EXHIBIT A

APPLICATION FOR MILESTONE EXTENSION

DIRECTV Enterprises, LLC ("DIRECTV") is authorized to launch and operate DIRECTV RB-2, a 17/24 GHz Broadcasting Satellite Service ("BSS") payload (Call Sign S2712), at the nominal 103° W.L. orbital location.¹ DIRECTV diligently entered into a construction contract and a launch services contract for this spacecraft. When its manufacturer began to experience delays in procuring vital parts for the satellite, DIRECTV switched manufacturers in an effort to assure expeditious delivery of the spacecraft. It has proceeded with construction under that second contract, and the satellite is nearly complete with 91.4% of all pre-launch construction payments made. DIRECTV has also maintained its place in the queue of its launch provider, and made 90% of the payments required under that agreement.

Unfortunately, DIRECTV will not be able to meet the final milestone in its DIRECTV RB-2 authorization. The spacecraft will not be completely constructed and ready for delivery to the launch site until September. More importantly, for a variety of reasons beyond DIRECTV's control, the launch window for the satellite has moved steadily later in time, and is currently estimated to fall in February/March 2015, after which DIRECTV will need to conduct in-orbit testing before beginning operations at its licensed location. Accordingly, pursuant to Section 308 of the Communications Act of 1934, as amended, and Section 25.117(e) of the Commission's rules, DIRECTV hereby requests a nine-month extension, up to and including April 27, 2015, to meet its "launch and begin operations" milestone for DIRECTV RB-2. In the alternative, it requests that the Commission waive that milestone for good cause shown.

¹ See DIRECTV Enterprises, LLC, 24 FCC Rcd. 9393 (Int'l Bur. 2009), recon. denied, 27 FCC Rcd. 5932 (Int'l Bur. 2012) ("DRB-2 Authorization Order"); Grant Stamp, IBFS File No. SAT-MOD-20110727-00136 (Oct. 26, 2011).

A. Although DIRECTV Has Proceeded Diligently, Unexpected Construction Issues Delayed Completion of the Satellite

DIRECTV and its affiliates have invested decades of effort and several billion dollars in developing and implementing the nation's leading direct-to-home ("DTH") satellite system. As part of its ongoing efforts to augment its capabilities, in 1997DIRECTV filed a petition for rulemaking to allocate spectrum for the 17/24 GHz BSS service in the U.S. Table of Frequency Allocations,² and was the first to seek authority from the Commission to operate in the 17/24 GHz BSS band.³ After participating in the ensuing rulemaking and pursing its applications for over a decade, DIRECTV was finally awarded several of the first licenses issued in this new band.

One such license was for DIRECTV RB-2 to operate in the 17/24 GHz BSS band at the nominal 103° W.L. orbital location. In order to make use of this license, DIRECTV incorporated a 17/24 GHz BSS payload as part of a multi-mission, hybrid spacecraft, known as DIRECTV 15, that also includes Ka-band and Direct Broadcast Satellite payloads.⁴ The DIRECTV RB-2 authorization included the following performance milestone requirements:

- 1. Execute a binding contract for construction by July 27, 2010;
- 2. Complete the Critical Design Review ("CDR") by July 27, 2011;
- 3. Commence construction by July 27, 2012; and
- 4. Launch and begin operations by July 27, 2014.⁵

² See Public Notice, Report No. 2208 (rel. July 1, 1997).

³ See IBFS File Nos. SAT-LOA-19970605-00049, -00050, and -00051.

⁴ See Application Narrative, IBFS File No. SAT-LOA-20140604-00055 (filed Jun. 4, 2014).

⁵ DRB-2 Authorization Order, ¶ 37.

DIRECTV timely submitted proof that it had satisfied the first three milestones.⁶ In addition, it entered into a launch services contract with Arianespace in September 2011.⁷

Unfortunately, due to circumstances beyond DIRECTV's control, the schedule for construction of its satellite began to slip. DIRECTV originally entered into a construction contract with Space Systems/Loral ("SS/L") in July 2010. In the spring of 2011, SS/L informed DIRECTV that acquisition of travelling wave tube arrays ("TWTAs") for the spacecraft had been delayed three months because the manufacturer was experiencing significant manufacturing process development issues. Although DIRECTV continued to work with SS/L and its TWTA manufacturer in an effort to expedite delivery of these vital parts, the delay only grew worse. By the fall of 2011, the projected delivery date for the TWTAs was several months behind schedule, with no firm assurance that further delay would not occur.

