTEMS/LORAL, LLC | 3/23/2017 | |
| US | 15/470,592 | ELECTRIC THRUSTER WASTE HEAT RECOVERY DURING SATELLITE ORBIT TRANSFER | SPACE SYSTEMS/LORAL, LLC | 3/27/2017 | |
| US | 15/470,600 | MULTI-CHANNEL SATELLITE CALIBRATION | SPACE SYSTEMS/LORAL, LLC | 3/27/2017 | |
| US | 15/480,276 | EXOSKELETAL LAUNCH SUPPORT STRUCTURE | SPACE SYSTEMS/LORAL, LLC | 4/5/2017 | |
| US | 15/480,941 | THREE AXIS ANTENNA DEPLOYMENT AND POINTING MECHANISM | MACDONALD, DETTWILER AND ASSOCIATES CORPORATION | 4/6/2017 | |
| US | 15/488,166 | ROTATABLE STACKED SPACECRAFT | SPACE SYSTEMS/LORAL, LLC | 4/14/2017 | |

| Country | Application Number | Title | Owner of Record | Filing Date | Issue Date |
|---------|--------------------|--|---|-------------|------------|
| US | 15/488,179 | DEPLOYABLE PROPULSION MODULE FOR SPACECRAFT | SPACE SYSTEMS/LORAL, LLC | 4/14/2017 | |
| US | 15/490,866 | AUTOMATED CONVERSION OF TWO-DIMENSIONAL HYDROLOGY VECTOR MODELS INTO VALID THREE-DIMENSIONAL HYDROLOGY VECTOR MODELS | DIGITALGLOBE, INC. | 4/18/2017 | |
| US | 15/586,076 | ARTICULATING SUNSHIELD | SPACE SYSTEMS/LORAL, LLC | 5/3/2017 | |
| US | 15/599,852 | SATELLITE SYSTEM USING OPTICAL GATEWAYS AND ONBOARD PROCESSING | SPACE SYSTEMS/LORAL, LLC | 5/19/2017 | |
| US | 15/603,288 | ECLIPTIC SUN ACQUISITION CONTROL MODE FOR SATELLITES | SPACE SYSTEMS/LORAL, LLC | 5/23/2017 | |
| US | 15/604,165 | COMMUNICATION PLATFORM WITH FLEXIBLE PHOTONICS PAYLOAD | SPACE SYSTEMS/LORAL, LLC | 5/24/2017 | |
| US | 15/608,894 | A SYSTEM FOR SIMPLIFIED GENERATION OF SYSTEMS FOR BROAD AREA GEOSPATIAL OBJECT DETECTION | DIGITALGLOBE, INC. | 5/30/2017 | |
| US | 15/616,803 | CROSS-FEEDING PROPELLANT BETWEEN STACKED SPACECRAFT | SPACE SYSTEMS/LORAL, LLC | 6/7/2017 | |
| US | 15/618,897 | SATELLITE NETWORK SWITCHING | SPACE SYSTEMS/LORAL, LLC | 6/9/2017 | |
| US | 15/622,888 | LATTICE STRUCTURE DESIGN AND MANUFACTURING TECHNIQUES | SPACE SYSTEMS/LORAL, LLC | 6/14/2017 | |
| US | 15/623,764 | Antenna Reflector Interchange Mechanism | MACDONALD, DETTWILER AND ASSOCIATES CORPORATION | 6/15/2017 | |

