Global Pre-Positioning of Satellite-Based ICT for Disaster Preparedness & Development

Martin Jarrold
Chief , International Programme Development
GVF

Fourth United Nations International UN-SPIDER Bonn Workshop on Disaster Management and Space Technology
12-14 October 2010

The Global VSAT Forum:

Facilitating Connectivity

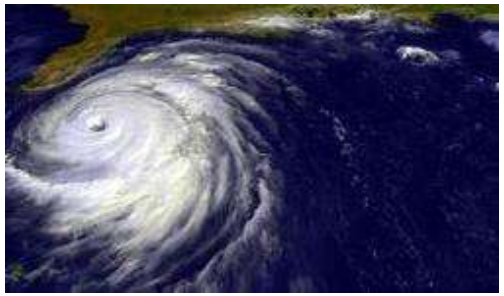
- **Global Non-Profit Association of Satellite Industry**
- **230+ Member Companies Headquartered in 100+ Countries**
- **Reaching Every Nation in the World**
- **Supporting Satellite Systems/Services Through Multi-Faceted International Programmes:**
  - ➢ **Enabling Effective Regulation, Spectrum Management (including support for Tampere Convention)**
  - ➢ **Providing Training Worldwide**
  - ➢ **Developing Disaster Relief & Development Initiatives (including complimentary 'Emergency Notices')**

Pre-Positioning Satellite-Based ICTs:

The Challenge 1

- **From hurricanes to earthquakes, from tsunamis to volcanic eruptions, the calculus of cost – in human lives or in financial terms – is being mitigated through new collaborative efforts of public & private sector stakeholders**

- **Particularly evident in the way that wireless, fibre and other satellite-enabled ICT solutions are being applied by UN aid agencies, NGOs, host nation governments, the military and private sector to address mission-critical disaster preparedness & long-term development requirements**



Pre-Positioning Satellite-Based ICTs:

The Challenge 2

- **A persistent challenge severely inhibiting public & private sector efforts concerns the need for "pre-positioning" ICT solutions local to the disaster zone & which can be quickly used to support disaster-response efforts**

- **Additionally, linking those same pre-positioned systems so they can not only be used for disaster response but also re-purposed, following disaster-relief efforts, to achieve longer-term development objectives, has not been realised at a satisfactory level**

Pre-Positioning Satellite-Based ICTs:

The Challenge 3

Challenges have thwarted comprehensive global programmes for provision of pre-positioned solutions:

1. Difficult for organisations to justify investment in pre-positioned communications systems which remain unused or under-utilised most of the time

2. This challenge is significant in one country/region, but overwhelming on a global scale

Pre-Positioning Satellite-Based ICTs:

The Challenge 4

3. Maintenance of pre-positioned systems can be costly

4. Licenses must be secured & kept current

5. Locally-based & trained technicians must be identified & deployed

6. Organisations need to develop an ICT approach that can be transitioned into longer-term infrastructure with scalable & commercial potential

Pre-Positioning Satellite-Based ICTs:

A Simple Solution Proposal –

GVF Disaster Preparedness Registry 1

The GVF has a proposal for a simple solution that can be applied to each of these challenges

(a) With immediate effect

and

(b) At disproportionately small cost

Pre-Positioning Satellite-Based ICTs:

A Simple Solution Proposal –

GVF Disaster Preparedness Registry 2

- **GVF Membership = world's major bandwidth suppliers + satellite equipment manufacturers + local/international service providers > 1 million earth stations around the world**
- **Systems/services are operated "sustainably" = profitably**
- **Profit creates investment in/expansion of networks, creates more development & supports key applications in agriculture, banking/financial services, education, health, mobile communications, etc**




Pre-Positioning Satellite-Based ICTs:

A Simple Solution Proposal –

GVF Disaster Preparedness Registry 3

• **Inherent in this already existing value chain is a powerful solution to address the pre-positioning challenge**

➢ **GVF Members will be invited to identify their systems, services, and other resources that:**

a. Are currently in operation,
b. Can be repurposed for use if/when necessary to support disaster relief efforts,
c. Detailing their precise location, and
d. Providing contact details where relevant personnel can be reached




Pre-Positioning Satellite-Based ICTs:

A Simple Solution Proposal –

GVF Disaster Preparedness Registry 4

This information will be in an online GVF Registry, such that when a disaster occurs

- **UN, NGO & government disaster-response stakeholders will be able to access the data – at nil cost – to identify systems/services locally available**
- **Registry listing pre-conditions can be determined in coordination with the UN and NGO communities**

Pre-Positioning Satellite-Based ICTs:

A Simple Solution Proposal –

GVF Disaster Preparedness Registry 5

Thereafter, if the responder – or others with whom they are involved – wants to continue to use the systems/services for any purpose, they can enter into a standard commercial negotiation with the vendor

The resources that can potentially be included in the GVF Registry include a vast array of fixed and mobile satellite-based solutions, including all terrestrial systems that work in tandem with satellite communications

e.g. GSM/3G, WiFi, WiMAX, fibre, picocells, femtocells, and more

Pre-Positioning Satellite-Based ICTs:

A Simple Solution Proposal – Key Advantages of the GVF Disaster Preparedness Registry 1

1. **Systems/services/other resources are already pre-positioned in 100,000s locations**
2. **Systems/services/other resources in most cases are already instrumental in promoting local development**
3. **Systems/services/other resources are in many cases operated & maintained by local companies**
4. **GVF already has a public database which could be linked to the GVF Registry & which includes hundreds of Certified VSAT installers throughout the world, who can be contacted to support disaster-response deployments**




Pre-Positioning Satellite-Based ICTs:

A Simple Solution Proposal – Key Advantages of the GVF Disaster Preparedness Registry 2

5. Once applied, the Registry's resources can be more closely coordinated for first-responder preparedness, but also for reconstruction efforts

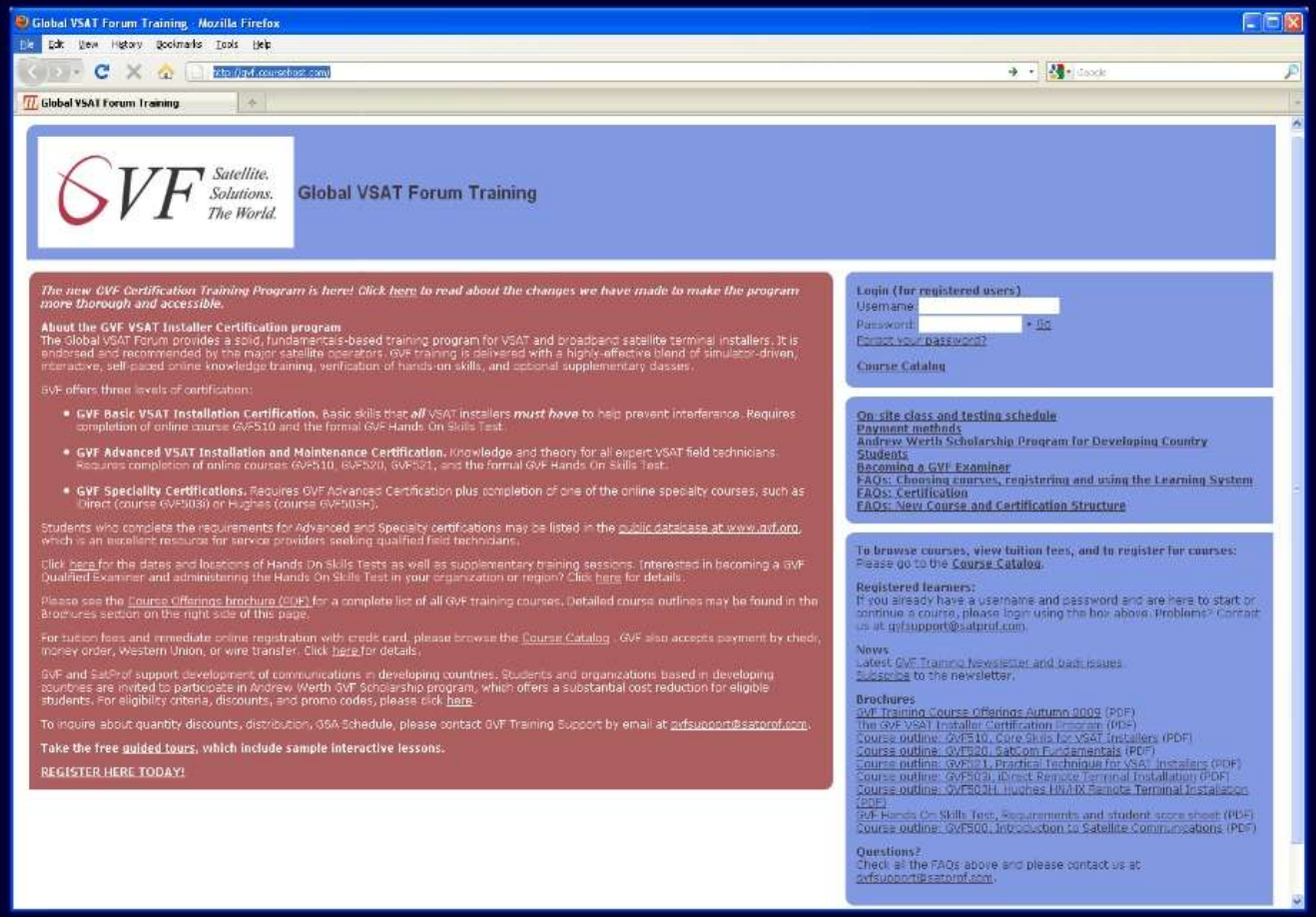
6. This will include "leave-behind" infrastructure for local partners to use to jump-start host-nation ICT infrastructure recovery & provide commercial opportunities to seed economic revitalisation

