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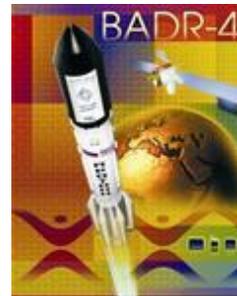
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## BADR-4 Blog

# Current Campaign Blog: BADR-4



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## Mission Complete

In the world of rocket science, nothing beats a successful launch and that's exactly what we had on 9 November at 2:01 a.m. Baikonur time. The liftoff was right on time on our first attempt and the flight was nominal, culminating in a very accurate orbit. When the successful spacecraft separation from the Breeze M was announced, the entire launch team was ecstatic, champagne started flowing, and spontaneous eruptions of French celebratory songs could be heard throughout. After some well-deserved rest, we all celebrated later that evening at our post-launch banquet.

Although most of the credit for the success of this mission goes to the dedicated, professional launch team, it doesn't hurt to get assistance from



higher authorities. This photo shows a few of the launch team personnel involved in the traditional ceremony to bless each stage of the rocket. This

interesting event occurred earlier on the actual day of launch.

For the icing on the cake, we witnessed yet another cosmodrome launch at the end of our own launch day. A Rokot launch vehicle blasted off from an in-ground silo just in front of the Fili Hotel. To recap, we were treated to a Rokot launch, two Soyuz launches, and of course our own Proton launch during the course of this one campaign.

Following the successful BADR-4 launch, the team performed close-out activities, packed personal belongings, said our goodbyes, and boarded the bus to the airport. There we crossed paths with the incoming MEASAT early launch team. This heel-to-toe timing was carefully planned and we passed the mission success torch to our ILS colleagues.

This concludes the BADR-4 blog. We hope you have enjoyed following along and we also hope you will continue to follow along with the upcoming MEASAT blog.

*Photo: Top - Liftoff of BADR-4 from Launch Pad 39. Bottom - Earlier in the day, a traditional blessing of the rocket. Visit the [Photo Gallery](#) for more pictures.*

**Posted 10 November**

[0 comments](#)

Posted By: ILS BADR-4 Team at 16:08, Baikonur

## BADR-4 Launch Successful

BADR-4 spacecraft separation has been confirmed! Target orbit has been achieved and parameters are better than predicted:

**Actual:** 3155.7 km perigee x 35,830.9 km apogee x 14.173 degrees inclination

**Predicted:** 3150 km perigee x 35,786 km apogee x 14.2 degrees inclination

For the latest press release, click [here](#). Thanks for joining us for another exciting ILS Proton launch campaign!

Posted 8 November

[12 comments](#)

Posted By: ILS Communications Team at 19:04, EST

## We Have Liftoff!

Congratulations to ARABSAT, Astrium and the ILS teams on a successful liftoff. To view highlights of the launch, click [here](#).

Stay tuned to the latest updates by calling the launch hotline at 1-800-852-4980.

Posted 8 November

[1 comments](#)

Posted By: ILS Communications Team at 16:14, EST



## On the Pad



Under a very fitting full moon (that's what "BADR" means in Arabic) and in front of a crowd of on-lookers, the ILV rolled away from the Breeze M Fueling Station yesterday morning at precisely 6:30, per tradition.

About two and a half hours later, it arrived at Launch Pad 39 where a busload of excited team members greeted it. We watched attentively as the ILV backed slowly up to the launcher structure. Then the erector unit slowly rotated the ILV to a vertical position to allow its proper attachment to the pad interface. Throughout the several minutes

of this impressive rotation, hundreds of photos were taken, both with individuals posing (some as if they were personally responsible for the lift), and with every imaginable group combination. This also made a nice backdrop for a few of us to record our video clips for the broadcast.

The photos give you a pretty good idea of the tremendous amount of flight hardware and propellants that are required to boost the spacecraft (a relatively small portion of the total mass) into its ultimate orbit. The ILV will remain on the pad for final preparations and testing before its scheduled launch on 9 November Baikonur time (8 November, EST).