| Country | Application Number | Title | Owner of Record | Filing Date | Issue Date |
|---------|--------------------|---|--|-------------|-------------|
| US | 15/621,362 | Robotic Servicing Multifunctional Tool | MACDONALD, DETTWILER AND ASSOCIATES INC. | 6/21/2017 | |
| US | 15/620,300 | Robotic Servicing Multifunctional Tool | MACDONALD, DETTWILER AND ASSOCIATES INC. | 6/21/2017 | |
| US | 15/633,007 | FLEXIBLE HIGH THROUGHPUT SATELLITE SYSTEM USING OPTICAL GATEWAYS | SPACE SYSTEMS/LORAL, LLC | 6/26/2017 | |
| US | 15/637,466 | SPACECRAFT RADIATOR SYSTEM AND METHOD | SPACE SYSTEMS/LORAL, LLC | 6/29/2017 | |
| US | 15/645,929 | System And Method For Automated Artificial Vision Guided Dispensing Of Viscous Fluids And Caulking And Sealing Operations | MACDONALD, DETTWILER AND ASSOCIATES INC. | 7/10/2017 | |
| US | 15/654,593 | SPACE BASED ROBOTIC ASSEMBLY OF A MODULAR REFLECTOR | SPACE SYSTEMS/LORAL, LLC | 7/19/2017 | |
| US | 62/366,481 | POWER TRAIN FOR DEEP SPACE SOLAR ELECTRIC PROPULSION | No assignee recorded | 7/25/2016 | Provisional |
| US | 62/374,309 | FLEXIBLE CAPACITY TO BEAM ASSIGNMENT AND GATEWAY ROLL OUT USING PHOTONICS | SPACE SYSTEMS/LORAL, LLC | 8/12/2016 | Provisional |
| US | 62/384,604 | SATELLITE SYSTEM USING OPTICAL GATEWAYS AND GROUND BASED BEAM FORMING | SPACE SYSTEMS/LORAL, LLC | 9/7/2016 | Provisional |
| US | 62/385,162 | SPACE BASED ROBOTIC ASSEMBLY OF A MODULAR ANTENNA REFLECTOR | SPACE SYSTEMS/LORAL, LLC | 9/8/2016 | Provisional |

| Country | Application Number | Title | Owner of Record | Filing Date | Issue Date |
|---------|--------------------|---|---|-------------|-------------|
| US | 62/400,001 | TECHNIQUES FOR IMAGE CO-REGISTRATION | DIGITALGLOBE, INC. | 9/26/2016 | Provisional |
| US | 62/404,113 | SELF-ASSEMBLING PERSISTENT SPACE PLATFORM | SPACE SYSTEMS/LORAL, LLC | 10/4/2016 | Provisional |
| US | 62/419,887 | AMPLIFIER INTEGRATED FEED ARRAY WITH MODULARIZED FEED ELEMENTS AND AMPLIFIERS | SPACE SYSTEMS/LORAL, LLC | 11/9/2016 | Provisional |
| US | 62/433,624 | Strut and Joint Spaceframe Structure Assemblies | MACDONALD, DETTWILER AND ASSOCIATES CORPORATION | 12/13/2016 | Provisional |
| US | 62/437,965 | Unobtrusive Driving Assistance Method and System for a Vehicle to Avoid Obstacles | MACDONALD, DETTWILER AND ASSOCIATES INC. | 12/22/2016 | Provisional |
| US | 62/438,919 | CALIBRATION SYSTEM AND METHOD FOR OPTIMIZING LEAKAGE PERFORMANCE OF A MULTI-PORT AMPLIFIER | MACDONALD, DETTWILER AND ASSOCIATES CORPORATION | 12/23/2016 | Provisional |
| US | 62/452,174 | PHOTOSPHERE SATELLITE COMMUNICATIONS SYSTEM | SPACE SYSTEMS/LORAL, LLC | 1/30/2017 | Provisional |
| US | 62/453,992 | METHOD AND APPARATUS FOR CALIBRATION AND EQUALIZATION OF MULTIPORT AMPLIFIERS (MPAs) | SPACE SYSTEMS/LORAL, LLC | 2/2/2017 | Provisional |
| US | 62/454,504 | SATELLITE SYSTEM THAT PRODUCES OPTICAL INTER-SATELLITE LINK (ISL) BASED ON OPTICAL FEEDER UPLINK BEAM | SPACE SYSTEMS/LORAL, LLC | 2/3/2017 | Provisional |

