the future of cinematography
Publisher's Note: The Future of Cinematography...

BY YURI NEYMAN

Yuri Neyman, ASC graduated from Moscow Film Institute (VGIK) with honors in the art of cinematography and photographic engineering. Before emigration to USA he worked as Director of Photography / SFX Supervisor on about half dozen films.

Starring anew as a loader in New York, he fought his way as a cinematographer and shot as Director of Photography and VFX designer many feature films, documentaries and commercials in USA and abroad. He is most known for his independent film “Liquid sky” and film-noir thriller “DGA”.

It's a rather conventional and "hot" subject we've chosen for the second issue of our Gamma and Density Journal, but, as they say "Noblesse oblige" - which can be figuratively translated from the French as “One must act in a fashion that conforms to one's position, and with the reputation that one has earned.”

And Gamma and Density Co. has been - a predecessor of 35mm - was shown to members of IA Local 644 in 1985 when the words "on-set color correction" were known to no more than a few people in the world - and still is in the vanguard of bringing technology and creative thinking to the art of cinematography, so it just fits us well to dare to select this passionate subject.

Well known writers and journalists from the field of cinematography, such as Debra Kaufman (industry journalist, who writes dozens of stories a month about production and post production and mobile media), Bob Fisher (Honorary Member of ASC, and recipient of Technicolor’s "William A. Fraker, ASC Journalistic Award for Covering Cinematography"), Directors of Photography John Bailey, ASC (1), Theo Van de Sande, ASC, Mark Irwin CSC, ASC and Yuri Neyman, ASC; Andy Romanoff (recipient of Kodak’s "Award for Mentoring Many Young Cinematographers" and Associate Member of ASC); and technological Bob Krile, share their thoughts and often contradictory predictions of what the future holds.

Just check the excerpts:

"Best YouTube Video" will become an Academy Award category.

"The Dogma school of found Art and the Krant school of Found Lighting combined with the Hour a Card How It Down with Pixie school of Poses is the cinematographer’s equivalent of Monkeys and Typewriters."

"Unquestioning belief in technology sank this ship."

"Mobile phone cameras are going to turn anyone into a cinematographer, but it will provide them with the tools of cinematography."

"Teléfono was the next step in the "latent technology invasion."

"We should almost have an ASC Mandate to capture the input from those just starting out in their careers, young cinematographers, who could in fact revive our craft."

"The choice is to reject it until its inevitability overtakes you, or to embrace it and help invent its possibilities."

"There are battles to fight, but it’s not a lost cause..."

"Beautiful images will always be lit and framed by people. The standards of beauty may change, but they will always be human standards. Who else, after all?"

"The future of cinematography is, I may say so at this moment, rather bleak."

"Yet the space for real cinematography still exists and will stay for a long time, because streaming or not, a small frame or not, it is still cinema to create a specific vision and to transfer this vision to others..."

In 1947 legendary cinematographer Leon Shammy, ASC wrote in his article "Future of Cinematography" [see http://www.thefoerster.com/magazine/mag99futureofcin.htm] that even with more inventions like "electronic camera, single lens reflex, automatic focusing, control of contrast and color before the processing, it will all be just more "refined" instruments in the hands of the creative cinematographer, who is "something more than mechanics, who points the camera and get the picture right every time."

The words "creative cinematographer" are not only very important for the future of cinematography - they are mandatory, they are non-negotiable, and they are the only and ultimate choice for the future of our beloved profession!

And as Gregg Toland, ASC wrote in the conclusion of the article: "The movie camera is a flexible instrument, with many of its possibilities still unexplored. New ways must be discovered, amateurs and professionals who are willing to think about it and take the necessary time to make the thought reality."

And this is our only hope!

Yuri Neyman, ASC
Gamma & Density founder
Publisher of Gamma & Density Journal
www.gammadensity.com

For discussions on the articles please go to our Facebook page if you are not on facebook you can email us at journal@gammadensity.com with your topic and we can post it on the discussion board.
The Future of Cinematography - What People are Saying...