Rather than risk falling still further behind, DIRECTV terminated its agreement with SS/L and entered into a new construction contract with Astrium SAS in October 2011. That agreement established a thirty-six month period from commencement of construction to satellite delivery. This meant that the satellite would be slightly behind the July 2014 launch and operate milestone unless the parties could accelerate production along the way.

⁶ See the following submissions in IBFS File Nos. SAT-LOA-20060908-00100, SAT-AMD-20080114-00014, and SAT-AMD-20080321-00077: Letter from William M. Wiltshire to Marlene H. Dortch (July 26, 2010) (contract submission); Letter from William M. Wiltshire to Marlene H. Dortch (July 27, 2011) (submission of amended contract); Letter from William M. Wiltshire to Marlene H. Dortch (July 27, 2011) (CDR package submission); Letter from William M. Wiltshire to Marlene H. Dortch (July 27, 2012) (commence construction submission). DIRECTV's showings with respect to all three milestones remain pending.

⁷ See Press Release, "Arianespace to launch up to four satellites for DIRECTV" (Sep. 13, 2011) (available at http://www.arianespace.com/news-press-release/2011/9-13-2011-directv.asp).

At all times, DIRECTV has proceeded diligently with development of the DIRECTV RB-2 satellite system. Evidence of DIRECTV's commitment to developing and launching this satellite include the following:

- As verified by the letter attached hereto as Attachment A, DIRECTV has made 91.4% of all pre-launch construction payments due under the Astrium construction contract. Astrium has assembled the spacecraft and completed all but the final functional and performances tests. It will be ready for delivery in mid-September – slightly ahead of the original schedule. DIRECTV has had an employee on-site at Astrium to monitor progress of construction.
- As further verified by the letter attached hereto as Attachment B, DIRECTV has paid Arianespace 90% of the price of the launch services contract applicable to DIRECTV 15, which remains in full force and effect.
- DIRECTV has also made significant progress with other elements of its system, including the construction of in-orbit test, TT&C and communications ground infrastructure at three of DIRECTV's existing uplink facilities (in Castle Rock, CO, New Hampton, NH, and Moxee, WA), and development of new consumer equipment capable of receiving and processing signals in the 17/24 GHz BSS band. Accordingly, the evidence demonstrates that DIRECTV has invested heavily and consistently in the DIRECTV RB-2 system. Nonetheless, due to delays in construction at the beginning of the process, completion of the satellite will miss the July 2014 launch deadline by approximately 45 days.

B. The Unavailability of a Launch Vehicle Has Unexpectedly Delayed DIRECTV's Satisfaction of the Final Milestone Requirement Still Further

As discussed above, DIRECTV has had a launch services contract with Arianespace in place for several years, and during that time has been working toward a

4

launch in the third quarter of 2014. Arianespace is one of the world's premier launch providers, capturing more than half of all commercial satellite launches each year.⁸ With an unbroken string of 59 successful Ariane 5 launches over the last eleven years, it is also the most reliable launch service provider.⁹ Unfortunately, although DIRECTV's satellite will be ready for delivery in September, no launch slot is available until 2015 due to a combination of factors beyond DIRECTV's control. These factors are discussed below.

First, although DIRECTV has maintained its place in the Arianespace launch queue, that place has marched steadily later in time due to delays in earlier-scheduled launches. Given the complexity of the satellite launch process, delays are not an uncommon occurrence in the industry. Moreover, because of the nature of Arianespace's co-passenger launches, one satellite operator may be ready for launch but be delayed by wholly unrelated problems experienced by another satellite operator. Specifically,

[t]he Ariane 5's business model is based on launching two commercial telecommunications satellites at a time, which usually means pairing one large satellite with one that is much smaller. The difficulty of finding two satellites ready for launch at the same time with a combined weight that fits into the Ariane 5 has long been one of the challenges for Arianespace.¹⁰

Indeed, this challenge was vividly illustrated at the end of 2013. Arianespace had scheduled the final Ariane 5 launch of the year for December 6, 2013. Unfortunately, the small satellite passenger on that flight (Amazonas 4A) was delayed, so both it and its co-

⁸ *See* Arianespace Service and Solutions (available at http://www.arianespace.com/about-us/service-solutions.asp).

