

PATENT ASSIGNMENT

Electronic Version v1.1

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SUBMISSION TYPE:

NEW ASSIGNMENT

NATURE OF CONVEYANCE:

SECURITY AGREEMENT

CONVEYING PARTY DATA

Name	Execution Date
Orbital Sciences Corporation	08/17/2007

RECEIVING PARTY DATA

Name:	Citibank, N.A.
Street Address:	388 Greenwich Street, 21st Floor
City:	New York
State/Country:	NEW YORK
Postal Code:	10013

PROPERTY NUMBERS Total: 23

Property Type	Number
Patent Number:	5917433
Patent Number:	5834923
Patent Number:	5808565
Patent Number:	5806801
Patent Number:	5721558
Patent Number:	5668565
Patent Number:	5587719
Patent Number:	5546632
Patent Number:	5535502
Patent Number:	5199672
Patent Number:	4901949
Patent Number:	5390606
Patent Number:	5681011
Patent Number:	5522569
Patent Number:	5977932

PATENT

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REEL: 019955 FRAME: 0825

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Patent Number:	5907582
Patent Number:	5970085
Patent Number:	6061387
Patent Number:	6064319
Patent Number:	4812041
Patent Number:	4835389
Application Number:	10856801
Patent Number:	5723923

# CORRESPONDENCE DATA

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ATTORNEY DOCKET NUMBER:	35899.0387
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NAME OF SUBMITTER:	Julio C Gurdian
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# Total Attachments: 7

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## PATENT SECURITY AGREEMENT

**PATENT SECURITY AGREEMENT**, dated as of August 17, 2007, by each of the entities listed on the signature pages hereof or that becomes a party hereto pursuant to *Section 7.10 (Additional Grantors)* of the Security Agreement referred to below (each a "*Grantor*" and, collectively, the "*Grantors*"), in favor of Citibank, N.A. ("*Citi*"), as agent for the Secured Parties (as defined in the Credit Agreement referred to below) (in such capacity, the "*Administrative Agent*").

### WITNESSETH:

WHEREAS, pursuant to the Credit Agreement, dated as of August 17, 2007 (as the same may be amended, restated, supplemented or otherwise modified from time to time, the "*Credit Agreement*"), among ORBITAL SCIENCES CORPORATION (the "*Borrower*"), the Lenders and Issuers party thereto and Citi, as agent for the Lenders and Issuers, the Lenders and the Issuers have severally agreed to make extensions of credit to the Borrower upon the terms and subject to the conditions set forth therein; and

WHEREAS, the Grantors are party to a Pledge and Security Agreement of even date herewith in favor of the Administrative Agent (the "*Security Agreement*") pursuant to which the Grantors are required to execute and deliver this Patent Security Agreement;

NOW, THEREFORE, in consideration of the premises and to induce the Lenders, the Issuers and the Administrative Agent to enter into the Credit Agreement and to induce the Lenders and the Issuers to make their respective extensions of credit to the Borrower thereunder, each Grantor hereby agrees with the Administrative Agent as follows:

#### ***Section 1. Defined Terms***

Unless otherwise defined herein, terms defined in the Credit Agreement or in the Security Agreement and used herein have the meaning given to them in the Credit Agreement or the Security Agreement.

#### ***Section 2. Grant of Security Interest in Patent Collateral***

Each Grantor, as collateral security for the full, prompt and complete payment and performance when due (whether by acceleration or otherwise) of the Secured Obligations of such Grantor, hereby mortgages, pledges and hypothecates to the Administrative Agent for the benefit of the Secured Parties, and grants to the Administrative Agent for the benefit of the Secured Parties a lien on and security interest in, all of its right, title and interest in, to and under the following Collateral of such Grantor (the "*Patent Collateral*");

- (a) all of its Patents and Patent Licenses to which it is a party, including, without limitation, those referred to on *Schedule I* hereto;
- (b) all reissues, continuations or continuations-in-part of the foregoing; and
- (c) all Proceeds of the foregoing, including, without limitation, any claim by Grantor against third parties for past, present or future infringement of any Patent or any Patent licensed under any Patent License.

## PATENT SECURITY AGREEMENT

*provided, however*, that "*Patent Collateral*" shall not include any Excluded Property; and *provided, further*, that if and when any property shall cease to be Excluded Property, such property shall be deemed at all times from and after the date hereof to constitute Patent Collateral.

