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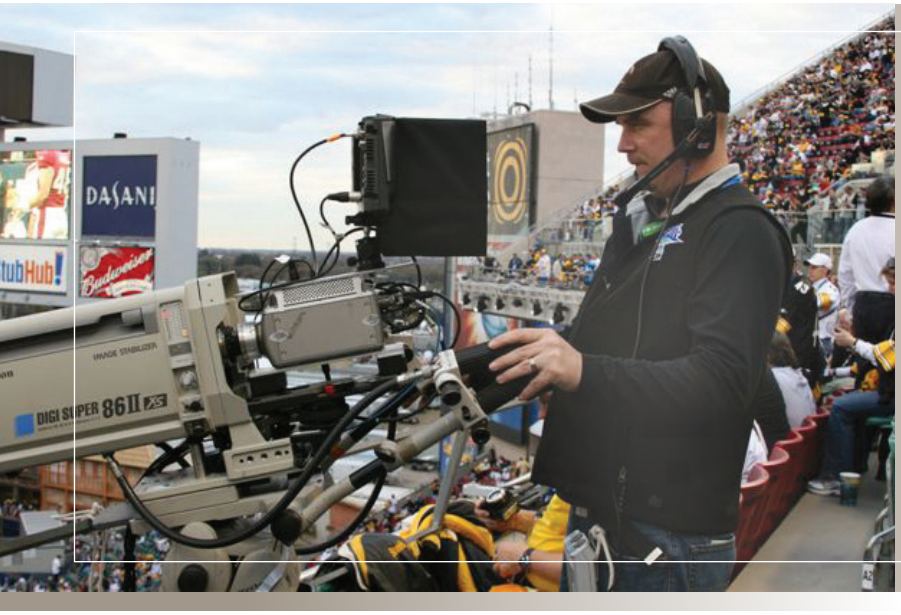


# Super Bowl XLIII

## Vision Research High-Speed Phantom Cameras Help Crown NBC Sports A Super Bowl Champion

After spending more than a decade on the sidelines, NBC finally had its chance in February to return to the Super Bowl. Having last broadcast the NFL championship game in 1998, NBC had a lot to prove this year on Super Bowl Sunday, and from the first drive of the game to the last, the network delivered a first-class production which undeniably enhanced the viewing experience for the millions of viewers tuned in across the country.

Broadcasting one of the world's most prominent sporting events is a significant undertaking, and NBC's extensive experience with the Olympics as well as Sunday Night Football positioned the network for success. With a keen focus on the experience for its viewers, NBC wisely decided not to waiver from its well-received production of Sunday Night Football, which drew significant ratings throughout the regular season. Using Sunday Night Football as a blueprint for its broadcast of Super Bowl XLIII, NBC added significantly to its on-site production staff and arsenal of high-definition and specialty cameras, which included three Vision Research Phantom® V-Series models.

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## Slow Motion Enhances the Viewing Experience

Securing its place as an essential component of live television sports broadcasts, ultra-slow motion replay not only enhances the viewing experience for those at home, but also offers commentators and league officials additional angles and detail to help analyze questionable calls during instrumental plays of the game. For this reason, NBC called on Inertia Unlimited, which utilizes Vision Research Phantom digital high-speed cameras as part of its X-Mo high-definition ultra-slow motion replay systems. Having successfully integrated X-Mo into its Sunday Night Football broadcasts, NBC received tremendous amounts of positive feedback regarding the images provided by the X-Mo ultra-slow motion system, and unquestionably understood the value that Inertia Unlimited would add if incorporated into the network's Super Bowl XLIII broadcast.

"There were a few specific reasons we chose the X-Mo system for our coverage of Super Bowl XLIII," said Fred Gaudelli, Producer of Sunday Night Football, for NBC Sports. "First and foremost is the superior detail X-Mo provides on the most athletic or potentially controversial of plays. We used the system for 10 regular season games during the NBC Sunday Night schedule and received great results from it. Each game had memorable shots that provided the viewer with a deeper appreciation for how great the NFL athlete is. It also provided the defining look at a couple of plays that were under review by the officiating team in those specific games."

Highly regarded as the leader and go-to source for high-definition, slow motion capture and broadcast video, Inertia Unlimited utilized three Vision Research digital high speed cameras for its X-Mo systems at Super Bowl XLIII, including two Phantom v10s and the company's award-winning Phantom v12.1. In high-definition, Inertia Unlimited used the Phantom cameras to record the key plays of the game at 300 frames-per-second (fps), resulting in playback that is 1.5 times slower than that provided by other standard slow motion cameras.

