

# NASA ERAST Exclusive Preview

OCT 13/1999

- 6: 15 A.M.**      **Registration** (behind RAIF)
- 7:15 A.M.**      **Welcome Address** (mezzanine)  
Kevin Petersen, Director, Dryden Flight Research Center (DFRC)  
John Sharkey, Program Manager, ERAST Program
- 7:30 A.M.**      **ERAST Video & Narration** (mezzanine)
- 8:30 A.M.**      **Formal Addresses**  
Rich Christiansen, Director of Aerospace Research, NASA Headquarters  
Larry Roeder, Senior Policy Advisor, U.S. Dept. of State  
Marianne McCarthy, Education Officer, DFRC
- 9:30 A.M.**      **Static Aircraft Viewing** (hangar)
- 11:30 A.M.**      **Lunch** (hangar) - **12:30 P.M.** (move to mezzanine)
- 12:45 P.M. -**      **Plenary Session**  
**1:45 P.M.**  
John Sharkey, Program Manager, ERAST Program  
Jennifer Baer-Riedhardt, Deputy Chief, NASA Dryden PACE Office  
Dennis Reinhardt, Director of Remote Sensing, Risk Management Solutions, Inc.  
Stan Herwitz, Professor of Biogeography, Clark University  
Gary Darling, Chief Information Officer, California Resources Agency
- 2:00 P.M. -**      **Commercialization/Science Workshops**  
**5:00 P.M.**  
*Please see reverse of agenda for a detailed workshop  
schedule, including topics and speakers.*
- 3:00 P.M. -**      **Break**  
**3:15 P.M.**
- 5:00 P.M.**      **Adjourn**

**PROGRAM**

**Address by  
Larry Winter (raider) Roeder, Jr.,  
Senior Policy Advisor  
Department of State, IO/PPC  
To NASA/ERAST  
October 13, 1999**

**Good Morning and thanks for offering me the distinct privilege of being with you today.**

The NASA ERAST program is an American crown jewel, which brings great credit to the Congressional delegations for Hawaii, West Virginia and California; especially to our late friend Congressman Brown.

The program also reflects well on NASA and on American industry as a whole -- for without the industry's partnership and synergy, there would be no NASA.

The Department of State has been on a journey with NASA in search of innovative approaches to disaster management. What we have discovered is that ERAST is clearly on the right track to do that and to also develop commercially valuable products.

In addition, NASA/ERAST's work is essential to economy of the entire country.

In fact, NASA/ERAST offers enormous hope to the world economy and to my special field of crisis management.

When I was born in Lebanon, a neighborhood nearby was destroyed by civil unrest. Between then and when I was eight, the age of my son now -- I lived through a civil war in one country, an invasion in another and a forced evacuation under fire across a hostile desert at night.

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A driving factor behind increasing losses is population growth in disaster prone regions. In the United States, the coast lines have seen an annual growth rate of 3-4%. That translates into enormous capital risks. With people come homes, business and infrastructure.

As a result in the US, we lose a billion dollars a week to natural disasters. Remember the floods in North Dakota in 1997? The region alone lost \$400 million.

The same is true for the rest of the world.

- The annual losses to the world add to nearly half a trillion dollars.
- Kobe cost over \$150 billion.
- A repeat of the 1906 San Francisco or 1857 Los Angeles earthquakes would cost over \$200 billion.
- A repeat of the 1923 Earthquake in Tokyo would cost over \$1 trillion.
- And think of the lives. What would happen if a liquid petroleum gas tanker exploded in Istanbul?
- The Tangshan earthquake in China killed at least 240,000. Some reports suggest 750,000.
- Even more frightening, many disasters happen where there is no infrastructure. (picture of mud hut)

**The bottom line is that disasters must be thought of as Systemic Risks to the world society -- events triggering a chain of events that cripples a society and where repairs can't be made in a short term without incurring very considerable costs.**

These disasters hurt every sector, health, transport, energy, water, telecommunications and the environment.

**What I do is crisis management and I will tell you that managing this new class of risks constitutes a critical dual challenge for governments and the business community -- one that will only grow in the next millenium.**

**So my speech is a call for unity.** The dividing line between the responsibilities of the market and those of government must be re-examined. We must share the tasks and responsibilities among individuals, academia, business, governments, the volunteer agencies and the international community.