Table of Contents
- The Future of Cinematography...
  - A Researcher's View
  - A Director's View
  - A Technologist's Perspective
  - A Cinematographer's Perspective
  - A Cinematographer's Perspective - Part 2
  - A Cinematographer's Perspective - Part 3
  - A Cinematographer's Perspective - Part 4
  - A Cinematographer's Perspective - Part 5
  - A Cinematographer's Perspective - Part 6
  - A Cinematographer's Perspective - Part 7
  - A Cinematographer's Perspective - Part 8
  - A Cinematographer's Perspective - Part 9
  - A Cinematographer's Perspective - Part 10
  - A Cinematographer's Perspective - Part 11
  - A Cinematographer's Perspective - Part 12
  - A Cinematographer's Perspective - Part 13
  - A Cinematographer's Perspective - Part 14
  - A Cinematographer's Perspective - Part 15
  - A Cinematographer's Perspective - Part 16
  - A Cinematographer's Perspective - Part 17
  - A Cinematographer's Perspective - Part 18
  - A Cinematographer's Perspective - Part 19
  - A Cinematographer's Perspective - Part 20
  - A Cinematographer's Perspective - Part 21
  - A Cinematographer's Perspective - Part 22
  - A Cinematographer's Perspective - Part 23
  - A Cinematographer's Perspective - Part 24
  - A Cinematographer's Perspective - Part 25
  - A Cinematographer's Perspective - Part 26
  - A Cinematographer's Perspective - Part 27
  - A Cinematographer's Perspective - Part 28
  - A Cinematographer's Perspective - Part 29
  - A Cinematographer's Perspective - Part 30
  - A Cinematographer's Perspective - Part 31
  - A Cinematographer's Perspective - Part 32
  - A Cinematographer's Perspective - Part 33
  - A Cinematographer's Perspective - Part 34
  - A Cinematographer's Perspective - Part 35
  - A Cinematographer's Perspective - Part 36
  - A Cinematographer's Perspective - Part 37
  - A Cinematographer's Perspective - Part 38
  - A Cinematographer's Perspective - Part 39
  - A Cinematographer's Perspective - Part 40
  - A Cinematographer's Perspective - Part 41
  - A Cinematographer's Perspective - Part 42
  - A Cinematographer's Perspective - Part 43
  - A Cinematographer's Perspective - Part 44
  - A Cinematographer's Perspective - Part 45
  - A Cinematographer's Perspective - Part 46
  - A Cinematographer's Perspective - Part 47
  - A Cinematographer's Perspective - Part 48
  - A Cinematographer's Perspective - Part 49
  - A Cinematographer's Perspective - Part 50
  - A Cinematographer's Perspective - Part 51
  - A Cinematographer's Perspective - Part 52
  - A Cinematographer's Perspective - Part 53
  - A Cinematographer's Perspective - Part 54
  - A Cinematographer's Perspective - Part 55
  - A Cinematographer's Perspective - Part 56
  - A Cinematographer's Perspective - Part 57
  - A Cinematographer's Perspective - Part 58
  - A Cinematographer's Perspective - Part 59
  - A Cinematographer's Perspective - Part 60
  - A Cinematographer's Perspective - Part 61
  - A Cinematographer's Perspective - Part 62
  - A Cinematographer's Perspective - Part 63
  - A Cinematographer's Perspective - Part 64
  - A Cinematographer's Perspective - Part 65
  - A Cinematographer's Perspective - Part 66
  - A Cinematographer's Perspective - Part 67
  - A Cinematographer's Perspective - Part 68
  - A Cinematographer's Perspective - Part 69
  - A Cinematographer's Perspective - Part 70
  - A Cinematographer's Perspective - Part 71
  - A Cinematographer's Perspective - Part 72
  - A Cinematographer's Perspective - Part 73
  - A Cinematographer's Perspective - Part 74
  - A Cinematographer's Perspective - Part 75
  - A Cinematographer's Perspective - Part 76
  - A Cinematographer's Perspective - Part 77
  - A Cinematographer's Perspective - Part 78
  - A Cinematographer's Perspective - Part 79
  - A Cinematographer's Perspective - Part 80
  - A Cinematographer's Perspective - Part 81
  - A Cinematographer's Perspective - Part 82
  - A Cinematographer's Perspective - Part 83
  - A Cinematographer's Perspective - Part 84
  - A Cinematographer's Perspective - Part 85
  - A Cinematographer's Perspective - Part 86
  - A Cinematographer's Perspective - Part 87
  - A Cinematographer's Perspective - Part 88
  - A Cinematographer's Perspective - Part 89
  - A Cinematographer's Perspective - Part 90
  - A Cinematographer's Perspective - Part 91
  - A Cinematographer's Perspective - Part 92
  - A Cinematographer's Perspective - Part 93
  - A Cinematographer's Perspective - Part 94
  - A Cinematographer's Perspective - Part 95
  - A Cinematographer's Perspective - Part 96
  - A Cinematographer's Perspective - Part 97
  - A Cinematographer's Perspective - Part 98
  - A Cinematographer's Perspective - Part 99
  - A Cinematographer's Perspective - Part 100