You may remember from an earlier blog entry that the Astrium team brought in a "baby foot" table (aka foosball) at the start of the campaign. It has gotten plenty of use already and recently some ILS members got a chance to team up with the French for a heated match at the Kometa Hotel. It was great fun and a fine demonstration of international cooperation.

*Photo: Top - ILV completing verticalization operations on the*



launch pad. Bottom - Fierce "baby foot" competition under way. Visit the [Photo Gallery](#) for more pictures.

Posted 06 November

[3 comments](#)

Posted By: ILS BADR-4 Team at 22:22, Baikonur

## Ready to Roll

The fully integrated launch vehicle (ILV) was hoisted onto the transporter on 1 November, making for a very impressive sight.

Rollout of the ILV to the Breeze M Fueling Station occurred early yesterday morning. At this facility, the Breeze M low pressure tanks are filled during a two day process, which was completed today. Since this operation is considered hazardous and occurs near the Processing Facility, the offices were kept clear of non-essential personnel for the last two days. At the conclusion of the fueling, the first State Commission Meeting was held to review readiness of all the various systems and facilities to receive the ILV at the launch pad and for the eventual launch. The consensus was positive, so rollout to the launch pad will occur as scheduled on 5 November.



Although we were evacuated from the office area for two days, we were able to conduct some work from the hotel areas, but it was also a good opportunity for recreational activities. We have had night trips to the clubs in town, day trips for shopping, and today we were fortunate to have a fascinating tour of the Energia Pad 250 facilities. While the complex sits idle today and is in a gradual state of decline (despite a 100-man maintenance team), there is an awesome amount of infrastructure present that was developed in the late 70's for the Energia launch vehicle (Russian equivalent of Saturn V). The photo gives you an idea of the enormousness of the facility while also



providing an opportunity to recognize the Telesat consultant who provided many of the photos used in this blog. One brave member of our Weissker staff actually climbed all those stairs from the bottom of the flame bucket.

Tomorrow will be a Russian Holiday known as Day of National Unity. To help celebrate, ILS has organized a full team barbecue which will feature some steaks and seafood that we special ordered for this purpose. The weather should be good so we are really looking forward to this final social event before we enter the real home stretch.

Photo: Top - ILV lift operations. Bottom - Telesat consultant (and unofficial blog photographer) at Energia launch pad. Visit the [Photo Gallery](#) for more pictures.

Posted 3 November

[0 comments](#)

Posted By: ILS BADR-4 Team at 12:52, Baikonur

## Movin' Out



Sunday was a picture-perfect day in Baikonur with clear skies, mild temperatures, and some beautiful fall colors. The grounds crew at the Fili Hotel has done its best to create an oasis in front of the hotel.

Yesterday was also an opportunity for another trip to Baikonur town. Shortly after the team returned, we headed over to the processing facility for the main ceremony to sign the payload fairing logos.

Today, the Ascent Unit (Breeze M plus spacecraft plus payload fairing) was separated from the tilter fixture and transported by rail over to meet the three stages of the Proton rocket in Hall 111. This was the first of three ground transports of the fueled spacecraft and it was conducted very carefully to satisfy some unique characteristics of this spacecraft design. The combination of Ascent Unit and Proton rocket, also known as Integrated Launch Vehicle, will remain in Hall 111 for a few of days of preparation before rolling to the Breeze M Fueling Station early on 2 November.

Overall, things are running quite smoothly here as we are now only 10 days from launch!

By the way, while clocks changed one hour back to standard time this past weekend in many parts of the world, they did not change here. Therefore, we are now 11 hours ahead of the United States Eastern time zone.

*Photo: Fall colors on display in front of the Fili Hotel. Visit the [Photo Gallery](#) for more pictures.*

**Posted 30 October**

**[1 comments](#)**

**Posted By: ILS BADR-4 Team at 11:34, Baikonur**

## Joint Operations

We have now reached our peak personnel level here as the change-out crew arrived on 25 October. After a few days of transition time, more than 20 of the outbound team members will depart by charter tomorrow. All of their efforts on this launch campaign are greatly appreciated.

We are currently in the campaign phase known as "joint operations" when the spacecraft processing path meets the launch vehicle processing path. The fully fueled spacecraft was joined to the launch vehicle adapter using an adapter ring built by Saab. We have a team of Saab specialists who achieve this critical part of the mate using a very careful process. Next, the spacecraft/adapter combination was hoisted above and then connected to the Breeze M upper stage in a vertical orientation.