We must do this because of our growing interdependence and complexity as a society and because of the nature of these new systemic risks,

In other words, we must be partners -- not competitors. ERAST and NASA are thus models for all of us.

**My current job** in the Department of State derives from the Rwanda Crisis in 1995. We realized that international disaster managers were not talking together as well as they might. Disaster information was not flowing smoothly. So, we developed specially designed products such as ReliefWeb, a web site that focuses on disasters where the UN has been asked to play a role.

**Picture. This was the first major international web site in the world, and it has been endorsed by the entire UN General Assembly.**

**A new product under development is GDIN, the Global Disaster Information Network,** an international partnership begun by the United States to convince all sectors to share disaster information from all sources and at the lowest cost. A big part centers on the use and distribution of remote sensing information from:

- Ocean sensors like we used to predict El nino.
- Ground sensors like we use for earthquakes and volcanoes.
- Overhead from satellites and airplanes.

**Now why would we want to do this?**

**Picture of Girl:** Here is one reason. The picture of malnutrition was given me a few weeks ago on the border of Sudan by GOAL, an Irish Relief organization.

Let me quickly explain what we need through two stories.

--- **Response:** A volcano erupted in December, 1996. There were worries that lava would threaten refugee camps below and the UN in Nairobi asked me by email for satellite images. Well, I was looking at a color image about so big.

Trouble was there were no color printers near the volcano and no. It would have been impossible to email it to the disaster site.

So I found a satellite with the right sensor on board and the next day I faxed a black and white map of the volcano that showed the contours, basic navigational features and the lava flow. **Right information, Right Format on time to the right people.**

But what if there wasn't a satellite over head, or I couldn't find one? Well, this might not be a problem if we had global deployment of Erast platforms like the Helios -- something unlike a satellite that could be moved over volcanoes or other disasters at will.

The Mexican government is thinking along just those lines. Why not have Helios fly back and forth over all the volcanoes that straddle the middle of Mexico, providing reliable remote sensing information at less cost than meg-million dollar satellites or traditional aircraft?

--- **Mitigation:** In 1996, a forest fire destroyed 80,000 acres in the hills surrounding Mendocino, leaving many steep hillsides threatened by heavy winter rains. By fusing data from many satellite sources, we saved \$250 million in planting less vegetation.

Just think if we could do that world wide in Albania, Honduras, and the rest of the world? Disaster mitigation isn't cheap. It requires information and money. No one says your systems will replace satellites; but that's not the plan anyway.

Instead, your systems will augment the current system .

**In other words, I see a world where ERAST** does what we did in Mendocino County, leasing the world the tools to less expensively than now develop mitigation plans and less expensively implement them. That means smaller and less expensive loans from the World Bank. Less debt servicing. More stable political and economic structures. That is good for everyone and defines a world market for ERAST.

-- **Here is another mitigation idea.** What if we could use the high grade quality of ERAST data to convince ordinary people why they shouldn't live in harm's way -- or at least improve their construction methods? In other words, instead of telling people where to move or how to live, we give them the tools to understand how to do it right and prosper at the same time.

**This work is so important.** A few years ago when I was a peacekeeper in the Sinai, I flew in a helicopter through a mountain pass one spring and saw settlement after settlement wiped out by flash floods -- they were poorly placed.

In Turkey last year I traveled through flooded areas between Ankara and the black sea and saw apartment buildings where roofs became basements. They were poorly placed. And you have all seen the pictures from Turkey's earthquake. Bad construction.

My point again is that international disaster management is too big for government. To succeed as a world, we must work together. Such a partnership is the Global Disaster Information network GDIN, an international link between industry, government, academia.

Here is an example of the partnering I am talking about. **SLIDE from Turkey.** On the same day as Turkey's Earthquake, the State Department worked out a simple information sharing agreement by email with our Turkish GDIN partners. They gave us specific requests for information in a specific format like this each morning. We provided the data by the end of the day for about a week.

We also put out an emergency call for useful information over GDIN's international email list server. American University came through with very valuable data.

If we work together, the world will get better forecasting and better mitigation and response. That will help us develop disaster-resistant communities, making North Carolina, California, Hawaii and the rest of us stronger and safer.

