# Video Blogging the Hubble Servicing Mission 4



**Ray Villard**
Space Telescope Science Institute
E-mail: villard@stsci.edu

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## Summary

"Access Hubble Special Edition SM4" was a groundbreaking reality-TV event for NASA productions: a low-budget, fast-response product that took advantage of universal broadband access. The unscripted series of programmes caught the never-before-seen drama behind the technologically intensive and challenging Hubble Space Telescope repair mission.

## Introduction

Space shuttle servicing missions to the Hubble Space Telescope always look very tidy on NASA-TV. The mission controllers at the Johnson Space Center (JSC) in Houston, Texas, all sit at blue control consoles in business wear. It's all button-down shirts and ties.

But in 2002 I found that there is a flipside to the servicing missions that isn't broadcast. Ann Jenkins, a colleague from NASA's Goddard Space Flight Center (GSFC) escorted me into the top security Payload Operations Control Center (POCC), where high-tech engineers and scientists from GSFC were packed in to oversee the upgrades and repairs on the pre-eminent space observatory on servicing mission SM3B. I discovered that they are definitely not a button-down crowd. They work hard, play hard and are openly passionate about what they are undertaking. When things go well, the POCC has a party atmosphere. When things go bad, jaws tighten, eyes tear up, and you can hear a mouse squeak.

I've always wanted to document the high-tech, backstage drama that unfolds during a servicing mission, which is one of the most unique space activities NASA has undertaken in its 51-year lifetime.

The opportunity came with the last scheduled Hubble-servicing shuttle flight, STS-125, in May 2009. In the years after 2002, the internet exploded with webcasting, YouTube, video blogs and social networking. The medium was there for the kind of project I envisioned.

The plan was to make a "reality TV" style daily report of the mission action behind the formal NASA video feed. The series was to be posted on the Space Telescope Science Institute (STScI) HubbleSite website[1]. We had a robust site planned among the education, news, and online outreach departments at STScI, with blogs,

*Figure 1. Website for showcasing the "Access Hubble" for viewing and download. Credit: NASA/STScI*

mission background material and children's activities.

We produced the video component with a small and nimble crew: video producer Mary Estacion and freelance videographer Vic Blandburg. Back at STScI our video engineer and our webmasters provided support for postproduction and posting of the daily three-to-six-minute reports. Animator Greg Bacon and science illustrator Ann Feild teamed up to make a stylish

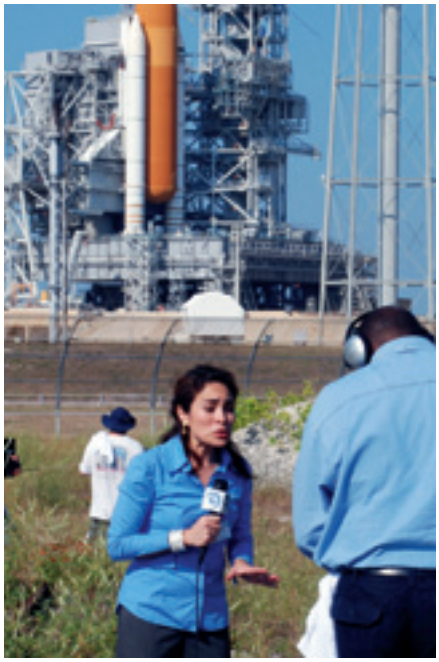

*Figure 2. Video producer Mary Estacion on location at the STS-125 launch site. Credit: NASA/STScI*

opening "signature" graphic for the series that animated the mission patch. The programme title — a take-off on the show *Access Hollywood* — was "Access Hubble SM4"[2].

To pull off the programme we had to have access to the inner sanctum of the huge and windowless Mission Control Center (MCC) in Houston. I wasn't sure if the gambit would pay off. Would the Hubble engineers and scientists become combative at the sight of a camera crew? Would project officials insist on reviewing the broadcast before it was aired? Or worse, would they insist that certain individuals be profiled on camera?

Our approach therefore was definitely "guerrilla video". That is, a low-budget, fast response product that took advantage of universal broadband access and free video services for distribution. I had full confidence we could capture a great story this way if all the players could simply ignore the camera and let us record the unfolding drama without a long and formal review of the product.