On the following day, the Breeze M and spacecraft were rotated slowly in the tilter fixture to a horizontal position. This is an impressive operation that many personnel like to observe. Afterwards, the team posed for a group photo in front of the horizontal hardware.

One of the favorite activities for the launch team is to sign the payload fairing logos. The main signing ceremony will occur in a few days, but we held a smaller ceremony for the personnel who are about to depart. You can see how they line up for the chance to add their personal message to the upper half of the payload fairing.

Then it was time to say goodbye to the spacecraft as it was being encapsulated by the upper and lower payload fairing halves that protect it during its ascent to orbit. Except for an occasional peek into one of the hatches, BADR-4 won't be seen again by human eyes.

*Photos: (Top) Departing crew gets a chance to leave a final mark on their hard work. (Bottom)*

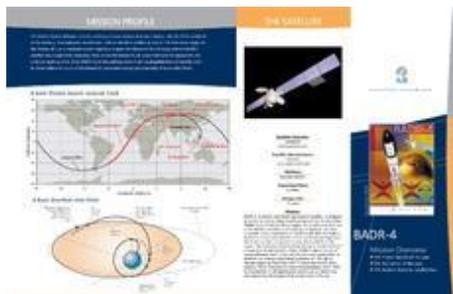
Group photo in front of the horizontally tilted Breeze M and spacecraft. Visit the [Photo Gallery](#) for more pictures.

**Posted 27 October**

**[0 comments](#)**

**Posted By: ILS BADR-4 Team at 17:44, Baikonur**

## BADR-4 Mission Overview



To read mission details for ARABSAT's BADR-4, view ascent and orbit charts, download the full mission overview and more, click [here](#).

**Posted 26 October 2006**

**[1 comments](#)**

**Posted By: ILS Communications Team at 18:02, EST**

## All Tanked Up

We passed a major milestone today with the completion of spacecraft propellant loading. Through the dedicated efforts of the British propellant team, oxidizer loading was completed on 21 October and fuel loading was completed today. With full tanks, the spacecraft now has the stored energy necessary to achieve its final orbit and to maintain that orbit throughout its service life. To honor the milestone, a member of the propellant team celebrated with a new haircut.

Yesterday also marked the final day of the holy month of Ramadan, observed by our ARABSAT end customer.



On the lighter side, with the stress of the propellant operation behind him, our Astrium customer was able to enjoy one of the many "country club" amenities offered here in Baikonur. As seen in the photo, a round of golf on our championship course was in order. This particular hole was so riveting that he decided to play it 18 consecutive times.

To cap off our day, the team was treated to yet another local launch viewing. Just after darkness fell, we witnessed the Progress launch at relatively close range. Hundreds of observers were in attendance as the rocket lit up the sky and the powerful acoustics rumbled through us. We have even been informed that a Rokot launch is scheduled near the end of our campaign. It is quite unusual to be able to watch 4 launches during a single campaign, but we are really appreciating the show!

*Photos: (Top) Propellant team member (on right) sports a new haircut; (Bottom) Astrium customer enjoying a chance to get some drives in. Visit the [Photo Gallery](#) for more pictures.*

**Posted 23 October**

**[1 comments](#)**

**Posted By: ILS BADR-4 Team at 08:27, Baikonur**

## Ready to Fuel

Progress has continued on all of the hardware components.

The spacecraft has been tested and is fully prepared for the loading of the fuel and oxidizer tanks. The oxidizer loading will occur first, followed two days later by the fuel loading. Yesterday, the spacecraft was weighed to determine its "dry mass". It will be weighed again once all the propellants are loaded.

The Proton rocket has completed its pneumatic testing and is now undergoing electrical testing. The Breeze M upper stage has successfully completed electrical tests and is being prepared to move to processing Area 31 (another part of the Cosmodrome) for loading of the high pressure tanks. This move by rail is scheduled to take place on 21 October, now that the MetOp mission has just launched from Area 31.