Dynamic Range Tests - Sony F35 / Arri Alexa

On Other Matters

New World Cinematography Directory

GIMME 2010 Awards

Cinematography Mailing List - CML
The Role Cinematographers Play in the Art of Filmmaking

By BOB FISHER — Founding Member of ASC

Films are not just pictures on a screen. They are the window into another world. They transport us to places we've never been, to moments in time we've never experienced. We look to movies to transport us to other places and to other lives.

Films are stories, but they are also about light and color and texture and shape and form. They are created by a number of people, but the one who sets the vision to paper is the cinematographer. And that's the job of a cinematographer.

Films are not just pictures on a screen. They are the window into another world. They transport us to places we've never been, to moments in time we've never experienced. We look to movies to transport us to other places and to other lives.

Films are stories, but they are also about light and color and texture and shape and form. They are created by a number of people, but the one who sets the vision to paper is the cinematographer. And that's the job of a cinematographer.
The Future of Cinematography - Cavemen's View

BY MARK VERNON, CINPA

Mark Vernon, CINPA, began his career in 1972 at the ABC TV Network in Sydney, Australia, and after returning to the United States in 1976, worked his way up the ranks to become the director of cinematography at the ABC Television Network's West Coast headquarters in Los Angeles. In 1987, he was appointed as the executive director of the Society of Motion Picture and Television Engineers (SMPTE).

Defining the future is a treacherous task. It is a task that is left to the ponderous or the apparently clairvoyant. Only the faintest echoes of the future surface in our current twists and turns. It is not surprising that the future becomes less predictable the closer it approaches. The future becomes clearer only as it is being shaped at the very moment that it is coming into existence.

The future becomes non-existent, as its being formed. It is the very process of creation that creates the future. This is the future that is formed in the process of being formed. This is the future that is formed in the process of being formed. This is the future that is formed in the process of being formed.

The future is a non-entity, a non-thing. It is the very process of creation that creates the future. This is the future that is formed in the process of being formed. This is the future that is formed in the process of being formed. This is the future that is formed in the process of being formed.

The future is a non-entity, a non-thing. It is the very process of creation that creates the future. This is the future that is formed in the process of being formed. This is the future that is formed in the process of being formed. This is the future that is formed in the process of being formed.

The future is a non-entity, a non-thing. It is the very process of creation that creates the future. This is the future that is formed in the process of being formed. This is the future that is formed in the process of being formed. This is the future that is formed in the process of being formed.
Mobile On the Set
Why the Latest Digital Camera May be Your Cell Phone
BY DEBRA KAUFMAN

Debra Kaufman has covered the entertainment industry for over 20 years. Based in Los Angeles, she writes about new media, entertainment technology and other topics for The Hollywood Reporter, Variety, TV Week, Film & Video, and many others. Her work has also been published in Wired, The Los Angeles Times, The New York Times and American Cinematographer.