⁹ See Arianespace – Launch Smart, at 3 (available at http://www.arianespace.com/about-us-corporateinformation/Arianespace-Corporate-Brochure-2014-EN.pdf) ("Arianespace Brochure"); Arianespace Mission Update, "Arianespace's Ariane 5 orbits satellites at the service of SES and HISPASAT" (Mar. 22, 2014) (available at http://www.arianespace.com/news-mission-update/2014/1147.asp).

¹⁰ Peter B. de Selding, "Ariane 5 Manifest Unsettled for Remainder of 2013 and into 2014," SPACENEWS (Jun. 26, 2013) (available at http://www.spacenews.com/article/launch-report/35984ariane-5-manifestunsettled-for-remainder-of-2013-and-into-2014).

passenger (Astra 5B) could not make use of that launch window.¹¹ Ultimately, that pair of satellites was rescheduled for launch on March 7, 2014.¹² Even then, the launch was further delayed by approximately two weeks in order to accommodate "complementary checks" on the Amazonas 4A satellite.¹³

Arianespace also had to delay the currently pending Ariane 5 launch, most recently scheduled for June 6, because one of the passengers (the Optus 10 satellite) "requires additional verifications."¹⁴ Arianespace has yet to announce a rescheduled date for that launch. Indeed, every Ariane 5 launch in 2014 has been delayed to some extent.¹⁵ Unfortunately, such delays inevitably push back launch windows for other satellites in the queue, including DIRECTV 15 and its DIRECTV RB-2 payload.

Second, although Sea Launch and International Launch Services ("ILS") have the capability to launch a satellite the size of DIRECTV 15, neither of them offers a practical alternative. Switching to a different provider would not expedite launch of the satellite, as there are already others waiting on their manifests. Indeed, the schedules of those other launch providers also have been affected by recent anomalies. ILS suffered a

¹¹ See Stephen Clark, "Next Ariane 5 launch delayed to January by satellite issue," SPACEFLIGHT NOW (Nov. 13, 2013) (available at http://spaceflightnow.com/ariane/va216/131113delay/).

¹² Arianespace Mission Update, "Dates set for Arianespace's first three missions of 2014: Year-opening flight is VA217 on February 6"" (Jan. 14, 2014) (available at http://arianespace.com/news-missionupdate/2014/1124.asp).

¹³ Arianespace Mission Update, "Ariane 5 Flight VA216 is postponed for payload checks" (Feb. 14, 2014) (available at http://www.arianespace.com/news-mission-update/2014/1132.asp).

¹⁴ *See* Press Release, "Arianespace Flight VA218: Launch Postponed" (May 26, 2014) (available at http://www.arianespace.com/news-press-release/2014/5-26-2014-VA218.asp).

¹⁵ See Press Release, "Ariane Flight VA217: Ariane 5 ECA – ABS-2 – Athena Fidus: Launch postponed" (Jan. 6, 2014) (available at http://www.arianespace.com/news-press-release/2014/1-6-2014-VA217-launch-postponed.asp); Press Release, "Ariane Flight VA216: Ariane 5 ECA – Astra 5B – Amazonas 4A launch postponed" (Feb. 14, 2014) (available at http://www.arianespace.com/news-press-release/2014/2-14-2014-VA216-launch-postponed.asp). In addition, Arianespace is committed to launch the Automated Transfer Vehicle to the International Space Station in late July – a launch window that cannot be moved and therefore will push the queue back still farther.

Proton launch failure on July 2, 2013 – the fourth launch anomaly for a Proton in two years.¹⁶ It resumed launch operations later in the year, but suffered another anomaly on its most recent launch.¹⁷ Moreover, the ILS launch manifest for 2014 and 2015 are reportedly full.¹⁸ Sea Launch suffered a launch failure in January 2013, and although the investigation into the cause of that failure concluded in May 2013,¹⁹ there were no launches on that platform until late May 2014.²⁰ By contrast, Arianespace is planning a record number of launches this year, and the Ariane 5 has proven to be a very reliable platform. Accordingly, there simply is no better option for launching DIRECTV's satellite – and launching it quickly.

C. Commission Precedent Supports Granting a Milestone Extension in These Circumstances

The Commission imposes milestone deadlines for satellite system implementation in order to ensure that licensees proceed with construction and launch of their satellites in a timely manner and that valuable spectrum will not be held, to the exclusion of others, by those who are unwilling or unable to proceed.²¹ Extensions may be granted when the

¹⁶ See "Fiery Proton Rocket Crash Leaves Commercial Customers in Limbo," SPACENEWS (Jul. 8, 2013) (available at http://www.spacenews.com/article/launch-report/36142fiery-proton-rocket-crash-leavescommercial-customers-in-limbo).