| Country | Application Number | Title | Owner of Record | Filing Date | Issue Date |
|---------|--------------------|---|--------------------------|-------------|-------------|
| US | 62/454,512 | SATELLITE SYSTEM THAT PRODUCES OPTICAL INTER-SATELLITE LINK (ISL) BASED ON OPTICAL ISL RECEIVED FROM ANOTHER SATELLITE | SPACE SYSTEMS/LORAL, LLC | 2/3/2017 | Provisional |
| US | 62/454,523 | SATELLITE SYSTEM THAT PRODUCES OPTICAL INTER-SATELLITE LINK (ISL) BASED ON RF FEEDER UPLINK BEAM | SPACE SYSTEMS/LORAL, LLC | 2/3/2017 | Provisional |
| US | 62/454,532 | GROUND BASED SUBSYSTEMS, FOR INCLUSION IN OPTICAL GATEWAY, AND THAT INTERFACE WITH OPTICAL NETWORKS EXTERNAL TO OPTICAL GATEWAY | SPACE SYSTEMS/LORAL, LLC | 2/3/2017 | Provisional |
| US | 62/480,160 | DOWNLINK USED AS A CROSSLINK | SPACE SYSTEMS/LORAL, LLC | 3/31/2017 | Provisional |
| US | 62/486,123 | SINGLE FEED PER BEAM ARRAY MECHANICAL DESIGN METHODS | SPACE SYSTEMS/LORAL, LLC | 4/17/2017 | Provisional |
| US | 62/505,074 | SHAPE-BASED SEGMENTATION USING HIERARCHICAL IMAGE REPRESENTATIONS FOR AUTOMATIC TRAINING DATA GENERATION AND SEARCH SPACE SPECIFICATION FOR MACHINE LEARNING ALGORITHMS | DIGITALGLOBE, INC. | 5/11/2017 | Provisional |
| US | 62/506,522 | CONDOMINIUM SPACECRAFT INFRASTRUCTURE | SPACE SYSTEMS/LORAL, LLC | 5/15/2017 | Provisional |
| US | 62/523,185 | ADDITIVE MANUFACTURING ON-ORBIT | SPACE SYSTEMS/LORAL, LLC | 6/21/2017 | Provisional |
| US | 62/523,186 | HIGH CAPACITY BROADBAND SATELLITE | SPACE SYSTEMS/LORAL, LLC | 6/21/2017 | Provisional |

**Schedule B
Trademarks And Trademark Applications**

1 U.S. Trademarks

| Country | Trademark | Registration No. | Registration Date | Record Owner |
|---------|----------------------------|------------------|-------------------|------------------------------------|
| US | EARTHVIEW | 2177128 | 7/28/1998 | MDA GEOSPATIAL SERVICES INC. |
| US | EARTHSAT | 2615486 | 9/3/2002 | MDA INFORMATION SYSTEMS LLC |
| US | SSL and Design | 4973452 | 6/7/2016 | SPACE SYSTEMS/LORAL, LLC |
| US | SSL and Design | 5027390 | 8/23/2016 | SPACE SYSTEMS/LORAL, LLC |
| US | SSL and Design | 4973453 | 6/7/2016 | SPACE SYSTEMS/LORAL, LLC |
| US | PCM | 4917047 | 3/15/2016 | MDA INFORMATION SYSTEMS LLC |
| US | NATURALVUE | 5006792 | 7/26/2016 | MDA INFORMATION SYSTEMS LLC |
| US | OPTIVISTA | 4766062 | 6/30/2015 | MDA INFORMATION SYSTEMS LLC |
| US | DIGITALGLOBE | 2484701 | 9/4/2001 | DIGITALGLOBE, INC. |
| US | DIGITALGLOBE | 2264047 | 7/27/1999 | DIGITALGLOBE, INC. |
| US | DIGITALGLOBE | 2136168 | 2/10/1998 | DIGITALGLOBE, INC. |
| US | DIGITALGLOBE AND DESIGN | 2653714 | 11/26/2002 | DIGITALGLOBE, INC. |
| US | DIGITALGLOBE.COM | 2487069 | 9/11/2001 | DIGITALGLOBE, INC. |