She has spoken on and moderated panels for numerous trade shows including HD Expo/Greatescape, NXTStage, NATPE, NAB and venues such as the Sundance Institute. She is also a member of Mobile Monday/Los Angeles and the Academy of TV Arts & Sciences Interactive peer group.

Hands-on experience includes a several year stint in operations at film/TV post-production facilities in Los Angeles and New York. She also shot a documentary in Poland, and recently directed “A School of Their Own: Reading, Writing and Revolution in Nepal,” a one-hour documentary distributed by Choices Video. She is a graduate of UC Berkeley (B.A.) and UCLA (M.A.).

When filmmaker L.M. Kit Carson decided to make “Africa Diary,” a three-part mini-documentary highlighting success stories in Africa, he didn’t do a lot of camera testing. He knew he’d be taking his Nokia N83 (and, later, N95) along to do all the shooting and onboard sound.

Aside from the fact that the phone was inexpensive relative to a camera, there were more practical matters to consider. Carson wanted to shoot in intimate surroundings, and focus on people who might be made tongue-tied by a proper camera and lights. His instinct was born out when a traumatized girl felt so unabashed in front of the phone’s camera that she spoke—for the first time—about her hopes for healing and the future.

For a long time, most people in the U.S. have scoffed at the idea that anyone would want to watch content on the phone’s 2.5-inch screen. Now those screens are twice the size and have been joined by the even larger screens of other mobile devices, most notably the iPad.

All of a sudden, many people—especially if they’re under 30—don’t find it at all odd to watch that episode of “The Office” they missed on mobile. At the same time, innovators in the industry have been busy creating tools for the film/TV production and post industry: everything from the iPad teleprompter to the recently released ASC Toland Digital Assistant. (For more information on these tools and others, visit http://www.MobileizedTV.com)

The mobile phone has also become much more popular as a distribution platform. This last year, filmmaker Sally Potter shot a pseudo-documentary, Rage, and released it first on mobile phones. Other filmmakers and artists see the mobile phone as an ideal platform for distribution, especially for experimental projects.

The next step: more and more people will begin to use their mobile phones as the video camera for the same reasons that L.M. Kit Carson did as well as a host of others.

Citizen journalism has been the most obvious use of a mobile phone camera in the past few months. Not everyone has a Sony XDCAM or Panasonic P2. But everyone has a cell phone and nearly everyone carries that cell phone on his or her person at all times. That makes the ordinary citizen able to capture events that would otherwise never be taped. Just in the last year, activists in Burma surreptitiously took mobile video of their uprising, posting it to the Internet as the only existing footage of those. Neda, the young woman assassinated in Iran, was another example of a handy mobile phone documenting an event that would never otherwise have been captured. The result? That video was viewed over a million times and Neda, unwittingly, became the face of Iran’s green revolution.

-Debra Kaufman

www.gammadensity.com
The Future of Cinematography - one geek's perspective

BY BOB KERTESZ

Bob Kertesz has been a partner and chief technical guru at BlueScreen LLC for several decades. He and the company specialized in high end digital cinematography for episodic television, commercials, industrials, and video games, as well as on-set previz for compositing. Additionally, Bob has spent more than 30 years doing video engineering, video control, and DI work on thousands of projects, and has shot 3D projects with the Pace and Gally rigs for Sony, James Cameron, Georgia Pacific, the Hollywood Sign Trust, and others.

As a little background, I've been involved in the making of electronic images for almost forty years, with electronic cinematography being my main focus for the last decade. I have worked as an engineer, video technician, colorist, briefly, live image composer, system integrator, and DI. I have been on set with the great cinematographers, the near greats, and a few incompetents. I've worked on successful major motion pictures and some of the worst commercial campaigns you could imagine (remember "Mr. Microphone")?