¹⁷ See Press Release, "Russian State Commission Investigates Russian Federal Proton Launch Anomaly" (May 16, 2014) (available at http://www.ilslaunch.com/newsroom/news-releases/russian-statecommission-investigates-russian-federal-proton-launch-anomaly).

¹⁸ See Peter B. de Selding, "ILS Rises Above Proton Problems," SPACE NEWS (Jan. 13, 2014) (available at http://www.spacenews.com/article/launch-report/39071launch-satellite-contract-review-ils-risesabove-proton-problems).

¹⁹ Press Release, "Sea Launch IS-27 FROB Report Complete" (Jun. 3, 2013) (available athttp://www.sealaunch.com/news/11365).

²⁰ Press Release, "Sea Launch Successfully Launches EUTELSAT 3B" (May 27, 2014) (available at http://www.sea-launch.com/news/11407).

²¹ See, e.g., Amendment of the Commission's Space Station Licensing Rules and Policies, 18 FCC Rcd. 10760, ¶ 173 (2003); TerreStar Networks, Inc., 22 FCC Rcd. 17698, ¶ 6 (Int'l Bur. 2007) ("TerreStar").

delay is due to unforeseeable circumstances beyond the applicant's control, or when there are unique and overriding public interest concerns that justify an extension.²² In this case, both factors clearly support grant of DIRECTV's milestone extension request.

First, "the Commission has considered the extent of a satellite's construction and the amounts paid toward to the total contract price as factors in milestone extension cases."²³ Thus, for example, the Commission granted a five-month extension to allow ICO to achieve completion and launch of its satellite.²⁴ Similarly, it granted TerreStar a ten-month extension where its satellite was in the final stages of construction and almost completely paid for, and it had a firm launch contract under which substantial payments had also been made.²⁵ In this case, DIRECTV will soon complete construction of its satellite, and has paid approximately 91.4% of the pre-launch construction payments and 90% of the launch services contract related to it.

Thus, DIRECTV would have been in a position to launch as early as October – less than three months beyond the applicable milestone date. Unfortunately, however, under the most recent estimate, an Ariane 5 launch window for DIRECTV 15 does not open until approximately February/March 2015. There are no alternatives that would achieve a more expedited launch. These are precisely the sort of circumstances in which the Commission has found extension to be justified and appropriate.²⁶

²² See 47 C.F.R. § 25.117(e). See also TerreStar, ¶ 6; New ICO Satellite Services G.P., 22 FCC Rcd. 2229, ¶ 14 (Int'l Bur. 2007) ("New ICO").

²³ New ICO Satellite Services G.P., 22 FCC Rcd. 2229, ¶ 15 (Int'l Bur. 2007).

²⁴ Id.

²⁵ See TerreStar, ¶ 7 and n.15 (discussing factors and citing other cases in which similar commitment justified milestone extension).

See, e.g., R/L DBS Co. LLC, 18 FCC Rcd. 7694, ¶¶ 14-15, 17 (Int'l Bur. 2003) (granting a five-month launch milestone extension based on, among other things, the unavailability of a launch vehicle due to delay in delivery of a spacecraft scheduled for an earlier launch and issues with the launch vehicle

Second, even were this not the case, DIRECTV's demonstrated commitment to construction and launch of this 17/24 GHz BSS payload presents the unique and overriding public interest grounds that are an independent basis for granting a milestone extension. The launch of the DIRECTV RB-2 payload will mark the culmination of an effort that DIRECTV began over 15 years ago. Its long-time commitment will finally bear fruit with the launch of the first 17/24 GHz BSS payload capable of providing commercial service. This additional capacity is coming online just in time to support the launch of bandwidth-intensive ultra-high definition television ("Ultra HD") services, which promise a leap forward for video programming similar to that achieved with the introduction of high definition service.²⁷ DIRECTV has invested years of effort and hundreds of millions of dollars to get to this point. No one is more anxious to launch this satellite than is DIRECTV.