Examples:

- Evacuations and business closures can be ordered only when needed.
- Citizens can be better protected.
- Unnecessary alarms can be avoided.
- Insurance rates can be set lower
- Markets will be less vulnerable.
- We can better prepare for international relief efforts.
- We can minimize global economic disruptions
- The impact on US foreign trade can be reduced.
- Airlines and shipping will be safer
- Oil and gas production will be protected.

**But there is a problem.** Many countries are afraid remote sensing platforms will risk their Economic and National security interests. What we need is a way to both use the technological promise of GDIN to mitigate and respond to disasters as well protect these interests. ERAST may have the key.

### **Peace Wing. -- slide of PathFinder or Helios**

At the Mexico City GDIN Conference in May, we introduced ERAST to many disaster experts from Latin America and the rest of the world. They were very impressed.

So too were all of the experts I spoke with a few weeks ago in Paris at a meeting of the OECD, Organization of Economic Cooperation and Development -- as were African experts I met in Kenya and on the border of Sudan last month.

What we proposed was PeaceWing, a GDIN related concept using ERAST technology to provide the best in remote sensing and telecommunications without the risks.

Our plan is fly the plane over a portion of Africa next year to test PeaceWing.

The planes we want to use are developed by your Aeroviornment partner because they are solar powered and also because they are transparent. You can see right through them.

The venue for PeaceWing will likely be Africa. Large numbers of animals traditionally migrate between Sudan and South Africa. This is also where a drought is building. Drought mitigation is essential. With drought comes malnutrition, pneumonia, dysentery, other diseases and political unrest.

Assuming all goes well, we will pick a group of experts from Industry, the UN, a local government, perhaps Kenya, NGO's etc., who are interested in environmental and disaster issues.

Each partner will select and place off the shelf sensors on the plane. Remember, the plane is transparent and can only carry a specific load. So there will be no hidden doors or cameras.

The plane will then fly on a series of missions over a few weeks to examine the land and its rare animals, to do population and environmental impact studies -- testing techniques used in disaster management and cell phone telephony.

The plane will also be on radar so we know where it is at all times. All of the data will flow down to a control room live, where all the partners are, so no one need worry about the kind of information being gathered.

Imagine for a moment that instead of Africa, Helios was providing cell phone calls and live imagery to disaster workers in North Carolina or over fires in California.

In North Carolina, dead pigs were floating, people were sitting on roofs, pollution was flowing into wells, animals were trapped. ERAST technology could detect all of these disaster situations using resolution levels better than on any civilian satellite -- geocoding problems and directing relief workers to where help is most needed.

In our PeaceWing experiment, we will also surround the control room with trailers linked via an intranet. Inside one you might have an expert on Black Rhino, in another an expert on droughts, counting refugees, etc. What we are doing is simulating a future world where the trailers are in different parts of the world.

Now suppose the experts inside were not at the disaster; but in far flung locations, and suppose one remote expert could simultaneously look at several parts of a disaster or even several disasters at the same time?

Park Rangers in Kenya could use Peacewing's cell phone capability to more effectively fight poachers. Relief Workers at NorthRidge could have had a dedicated network. A fire expert in Idaho could help fire a fire in Peru.

That's enormous added value over the status quo.

What we plan to test with PeaceWing then is a sophisticated simulation of a disaster done under controlled conditions that also shows local leaders that it can be done without risk.

If successful, we will stimulate broad use of remote sensing in the developing world, as well as substantial use of your technology.

I would add that this concept will be discussed in detail at the April GDIN conference in Ankara, Turkey. I invite all of you to attend.

**In conclusion**, I would mention that over 2,000 were killed by the earthquake in Taiwan because of the September 21 quake. In addition, Two weeks ago a thunderclap that sounded like dynamite reverberated in southern Mexico and the town of La Aurora slid off a mountain. Over 200 may be dead under mud -- 90% of women appear to women and children, according to press reports. Over 400 are known to be dead in nine of Mexico's 31 states and over 200,000 are reported as homeless. It will take years for these states to recover.

It is to those people, the folks in North Carolina and all other victims of disasters, that this speech is dedicated.

With your help -- Aeroviorment, Iridium, MapInfo, AmTech of Monterey, Vista of Fairfax, Virginia and of the rest of, that GDIN, the Global Disaster Information Network and PeaceWing can turn the tide. Join us.

Thanks very much and send me an email to [Lroeder@hotmail.com](mailto:Lroeder@hotmail.com)