In fact, many members of the launch team (some who worked on the MetOp mission) traveled one hour by bus to watch this payload be launched tonight on a Soyuz rocket on its third attempt. The first attempt was aborted due to a faulty pressure sensor and last night's attempt was scrubbed due to excessive upper altitude winds. It always gets the adrenaline pumping when you witness a rocket launch and this event provided great inspiration for the upcoming BADR-4 launch.

**Posted 19 October**

[0 comments](#)

**Posted By: ILS BADR-4 Team at 10:56, Baikonur**

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## Sunday Recreation

Today was a relaxing day for the launch team. Many folks were sleeping off last night's excursion into town. Another large group headed into town for a half-day of touring and shopping for clothing, gifts, and food. The photo shows one of our ARABSAT customers and a Weissker teammate enjoying the popular town market.



This evening, our Astrium customer hosted a party for the full team. The event was held at the Proton Club and featured a delicious duck dish (a Toulouse specialty) and some fine French wine from the Bordeaux region. Everybody had a great time during this team-building experience.

*Photo: Taking in the sights in one of the Baikonur town markets. Visit the [Photo Gallery](#) for more pictures.*

**Posted 15 October**

[0 comments](#)

**Posted By: ILS BADR-4 Team at 21:34, Baikonur**

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## Lucky Number 13



It is time to fill you in on the last few days since the spacecraft and Main Team arrived here in Baikonur. The spacecraft, BADR-4, was removed from its shipping container on 11 October and moved into processing Hall 103A. Yesterday, the final piece of critical hardware arrived, the Breeze M upper stage. Breeze M came in on an Antonov aircraft the same day that the BADR-4 container departed on a different Antonov. It was quite an unusual sight to see two of these massive planes side-by-side at the airfield.

Here are some words from our Astrium customer on their current perspective:

"On 13 October, tests are proceeding nominally on the spacecraft to verify its good health after transport. Propulsion pressurization operations are on-going. The whole Astrium team is fully operational and is working two shifts from Monday to Saturday. Team spirit is excellent and the "Baby Foot" (aka foosball) championship has just started at Astrium's hotel."

Friday the 13th was a very lucky day for the ILS team. We were invited to attend the 50th anniversary celebration at School No. 1 in Baikonur Town. Not only did we attend, but we were treated like absolute royalty in appreciation for some computer and video equipment that we (and some previous customers) donated during prior campaigns. We were even asked to cut the ribbon at the grand opening of their new Video Center. We were truly overwhelmed by the hospitality we received on a night that included champagne and fine chocolates, a VIP school tour, student video interviews of the ILS team, a rock and roll dance, and ultimately a fireworks show from the school roof as we drove away. In perhaps another good luck sign, one of the champagne corks launched itself, ricocheted off the ceiling and landed in the shirt pocket of an ILS team member (what are the odds?). It was a night to remember and made us really appreciate the human cultural aspect of our high technology jobs.

*Photo: Two Antonovs, one for the SC and one for the Breeze M, on the Yubileiny runway. Visit the [Photo Gallery](#) for more pictures.*

**Posted 13 October**

**[0 comments](#)**

**Posted By: ILS BADR-4 Team at 23:27, Baikonur**

## Main Team & SC Arrivals

The Main Campaign Team arrived safely at Baikonur early yesterday afternoon. This group of 30 consists primarily of Astrium personnel, a consultant to ARABSAT from Telesat, and a few other support personnel. The photo shows the arriving Main Team as they clear Kazakh customs with the charter aircraft in the background. Now we have a complete crew and we can get on with the important business at hand.



Today saw our most important arrival, the BADR-4 (aka ARABSAT-4B) spacecraft. After several days of fantastic, beach-like weather here, we woke up this morning to a glimpse of things to come. We were hit with high winds and cold temperatures as we boarded the 8 a.m. bus to the airfield. We made it in time to greet the massive Antonov aircraft that transported the spacecraft and other equipment from Toulouse, France, where it was built. With regular trips back to the bus to warm up, the crew managed to offload the precious cargo in a very smooth operation. Despite the tremendous size of the cargo hold, the spacecraft container has a tight fit. In a carefully orchestrated operation, the container is hoisted from the Antonov ramp onto a rail car (using Khrunichev's brand new mobile crane) for the six-hour train ride to the processing facilities. The train carrying BADR-4 arrived safely tonight and the next step will be the unpacking process.