The Commission has found similar circumstances to justify extension of the launch and operate milestone in prior cases. For example, in *TerreStar*, the Commission found overriding public interest considerations that justified a ten-month extension. There, as here, delivery of the satellite was delayed due to problems associated with the delivery of critical parts.²⁸ The Commission nonetheless found that the licensee had demonstrated a substantial and continuing commitment to satellite construction and system implementation.²⁹ In that case, satellite construction was 84% complete, and the

itself); *Geostar Positioning Corp.*, 6 FCC Rcd. 2276, ¶ 4 (CCB 1991) (milestone extensions of one to one-and-a-half years granted based on revisions to launch provider's revised manifest).

²⁷ Ultra HD is an umbrella term that describes two different resolutions: 4K Ultra HD and 8K Ultra HD. 4K Ultra HD has a resolution of 3,840 x 2,160 pixels, which is four times the number of pixels as HDTV, while 8K Ultra HD has a resolution of 7,680 × 4,320 pixels, or sixteen times the number of pixels as HDTV.

²⁸ *TerreStar*, \P 9.

²⁹ *Id.*, ¶¶ 7, 10.

licensee had paid 97% of the total amount due under the satellite construction contract price and 70% of the total amount due under the launch services contract. The Commission also noted that grant of the extension would serve the public interest because it would allow a licensee "that has demonstrated diligence and commitment . . . to expeditiously complete implementation of a satellite system with advanced capabilities for homeland security, rural connectivity, and other critical communications purposes."³⁰

For similar reasons, granting a nine-month extension would be appropriate here.³¹ Like TerreStar, DIRECTV has worked diligently and invested significantly in its satellite system, which will be one of the first capable of providing commercial service in the 17/24 GHz BSS band. DIRECTV has firm arrangements in place for launch of the satellite within the period of the extension requested herein. It has requested a period somewhat beyond that launch window in order to accommodate the time necessary for in-orbit testing and arrival of the satellite on station at its assigned orbital location. Such an extension is clearly justified in the circumstances presented here.

D. In the Alternative, the Commission Should Waive the Final Milestone

Pursuant to Section 1.3 of the Commission's rules, the Commission may waive its rules for good cause shown.³² "Waiver is appropriate if special circumstances warrant a deviation from the general rule and such deviation would better serve the public interest than would strict adherence to the general rule," including "more effective implementation of overall policy."³³ In determining whether waiver is appropriate, the

³⁰ *Id.*, \P 10.

³¹ See 47 C.F.R. § 25.117(e) (applicant must justify length of requested extension).

 ³² 47 C.F.R. § 1.3. See also WAIT Radio v. FCC, 418 F.2d 1153 (D.C. Cir. 1969), cert. denied, 409 U.S. 1027 (1972); Northeast Cellular Telephone Co., LP v. FCC, 897 F.2d 1164 (D.C. Cir. 1990).

³³ GE American Communications, Inc., 16 FCC Rcd. 11038, ¶ 9 (Int'l Bur. 2001).

Commission should "take into account considerations of hardship, equity, or more effective implementation of overall policy."³⁴

As explained above, the evidence that the satellite will be complete and ready for launch months before its launch vehicle will be available demonstrates good cause for a waiver in this case. DIRECTV could neither foresee nor control the cause of the construction delays and compounding launch unavailability, and a waiver would not undermine the purpose of the milestone requirements, as it would not result in, facilitate, or encourage spectrum warehousing.³⁵ Moreover, grant of the requested waiver would promote the expeditious use of the undeveloped 17/24 GHz BSS spectrum band, and enable DIRECTV to provide Ultra HD programming and other video services to millions of subscribers across the nation.

* *

For the foregoing reasons, DIRECTV respectfully requests that the Commission grant a nine-month extension, up to and including April 27, 2015, to meet its "launch and begin operations" milestone for DIRECTV RB-2. In the alternative, it requests that the Commission waive that milestone for good cause shown.

Respectfully submitted,

DIRECTV ENTERPRISES, LLC

By:

Romulo Pontual Executive Vice President

*

³⁴ *WAIT Radio*, 418 F.2d at 1159.

³⁵ See, e.g., EchoStar Satellite Corp., 18 FCC Rcd. 15875, ¶ 9 (Int'l Bur. 2003); Astrolink Int'l LLC, 17 FCC Rcd. 11267, ¶ 6 (Int'l Bur. 2002).

DECLARATION

I, Philip J. Goswitz, hereby make the following declaration under penalty of perjury. I

understand that this Declaration will be submitted to the Federal Communications Commission.

- 1. I am Senior Vice President, Video, Space, and Communications at DIRECTV.
- 2. I have reviewed the foregoing Application for Milestone Extension or Waiver, and certify that the facts set forth therein are true and correct to the best of my knowledge.