## Positioning the Vision Research Phantom Cameras

NBC paid significant attention to detail, especially when determining the position of the three Vision Research Phantom cameras that would be used to record the slow motion replay on Super Bowl Sunday. The position of such cameras is crucial, as from a production standpoint, the cameras must be strategically placed to deliver unique and useful angles that no other camera in the stadium can provide.

"In getting ready for the Super Bowl, we knew we would place the X-Mo system in our customary position at the reverse 50-yard line, directly across from our game cameras," added Gaudelli. "This gave us full-field coverage and a view of the near sideline. It was then decided to use the additional two systems in a higher position shooting down each goal line. The thought was simple: the biggest play in a football game is a touchdown, so we wanted replays that could confirm or refute any close play that occurred on the goal line. Additionally it allowed us to ascertain whether or not a player happened to keep his feet in bounds, or came down with both feet in bounds in each end zone. Little did we know how fortuitous these placements would be in the outcome of the game itself and the production of it."

## Vision Research's Phantom v12.1 Digital High-Speed Camera

One of the most revolutionary digital high-speed cameras for the professional broadcast and entertainment markets, the Phantom v12.1 delivers unsurpassed performance with an advanced CMOS sensor and blazing speed. At 720p high-definition resolution, the Phantom v12.1 can record 6,933 fps in a wide aspect ratio, making the camera perfect for high-definition broadcast applications, including slow motion sports replay as well as special effects. For unique applications and at lower resolutions, the camera can go even faster, maxing out at 1 million fps.

What makes the Phantom v12.1 even more ideal for professional sports broadcasting is a new Vision Research feature, dubbed "Versatile Dual HD-SDI." Boasting two HD-SDI ports, the Phantom v12.1 offers a level of versatility unmatched in the industry. The camera's two HD-SDI ports can be used together for 4:4:4 video out, or used independently at 4:2:2, the setup which allowed X-Mo camera operators to simultaneously feed replays to the broadcast truck while still viewing and capturing new footage at the start of each play.

## The Defining Moments of the Game in Slow Motion

The three X-Mo slow motion systems used by NBC proved to be instrumental in the production of Super Bowl XLIII. Meticulous preparation by the Inertia Unlimited team, the unmatched and proven performance of the X-Mo slow motion systems, and a highly-skilled team of camera operators and staff, provided NBC with the high-caliber production needed for such an event. Such reliability led to multiple replays making the air and, according to Fred Timberlake, Inertia Unlimited's X-Mo system operator, "Combined there were over 40 replay segments which made the air that came from all three systems."

Added Timberlake, "On every significant play throughout the game, the cameramen at the controls were able to give myself and Doug Kowalczyk, who were behind the computers controlling the replays from the truck, a shot that we could sell to the producer and director. The Dual HD-SDI out from the Phantom v12.1 also gave the team an edge as the cameraman could continue to shoot without having to wait for the footage to be offloaded to the truck. This allowed us to always have at least one camera at the ready before each snap."

Of the 40-plus X-Mo replays that made the air, there were three specific plays during the game in which NBC and the NFL relied specifically on the trio of Vision Research Phantom digital high-speed cameras, including:

- The touchdown scored on the first drive of the game by Pittsburgh's quarterback Ben Roethlisberger.

  The X-Mo system at the reverse 50-yard line, as well as the one at the goal line gave the referee the views needed to overturn the call on the field as the cameras clearly indicated that the quarterback's knee was down prior to the ball breaking the plane of the goal line.

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- The interception by Pittsburgh's James Harrison on the Steelers' own goal line which was returned 100 yards for a touchdown (the longest play in Super Bowl history).

  The X-Mo system positioned at the goal line allowed the referee to confirm the touchdown, as the slow motion replay indicated that Harrison not only stayed in bounds but that when his knee first went down, it landed on an opposing player and not the ground.

- The toe-tapping, game-winning touchdown reception by Pittsburgh's Santonio Holmes.

  The X-Mo system, combined with NBC's NBCEE IT technology, was able to zero in on the receiver's feet, showing that both were indeed in-bounds while the catch was made.

"The Harrison interception return and the Holmes catch will live forever in Super Bowl lore," added NBC Sports' Gaudelli. "Etched into the sports fans' memories will be the great athletic feats, the players who made them, and the pictures that captured and validated them as historic plays."

*Phantom v12.1*
*Digital High-speed Camera*

Specific footage from the Vision Research Phantom digital high-speed camera can be seen at the 1:28 through 1:41 marks at this link:

**http://www.nfl.com/videos?videoId=09000d5d80e85a1f**

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