Photo: Main Team Arrival. Visit the [Photo Gallery](#) for more pictures.

**Posted 10 October**

**[0 comments](#)**

**Posted By: ILS BADR-4 Team at 20:42, Baikonur**

## Catching Up



Today is Sunday, our first day off, which gives us an opportunity to reflect on the Early Team activities so far. First, we are happy to report that all Early Team members heeded the early morning wakeup call in Moscow and our charter flight departed from Moscow on time. After a smooth three hour flight, the team arrived in Baikonur enthusiastic and energized as clearly depicted in the bus photo. Along the route from the airport to the hotel area, we were greeted by wild horses crossing the road, a pack of 50 camels (coincidentally, that's one per arriving passenger), and even a caged "Wolf" (actually our computer/network engineer thusly named).

The Early Team activities have progressed well as we prepare the facilities for the arrival of the Main Team and then the spacecraft. Many recent improvements to the infrastructure have been observed here, including roadway repairs, residential building renovations, and ongoing exterior upgrades at the processing facilities. It is obvious that the launch organizations are committed to a bright, successful future for the Cosmodrome and the Proton programs.

The general consensus is that we are being treated to the the finest weather that any of us can remember here. Blue, cloudless skies, gentle breezes, and daytime temperatures in the 70's. Perfect weather for an outdoor barbecue which is how we ended our first Sunday, under a gorgeous full moon, after many team members spent the day in Baikonur Town. Although this is not the most lush location on earth, the vegetation in front of the Fili affords a touch of Fall as the leaves slowly turn colors. Today is definitely a bit of a breather before the busy schedule triggered by the arrival of the Main Team tomorrow and the BADR-4 spacecraft on Tuesday.

**Posted 09 October**

**[1 comments](#)**

**Posted By: ILS BADR-4 Team at 09:01, Baikonur**

## Next Stop... Baikonur!

With great anticipation, the BADR-4 "early team" has gathered in Moscow for tomorrow's charter flight to Baikonur. This early team consists of about 50 personnel from ILS; ARABSAT, the end customer; Astrium, the contractual customer and spacecraft manufacturer; Khrunichev; DTSA, the Defense Technology Security Administration; Pinkerton Security; and other support staff whose job it is to prepare the Baikonur facilities for the launch campaign. Another charter flight will arrive on 9 October carrying the "main team". A flurry of activities will take place in these next few days to ready the launch site for the spacecraft arrival on 10 October. We have cleared all the usual logistic hurdles with all essential personnel having Russian visas and security access to Baikonur. Thanks to all the hard work of each organization, we are working no significant issues at this time.

BADR-4 is also known as "ARABSAT-4B" and it is nearly identical to the ARABSAT-4A spacecraft. Both are Eurostar 2000+ satellites built by Astrium in Toulouse, France. This mission is somewhat unique in that it has a 4-hour mission duration (from liftoff to spacecraft separation), compared to the typical 9+ hour Proton/Breeze M mission profile. Many launch team members -- both in Baikonur and McLean, Va. -- appreciate the shorter launch day support associated with a 4-hour mission.

Now it is time to get some rest because the bus leaves at 7 a.m. sharp tomorrow for the Moscow airport. Fortunately, we are expecting pleasant weather for the start of our launch campaign. Next stop... Baikonur!!

Posted 04 October

[0 comments](#)

Posted By: ILS BADR-4 Team at 23:38, Moscow

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## Welcome to the BADR-4 Launch Campaign

Thank you for joining us for our second launch campaign blog -- Arabsat's BADR-4.

If you followed along with our previous campaign blog, we're glad to have you back with us. If this is your first time joining us, we welcome you and trust that you will enjoy this chance to take an inside look at daily life on a launch campaign.

We have added an on-site blog photo album where we will post the latest pictures from Baikonur. Also, be sure to drop us a note using our comments feature.

Posted 03 October 2006

[1 comments](#)

Posted By: ILS Communications Team at 14:23, EDT