It is Fall 2010. Digital acquisition has become all the rage. While many theatrical projects (and a few episodics) are still shot on film in the U.S., the use of digital cameras to pick up and record images has gained a strong foothold in the production community, and the rapid logarithmic improvements in sensor and recording technologies have propelled it to the forefront in the minds of many producers when choosing a format for their projects.

And while the onslaught of relatively inexpensive digital systems has enabled many who could not otherwise have participated to make movies, it has also helped those above the line cross a line which heretofore has been sacred. While no producer would ever dare call a DP and say "Make movies, extraordinarily, attention-getting, and much of the work will be done late in post. The fight song will be "Why spend all that money in an uncontrolled and expensive production situation, when we now have the tools to do just as well here with far more control and less expense"?"

As it always has been, it's ultimately about the money and how it's carved up between production and post, and the battle will shape how production looks and DP's fare in the coming years.

Copyright Bob Kertesz 2010

www.gammaanddensity.com
What will Cinematography be in 2019?

BY EUGENIUS

Text: EUGENIUS. Adapted from "CinemaScope: A Film Industry Revolution" by G. B. Trenchard Moore.

The future of Cinematography is one of two major factors: technology, and the process of film itself. The industry continues to be on the cutting edge of technology, but cameras and lenses are not the only tools in the cinematic toolbox. Cinematography has long been a blend of art and science, and the development of new equipment has always been driven by both technical innovation and creative vision.

One of the most exciting areas of new technology is virtual reality (VR) and augmented reality (AR). These technologies have the potential to revolutionize the way we experience cinema, allowing viewers to step into the stories they are watching. However, VR and AR are still in their infancy, and there are many challenges to overcome before they can become a mainstream part of the cinematic experience.

Another area of innovation is 3D printing, which is being used to create intricate sets and props that were previously impossible to build. This technology has the potential to revolutionize the way studios create their sets and costumes, allowing them to build more detailed and realistic environments.

CinemaScope: A Film Industry Revolution

The development of Cinematography has been shaped by the needs of the industry to tell stories in a way that is both entertaining and visually striking. From the first black-and-white films to the Technicolor productions of the 1930s, technology has always been a驱動力力 in the evolution of the art form.

One of the most significant developments in Cinematography in recent years has been the rise of digital cinema. This technology has allowed filmmakers to create images that were previously thought impossible, and has opened up new possibilities for storytelling.

The development of digital cinema has been driven by the need to create images that are both beautiful and truthful. Cinematographers have used digital technology to create images that are more realistic and more vivid than ever before, allowing them to create scenes that were previously impossible to shoot.

However, the use of digital technology has also raised questions about the role of the cinematographer in the future. As digital technology becomes more advanced, will the role of the cinematographer become less important?

The future of Cinematography is a fascinating one, and it is sure to be shaped by both technology and the continuous evolution of the art form itself.

References:


The Future of Cinematography (and Cinematographers)

BY ANDY ROMANOFF

Andy Romanoff has been working with, mentoring, thinking about and using cameras for over fifty years. As a successful business leader, educator, writer and photographer himself, he is thrilled to be sharing his point of view on his line of work and where he sees it heading in the image-making path.

He describes technological questions from a human perspective—thinking first about the people who use the tools and then putting the technology in service of them. He is a member of the Academy, the ASC and the ISO and an associate ASC member. He has just been given the Kodak Award for mentoring young cinematographers.

Begin here: the past of cinematography, the ground on which we stand. In the not so distant past, cameras are big and heavy, hard to move. The tools to move them are also big and heavy. Camera operators accumulate muscles, maybe it takes a lifetime to become a decent shooter and the shadows that film cannot begin to capture. The film is slow. Its latitude is limited. It does not respond to light like the human eye. Only a practiced and experienced, professional, the cinematographer, can say with any assurance, "Don't worry, we've got it." For everyone else the magic will either not work or will not be visible.

Similarly, only the camera operator knows what the frame holds at the moment of composition. After every take there is a long, pregnant pause as the cinematographer does his or her record, studying the ground glass, comparing it to the proxy frame of the synchronized file before committing to tomorrow’s promise.