| Country | Trademark | Registration No. | Registration Date | Record Owner |
|---------|-------------------|------------------|-------------------|-----------------------|
| US | EARTHSERVICE | 4158423 | 6/12/2012 | DIGITALGLOBE, INC. |
| US | FIRSTLOOK | 4180489 | 7/24/2012 | DIGITALGLOBE, INC. |
| US | IMAGECONNECT | 3614695 | 5/5/2009 | DIGITALGLOBE, INC. |
| US | PHOTOMAPPER | 2593257 | 7/9/2002 | DIGITALGLOBE, INC. |
| US | SECONDS ON ORBIT | 2470721 | 7/17/2001 | DIGITALGLOBE, INC. |
| US | SOO | 2385734 | 9/12/2000 | DIGITALGLOBE, INC. |
| US | ELEVATING INSIGHT | 4155051 | 6/5/2012 | DIGITALGLOBE, INC. |
| US | ELEVATING INSIGHT | 4143830 | 5/15/2012 | DIGITALGLOBE, INC. |
| US | ELEVATING INSIGHT | 4155050 | 6/5/2012 | DIGITALGLOBE, INC. |
| US | ELEVATING INSIGHT | 4155049 | 6/5/2012 | DIGITALGLOBE, INC. |
| US | ELEVATING INSIGHT | 4155048 | 6/5/2012 | DIGITALGLOBE, INC. |
| US | GEOEYE | 3529980 | 11/11/2008 | DIGITALGLOBE, INC. |
| US | GEOEYE STYLIZED | 3845085 | 9/7/2010 | DIGITALGLOBE, INC. |
| US | IKONOS | 2650079 | 11/12/2002 | GEOEYE SOLUTIONS INC. |
| US | ORBIMAGE | 2039409 | 2/18/1997 | DIGITALGLOBE, INC. |
| US | ORBVIEW | 2091116 | 8/26/1997 | DIGITALGLOBE, INC. |
| US | ROADTRACKER | 3482049 | 8/5/2008 | GEOEYE SOLUTIONS INC. |
| US | CARTERRA | 2105901 | 10/14/1997 | GEOEYE SOLUTIONS INC. |
| US | CARTERRA | 2047487 | 3/25/1997 | GEOEYE SOLUTIONS INC. |

| Country | Trademark | Registration No. | Registration Date | Record Owner |
|---------|---------------------------|------------------|-------------------|--------------------|
| US | GEOEYE 3D AIRPORT | 4265379 | 12/25/2012 | DIGITALGLOBE, INC. |
| US | WORLDVIEW GLOBAL ALLIANCE | 4585810 | 8/12/2014 | DIGITALGLOBE, INC. |
| US | WORLDVIEW | 4816466 | 9/22/2015 | DIGITALGLOBE, INC. |
| US | WORLDVIEW | 4816469 | 9/22/2015 | DIGITALGLOBE, INC. |
| US | WORLDVIEW | 4816472 | 9/22/2015 | DIGITALGLOBE, INC. |
| US | DIGITALGLOBE AND LOGO | 4653570 | 12/9/2014 | DIGITALGLOBE, INC. |
| US | SEEING A BETTER WORLD | 4653569 | 12/9/2014 | DIGITALGLOBE, INC. |
| US | SEE A BETTER WORLD | 5192964 | 04/25/2017 | DIGITALGLOBE, INC. |

2 U.S. Trademark Applications

| Country | Trademark | Application No. | Application Date | Record Owner |
|---------|---------------------------------------|-----------------|------------------|--------------------|
| US | EYEQ | 77870723 ITU | 11/11/2009 | DIGITALGLOBE, INC. |
| US | LIVING DIGITAL INVENTORY | 86176604 ITU | 1/27/2014 | DIGITALGLOBE, INC. |
| US | LIVING DIGITAL INVENTORY OF THE EARTH | 86176630 ITU | 1/27/2014 | DIGITALGLOBE, INC. |
| US | GEOHIVE | 86817700 ITU | 11/12/2015 | DIGITALGLOBE, INC. |
| US | SECUREWATCH | 87181557 ITU | 9/23/2016 | DIGITALGLOBE, INC. |
| US | SEE A BETTER WORLD | 87075825 ITU | 6/17/2016 | DIGITALGLOBE, INC. |
| US | SPACENET | 87232837 ITU | 11/10/2016 | DIGITALGLOBE, INC. |