<u>/s/</u>

Philip J. Goswitz Senior Vice President, Video, Space, and Communications DIRECTV Enterprises, LLC

Executed: June 24, 2014

ATTACHMENT A



Airbus Defence and Space, 31 rue des Cosmonautes, 31402 Toulouse Cedex 4

Gaëtan Martin T +33 5 62 19 60 44 F +33 5 62 19 74 85 E gaetan.martin@astrium.eads.net

Our ref: 2014/ATC/066

Toulouse, 12th June 2014

DIRECTV

2260 E. Imperial Hwy., El Segundo, CA 90245 United States of America

To the attention of Mr. Brian Regan Vice President & Deputy General Counsel

Subject: DIRECTV 15 Satellite

Dear Mr Regan,

We are pleased to give you the latest status of progress for the DIRECTV-15 Satellite Program as per June 2014.

- a) The DIRECTV 15 satellite has now reached a very advanced construction stage, and it is currently in final steps of Spacecraft test at Airbus Defence and Space facilities in Toulouse before being shipped to launch site. The main steps that have been successfully completed this year are (refer to associated pictures):
 - ✓ Satellite assembly in February 2014
 - ✓ Satellite thermal vacuum test completed on 24th April 2014
 - ✓ Satellite mechanical & dynamic test successfully completed on 6th June 2014

DIRECTV 15 satellite is starting the final functional & performances tests before shipment.

- b) Our contract awarded by DIRECTV in October 2011 remains in full force, and to date 91.4% of all payments due and owing on the satellite construction contract have been paid by DIRECTV (excluding in-orbit incentives).
- c) The current satellite schedule is on track and the projected on ground delivery date is 14th September before shipment to the launch site in Kourou (French Guyana) for a launch by the Ariane 5 launcher.

We hope that the above information responds to your expectation and remain at your disposal. Yours sincerely.

Gaëtan Martin Commercial & Contract Manager Telecommunications Satellites

www airbusdefenceandspace.com

ANNEX 1

DIRECTV 15 Spacecraft pictures at different stage of build



DIRECTV 15 satellite under Mechanical Dynamic Test: Completed on 6th June 2014

DIRECTV 15 satellite under thermal vacuum test: Completed on 24th April 2014



DIRECTV 15 satellite Assembly performed in February 2014



DIRECTV 15 Antenna Subsystem test: Completed in December 2013



ATTACHMENT B



Direction Commerciale

Attn. Mr. Brian REGAN Associate General Counsel DIRECTV OPERATIONS, Inc 2230 East Imperial Hwy El Segundo California 90245 USA

Evry-Courcouronnes, 18 June 2014 Ref.: DC/SC/CBA/VPR/L14-118 Issue 2

VIA ELECTRONIC MAIL ONLY

Subject: DIRECTV-14 and 15 Launch Services Agreements Status

Dear Mr. Regan,

This purpose of this letter is to confirm that the Launch Services Agreement (Contract DC/V/RDA/VSH/C11-009 signed on September 09th, 2011) for DIRECTV-14 and DIRECTV-15 is in full force and effect. Current manifest objectives foresee a launch of DIRECTV-14 before the end of 2014 and DIRECTV-15 is expected to be launched during the first quarter of 2015.

I also want to confirm that, to date, DIRECTV has paid 90 % of the launch services price for DIRECTV-14 and 90 % of the launch services price for DIRECTV-15.

Do not hesitate to contact me if you have further questions.

With my best regards,

Christophe BARDOU Program Director for DIRECTV-14

Copies:

DIRECTV Arianespace

P. Goswitz, J. Seto, C. Ho.W. Kernisan, M. Callari, F. Desnoues, C. Bardou, R. Darde.

www.arianespace.com

S.A. au capital de 372 069,01 € - RCS Evry B 318 516 457 - Siren 318 516 457 - APE 5122 Z Boulevard de l'Europe - B.P. 177 - 91006 Evry-Courcouronnes cedex - France

Evry Tél : +33 (0)1 60 87 60 00 Fax : +33 (0)1 60 87 62 17 Kourou Tél : +594 594 33 67 07 Fax : +594 594 33 62 66 Washington DC Tél : +1 202 628 3936 Fax : +1 202 628 3949 **Tokyo** Tél : +81 3 3592 2766 Fax : +81 3 3592 2768 Singapore Tél : +65 6223 6426 Fax : +65 6223 4268