Most of what the cinematographer and his crew (always they think crew) do is a mystery to everyone on set. They are a black box in the flow of the picture. Where they hide themselves, what they do, when they shoot, no one knows for certain—no one but the person who controls the future—and then it makes no sense at all in his or her own way.

All of that is already gone. Only the memory of it informs crews who grew up in the shadow of the great film age. From the beginning, directors knew they wanted a look, colors, shadows, moods, textures that would give them wonderful capabilities but forever changed their roles. Cinematographers became small enough to handle the conditions the great directors gave them. In a way that changed forever, they became everyone’s property, not just for those with the biggest budgets. Cinematographers existed to the changes and not in the changes. In the right new freedom, they found something that in the past could only be called “soul.” From the very last light without the feeling of their momentarily private knowledge — what tomorrow’s dollars would ever see.

The recent past, the twenty-first century, brought digital cameras, the D.O. and CGI to everybody. Filmmakers found new tools for transforming the image and reality became paramount. 難以想像你以前會想像的電影會是這樣。電影特效的加入使得電影具有更多的可能性。數位技術讓電影創作變得更輕鬆。在數位的電影世界中，每個人都可以在不同的角度創造出屬於自己的電影。數位技術讓電影創作變得更輕鬆。在數位的電影世界中，每個人都可以在不同的角度創造出屬於自己的電影。

Filmmakers don’t need to control light or film. Everything is created with software. From the small studio benefit to the big-budget bomb, the new freedom turns the cinematographer and camera crew from everyone else were blurred and smeared as an impressionistic painting, the way you now, with the same set, with the same crew, with the same light, will never create and be the same. What you do with it, decide everything. What you do with technology, decide everything. What you do with the light, decide everything. The cinematography that has been identified as the "best," whatever that means, is simply the best.
Sony F35 Dynamic Range Tests

BY GAMMA & DENSITY CO.

Tests were done for optimal light temperature conditions (5500K) at a 500 ISO.

The Testing Method

SONY F35 Camera Image Acquisition:
- 500 ISO - 5500K - Meter at 5.6 approx 12 f/c
- Recorded to HDCAM-SR
- Captured to Uncompressed 444 Quicktime files for grading and evaluation

Gamma and Density's experimental 3D-texture latitude Chart provides a real world test image to evaluate digital image exposure. The center grey card we are calling a 50% grey value when viewed on a waveform. The other detailed dark and light areas are used to track the loss of image detail through the test exposure range. The brightest detail points in the image are the white areas at the top left of the image between the napkin and edge of the twist-ties. The darkest detail areas are located in the Velcro strip just to the right and below the grey card as well as in areas of the dark sand paper backing of the right side.

The Image Workflow:

For the LEFT column: Original Camera Image (CLICK FOR FULL RES)
- Recorded to HDCAM-SR - S-Log(??)
- Captured to Uncompressed 444 Quicktime files for grading and evaluation

For the CENTER column: Color Graded
- Standard Log-Lin LUT applied to Images
- Key image graded to have chart points fall into appropriate areas of waveform. (Black = 0, White = 700, 50% grey = 350)
- Over and Under exposed images are then graded to closely match the Key graded image.

Results:
SONY F35 Useable Extractable Latitude (conservative)
500 @ F5.6: -2.5 thru +1.5 = 10 Stops

SONY F35 Potentially Acceptable Extractable Latitude (generous)
500 @ F5.6: -3 thru +2 = 11 Stops

For the underexposed images some subjectivity is in play to the noise tolerance. What is an unacceptable level of noise to me may be entirely acceptable to you. And if the noise tolerance is greater than certainly you could rate the useable and extractable dynamic range at a larger number. The overexposed images however are less about subjectivity and more about obvious clipping of detail. When the waveform flattens out completely in the highlight areas; that means that stop test was not exposed sufficiently.