## Kennedy Space Center — launch!

On 10 May our crew headed for Florida's Kennedy Space Center (KSC) with no script and no story outline. We were simply looking for vignettes that captured the preparations for the launch of STS-125. The opening shot for the series had Mary standing in front of the iconic Vertical Assembly Building (VAB), built during the Project Apollo days.

With launch a day away, we used the opportunity to take a press bus out to within half a mile of the shuttle launch pad and record a story about photographers setting up remote cameras. The close proximity to the space shuttle allowed for dramatic shots. We'd never get this close to *Atlantis* again. My crew then high-tailed it back to Cocoa Beach to a Hubble Space Telescope (HST) public fair event that offered an opportunity for man-on-the-street interviews, and to informally introduce some project personnel that we'd see in later instalments.

Launch day caught the building excitement and tension with vignettes of the astronauts boarding the van to go to the launch pad, and spectators at the VIP viewing site on the Banana River, three miles from the launch pad. The opening scene to this segment has Mary driving by handwritten launch parking signs along the rural road to KSC and exclaiming: *"Today is the day!"*

## Flight days unfold in Houston

After launch, the space shuttle *Atlantis* began its Hubble chase around the globe, and we hopped on a plane to Houston. There were no Hubble Access stories that day. In the third instalment on 13 May, Mary did a stand-up introduction in front of the JSC entry sign as I drove around the block because there is no street parking! Then we spent the next four hours trying to get proper security badging, which we thought had been all arranged after weeks of phone calls and e-mails to NASA.

Things got very dicey when JSC's security chief seemed indecisive about whether our crew could enter the high security MCC. I began to fear that despite our best efforts we'd be locked out, as was a producer from PBS's *Nova* series, who was left to stand in the MCC lobby and film interviews for the five days of spacewalks. Our web programme would be a flop if we were so cut off from the centre of the action.

Thankfully, JSC Public Affairs officials arranged for one of their staff escort us to the POCC and stay there with us for eight hours of shooting each day. Our arrival at the MCC was razor-thin timing. As we headed through the MCC labyrinth of corridors, we could hear applause as the shuttle was grappling HST. We missed it, but caught the engineers' excitement when Hubble was berthed in the shuttle cargo bay for five days of spacewalks.

## Spacewalks start

At first the GSFC team didn't know what to make of our video crew. We had decided to be as non-intrusive as possible. My bringing along Ann Jenkins, our senior science writer, as liaison boosted our acceptance. She had formerly worked with the GSFC team, so if we were Ann's companions we must be OK!

It also helped that the crew was small and Mary, who was the on-camera talent and interviewer as well, was affable. Her enthusiasm for the mission was infectious. Over the course of five spacewalks the video crew was treated as part of the GSFC team.

Some of the best footage came from the first spacewalk on 14 May because things went sour quickly. An over-torqued bolt on the Wide Field Camera 2 would not come loose. If the bolt had broken, the Wide Field Camera 3 would not have been swapped out with WFPC2, and the new camera would have come back down to Earth as a 130-million-dollar museum piece!

The video captures the high anxiety on the engineers' faces. The best piece of footage was when the GSFC HST Project Scientist clasped his head with both hands in a show of relief when the stubborn bolt finally came loose. *"This took five years off of my life,"* he later said on the video segment.

Over successive spacewalks there was a rhythm of tension, triumph and fun as the repair drama unfolded. The most endearing shots that gave the programmes a cadence were comic relief vignettes when engineers decide to munch on Cheese Snack crackers, Start Smart breakfast cereal, and specially made "berthing brownies". There were great mini-tutorials where GSFC engineers did show and tell sessions with duplicate Hubble hardware they had in the POCC, such as replacement thermal insulation panels.

After the first couple days we realised that the project was bigger than anticipated. We'd start at 6 am for spacewalks. We'd finish videotaping by mid-afternoon. Editing would go on well into the evening, and the hours overnight would be spent uploading HD files to STScI in Baltimore. Sometimes postproduction was needed and our video engineer Ed Weibe would splice in spacewalk footage. Then there was the automated but still gruelling task of converting the finished piece into 12 different formats for the internet. By noon the following day each video had been posted. In hindsight this was more work than one producer could handle, though Mary held up remarkably well over the five exhaustive days of spacewalks.

The climactic "money shot" we all anticipated in the series was the teary goodbye in the POCC when HST was deployed back into orbit. It would be like watching a child go off to college, never to return.