### ***Section 3. Security Agreement***

The security interest granted pursuant to this Patent Security Agreement is granted in conjunction with the security interest granted to the Administrative Agent pursuant to the Security Agreement and each Grantor hereby acknowledges and affirms that the rights and remedies of the Administrative Agent with respect to the security interest in the Patent Collateral made and granted hereby are more fully set forth in the Security Agreement, the terms and provisions of which are incorporated by reference herein as if fully set forth herein.

[SIGNATURE PAGES FOLLOW]

IN WITNESS WHEREOF, each Grantor has caused this Patent Security Agreement to be executed and delivered by its duly authorized officer as of the date first set forth above.

ORBITAL SCIENCES CORPORATION  
*as Grantor*

By: Michael R. Williams

Name: Michael R. Williams

Title: Senior Vice President and Treasurer

ACCEPTED AND AGREED  
as of the date first above written:  
CITIBANK, N.A.  
*as Administrative Agent*

By: 

Name:

Title:

**Tucker R. Borden**  
VP  
National Corporate Banking  
212-816-5394

[SIGNATURE PAGE TO PATENT SECURITY AGREEMENT]

**SCHEDULE I  
TO  
PATENT SECURITY AGREEMENT**

***Patent Registrations***

**A. REGISTERED PATENTS**

<b>Title</b>	<b>Patent No.</b>	<b>Issue Date</b>	<b>Inventor</b>	<b>Country</b>
Asset Monitoring System and Associated Method	5,917,433	June 29, 1999	Sharon A. Keillor Frederick Michael Weaver	United States
Battery Charge Control Method	5,834,923	November 10, 1998	Lewin Tandler	United States
GPS Triggered Automatic Annunciator for Vehicles	5,808,565	September 15, 1998	David M. Matta Andrew M. Kissel	United States
Method and System for Formation Keeping Between Orbiting Spacecraft by Varying their Ballistic Coefficients	5,806,801	September 15, 1998	Burgess Evans Steffy	United States
Deployable Helical Antenna	5,721,558	February 24, 1998	Walter Holemans	United States
Flexible Feed Line for an Antenna Systems	5,668,565	September 16, 1997	Robinson	United States
Axially Arrayed Helical Antenna	5,587,719	December 24, 1996	Steffy	United States
Shear Viscous Damped Hinge	5,546,632	August 20, 1996	Curtin Robinson	United States

Method for Making an Explosive Separation System	5,535,502	July 16, 1996	Harris	United States
Method and Apparatus for Deploying a Satellite Network	5,199,672	April 6, 1993	Beidleman King	United States
Rocket-Powered, Air-Deployed, Lift-Assisted Booster Vehicle for Orbital, Supraorbital and Suborbital Flight	4,901,949	February 20, 1990	Elias	United States
Frangible Joint Separation System	5,390,606	February 21, 1995	Harris	United States
Method for Injecting Payloads into Orbit	5,681,011	October 28, 1997	Frazier	United States
Satellite Having a Stackable Configuration	5,522,569	June 4, 1996	Anthony D. Robinson David Alan Steffy	United States
Self-Deploying Helical Structure	5,977,932	November 2, 1999	Robinson	United States
System for Turbo-Coded Satellite Digital Audio Broadcasting	5,907,582	May 25, 1999	Yi	United States



<b>Title</b>	<b>Patent No.</b>	<b>Issue Date</b>	<b>Inventor</b>	<b>Country</b>
Method and Receiver for Coded Satellite Digital Audio Broadcasting	5,970,085	October 19, 1999	Yi	United States
Method and System for Turbo-Coded Satellite Digital Audio Broadcasting	6,061,387	May 9, 2000	Yi	United States
Method and System for Regulating Switching of Traffic Light	6,064,319	May 16, 2000	Matta	United States
Spectrometer System Having Pivotaly Mounted Internal Reflectance Element	4,812,041	March 14, 1989	Doyle	United States
Internal Reflection Spectroscopy for Deep Container Immersion	4,835,389	May 30, 1989	Doyle	United States

**B. PATENT APPLICATIONS**

<b>Title</b>	<b>Patent App. No.</b>	<b>Filing Date</b>	<b>Inventor</b>	<b>Country</b>
Carrier Suppression Type Modulator with Encoded Modulating Signals	10/856,801	June 1, 2004	Leonard A. Atkinson	United States

**C. PATENT LICENSES**

NASA has granted to Orbital Sciences Corporation a revocable, royalty-bearing, nonexclusive license, with authority to sublicense with respect to Patent No. 5,723,923 (March 3, 1998), Apparatus for Providing Torque and for Storing Momentum Energy, owned by the United States Government, represented by NASA.