Stop measurement: how we got the numbers:
The KEY image recorded at optimal exposure shows a visible flat dynamic range of 6 stops. We then add a stop for each image recorded a full stop over and under exposure that can be graded successfully to match the KEY image. For the over-exposed images the image is considered successful if either the highlight detail is lost or when the shadow detail begins to deteriorate during color grading. For the under-exposed images the image is considered successful until the noise created by extracting image range is subjectively objectionable. It is also important to remember that this test is providing results relating to the extractable dynamic range of the recorded image in post production and is NOT necessarily measuring the native dynamic range of the F35 sensor.
Arri Alexa Dynamic Range Tests

BY GAMMA & DENSITY CO.

The Testing Method
ARRI ALEXA Camera Image Acquisition:
- 250 ISO - 3200K - Meter at 5.6 approx 12 f2
- Recorded to HDCAM-SR
- Captured to Uncompressed 444 Quicktime files for grading and evaluation

Gamma and Density's experimental 3D-texture latitude Chart provides a real world test image to evaluate digital image exposure. The center grey card we are calling a 50% grey value when viewed on a waveform. The other detailed dark and light areas are used to track the loss of image detail through the test exposure range. The brightest detail points in the image are the white areas at the top left of the image between the napkin and edge of the twist-lies. The darkest detail areas are located in the Veiro strp just to the right and below the grey card as well as in areas of the dark sand paper backing of the right side.

The Image Workflow:
For the LEFT column: Original Camera Image
- Recorded to HDCAM-SR - Art C-Log
- Captured to Uncompressed 444 Quicktime files for grading and evaluation

For the CENTER column: Color Graded
- Standard LogLin LUT applied to images
- Key image graded to have chart points fall into appropriate areas of waveform. (Black = 0, White = 701, 50% grey = 350)
- Over and Under exposed images are then graded to closely match the Key graded image.

Results:
ALEXA Useable Extractable Latitude (conservative) 250 @ F5.6: 3.6 thru 1.5 = 11 Stops
ALEXA Potentially Acceptable Extractable Latitude (generous) 500 @ F5.6: 4 thru 2 = 12 Stops

For this test of the ARRI Alexa, -4 was the lowest most underexposed image recorded. The noise is so little at -4 however that it is probable that if lower exposures were recorded they would be extractable and usable. For the underexposed images some subjectivity is in play to the noise tolerance. What is an unacceptable level of noise to me may be entirely acceptable to you. And if the noise tolerance is greater than certainly you could rate the useable and extractable dynamic range at a larger number. The overexposed images however are less about subjectivity and more about obvious clipping of detail. When the waveform flattens out completely in the highlight areas, that means that stop test was not exposed sufficiently.

Stop measurement; how we got the numbers:
The KEY image recorded at optimal exposure shows a visible flat dynamic range of 6 stops. We then add a step for each image recorded a full stop lower and upper exposure that can be graded successfully to match the KEY image. The over-exposed images the image is considered successful until either the highlight detail is lost or when the shadow detail begins to deteriorate during color grading. For the under-exposed images the image is considered successful until the noise created by extracting image range is subjectively objectionable. It is also important to remember that this test is providing results relating to the extractable dynamic range of the recorded image in post production and is NOT necessarily measuring the native dynamic range of the ARRI Alexa sensor.

We also did some testing with the Alexa in regard to "Capture Dynamic Range" using DCC's Ambi Chart. You can see the result below.

ARRI ALEXA Camera Image Acquisition:
- 250 ISO - 3250K - Meter at 5.6 approx 12 f2
- Recorded to HDCAM-SR

We measured this chart to have a complete range of 15 f-stops from the whites to the blacks. We measured using multiple spots meter on standard mode as well as EV mode. We also measured the densitometer at Kodak and Photoform in Hollywood, CA using their densitometers. All measurement instruments, we were able to determine the exact value for each field on the Ambi Chart.

From this point we took utilized the waveform monitor that was fed out of the SR deck where the footage was captured to measure how many fields were being captured. The footage was also ingested into the post facility at Hollywood intermediate to double check the footage results.

Results:
ALEXA Useable Capture Latitude 250 @ F5.6: = 13 f-stops