*Figure 3. Video editing required long hours at the JSC newsroom. Credit: NASA/STScI*

We anticipated this moment for days. But much to our surprise and distress, it never came. The shuttle could not downlink live video because the *X*-band antenna was needed to do double duty as a radar antenna for measuring shuttle and HST separation distances. Safety, not showbiz, came first. This infuriated an ABC-TV news producer at JSC who was planning to carry the video live on *Good Morning America*. So there were a few tears, but the most dramatic moment never happened. The final video we shot at JSC was the celebratory sheet cake. We thought this would wrap up the series.

But the growing question in the back of my mind was whether we should change our plans and go back to KSC and cover the landing. At first it didn't seen as intimate as the material we had captured at JSC. We'd simply be standing with the rest of the press videotaping the *Atlantis* touchdown. We had no special behind-the-scenes access. Then our STScI director, Matt Mountain, weighed in and thought it looked bad — especially in the post-*Columbia* era — to imply mission success without showing the astronauts landing safely.

Mary and I headed back to KSC to capture the landing. This became our own version of the 1993 film *Groundhog Day* — where a TV weatherman awakes to repeat the activities on a day that infinitely repeats itself. With all of Florida covered by a tropical depression, we headed to the soggy KSC press site on three consecutive mornings to see if the weather would clear up enough for the shuttle *Atlantis* to land.

The video footage for these days involved watching a lot of weather radar, talking to media photographers and KSC veteran meteorologists. The impending landing was all the buzz in stores and restaurants along Cocoa Beach. We even tried for an impromptu interview with a Waffle House cook — but his company policies forbade talking to news media! On the third try, on 24 May, *Atlantis* was diverted to Edwards Air Force Base in California. We closed out the series with a great interview with the NASA astrophysics chief, Ed Weiler, who declared the mission a success. The series closed with Mary standing back again in from of the VAB. This was a nice visual and narrative wrap to the series.

## A Critical Success

The "Access Hubble SM4" video series received wide appeal on our SM4 website. Viewership surged to 14 000. NASA-TV producers took note, and began running the Hubble Access segments as part of their daily Video File news feeds. NASA also added it to their Hubble portal website. The series made its way to YouTube where all segments earned a five-star rating. This project was groundbreaking for NASA productions. It was uniquely engaging and unscripted, and caught a never-before-seen drama behind the complex technological space ballet of repairing Hubble.

To our delight, the video captured the diversity of the scientists and engineers on the Hubble team. There were many young women engineers and a variety of ethnic backgrounds represented. The team was fun-loving and came across as everyday people. This broke all stereotypes of the bespectacled, introverted, humourless scientist as commonly portrayed in many science fiction films (one of the worst, most grotesque caricatures was Dr Okun played by Bret Spiner in the 1996 space invasion film *Independence Day*). More importantly, these engineers are passionate about their work and feel like the luckiest people on Earth to be part of the Hubble project.

Young adults can watch this series and decide that, unlike the film stereotypes, "normal" everyday people can be scientists and engineers. They can be munching on Cheese Snacks one minute and analysing a space telescope's electronic heartbeat the next.

The success of "Access Hubble SM4" reminds me of one of my favourite childhood stories, *Stone Soup*, where French soldiers entice townspeople into giving them food for a huge kettle filled with nothing but water cooked in the town square. The story is a lesson in cooperation where people at first might first feel apprehensive about participating.

The Access Hubble team came to KSC and JSC wanting to tell a story that had never been told in this way before. Busy scientists and engineers graciously put their time aside to let us share their once-in-lifetime adventure with the rest of the world. They brought life to the event with a range of emotions, from fun and playfulness to fear and tears.

This is the last scheduled Hubble Servicing mission, and we are all delighted to have had an opportunity to capture a unique event in America's space exploration history, and hopefully help inspire a new generation of space explorers.

## Notes

[1] http://hubblesite.org

[2] http://hubblesite.org/servicing_mission_4/access_hubble_sm4.php

### Biography

**Ray Villard** is News Director for the Space Telescope Science Institute in Baltimore Maryland. For the past 35 years he has communicated astronomy to the public through popular articles, planetarium programmes and public seminars and courses. A 22-year veteran of the Hubble Space Telescope Project, he has received several NASA service awards for his contribution. His latest book, *Infinite Worlds* (published by University of California Press), is an illustrated survey of extrasolar planets.