7. GVF already has partnership agreements with NGOs, UN aid agencies and other stakeholders which would utilise the resource

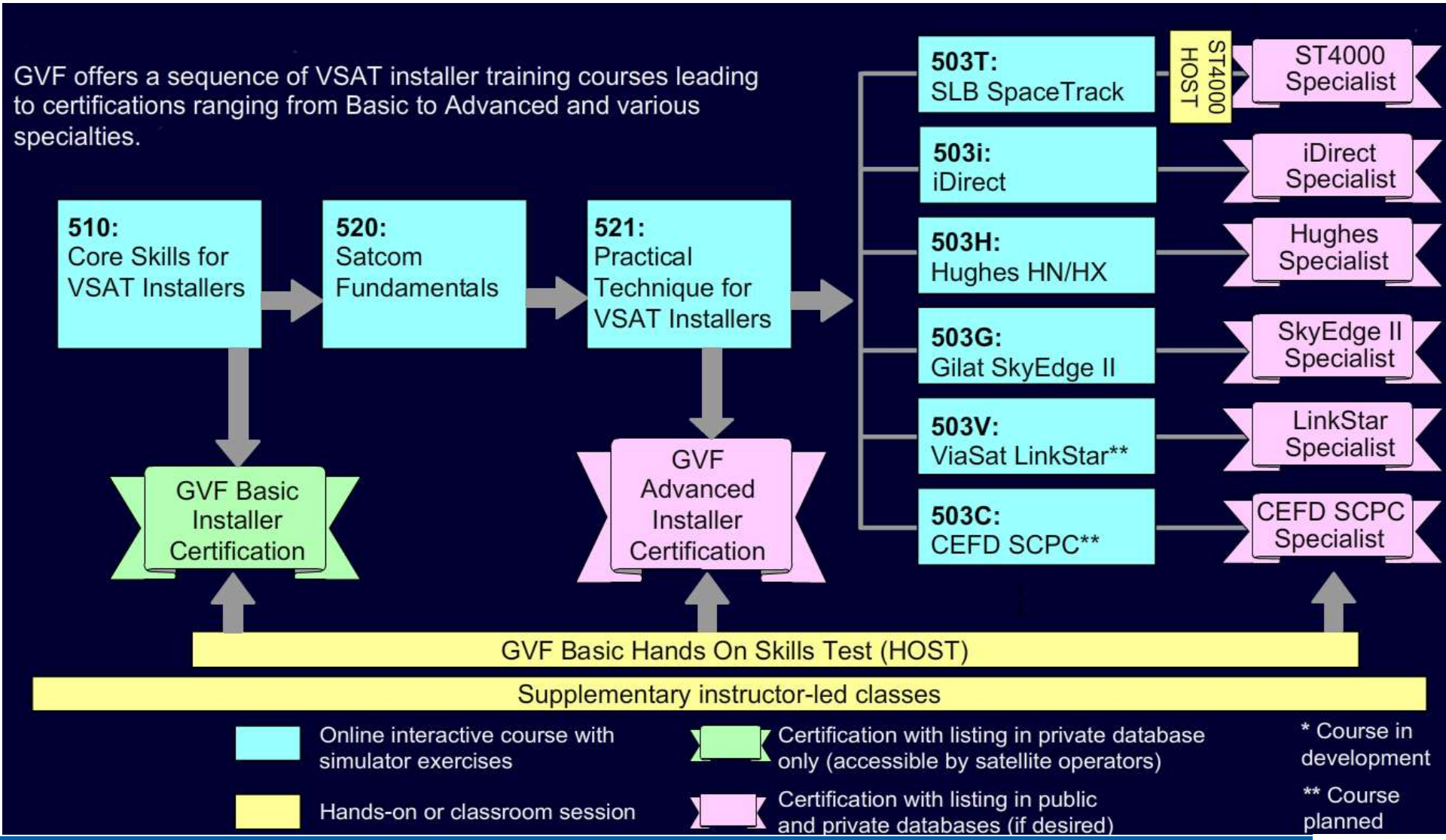
GVF Training Programme Management
http://gvf.coursehost.com

The GVF Training Portal at ***gvf.coursehost.com*** provides:

- Student log-in
- Self registration
- Tuition payment
- Course catalog
- Classroom schedules
- Newsletter archives
- Guided tour
- Brochures
- Certificates



GVF Certification Paths



Pre-Positioned Satellite-Based ICTs:

Training Programme Status

Training program status

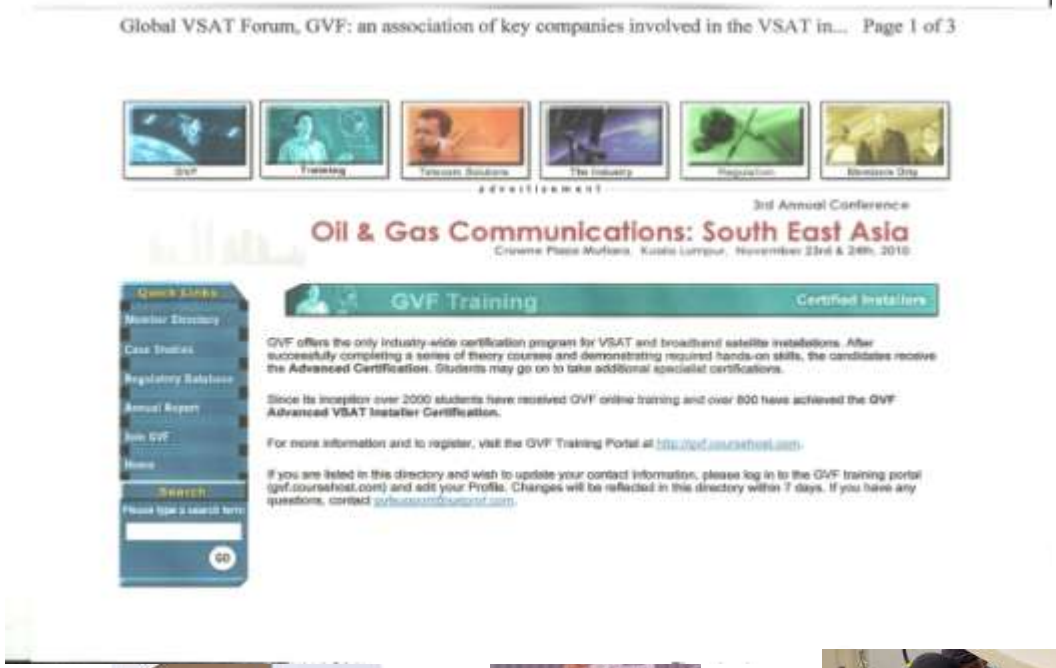
- Program began in 2003
- Initially all classroom based
- Accelerated by SatProf partnership in 2006 (interactive, online courses)
- Restructured 2009 for greater emphasis on core interference-preventing skills with intensive simulator skills exercises and tests
- As of the end of 2009, over 2300 students have taken one or more GVF training courses
- More than 850 have completed certification
- About 1/3 pay for their own tuition as individuals

*All required instruction is taken on-line in self-paced, interactive lessons, including realistic simulation exercises. A high-speed Internet connection is **NOT** necessary.*

For achieve certification, every student must demonstrate critical hands-on skills.

Pre-Positioned Satellite-Based ICTs:

GVF Installer Training



Pre-Positioned Satellite-Based ICTs:

GVF Certified Installers – Public Database

Pre-Positioned Satellite-Based ICTs:

Example Trainee Feedback

- Found the course to be effective: **100%**
- Did a good job teaching how to avoid uplink interference installing a VSAT: **100%**
- Dish pointing simulation was OK or realistic: **> 90%**
- Would take more online courses like this: **> 90%**
- Course was well written, or graphics answered my questions: **100%**

"Very good. I have over 21 years in the satellite industry and I learned a new thing or two here. Excellent job!!"

"The course is a very good one. I thank GVF making available these kind of courses for people even in remote areas like me."

"It was well presented and on a level that anyone could understand."

"I really learned a lot from this course! I knew nothing about satellites, and now I feel like a pro. Thanks!"

"I never believed that online learning could be more effective than classroom purely based on slides and animations. I am very impressed."

Pre-Positioned Satellite-Based ICTs:

Example Training Online Pages 1 – Pointing Simulator

Exercise: find and peak

In this exercise you must **find** the satellite and perform the initial **peak in azimuth and elevation**. You may assume the following:

Your location is 160 deg E, 50 deg N.
The satellite is at 134 deg E.
The VSAT will use H downlink polarization.
Pointing angles from your look angle calculator:
True azimuth = 213, Elevation = 28, Pol = 20

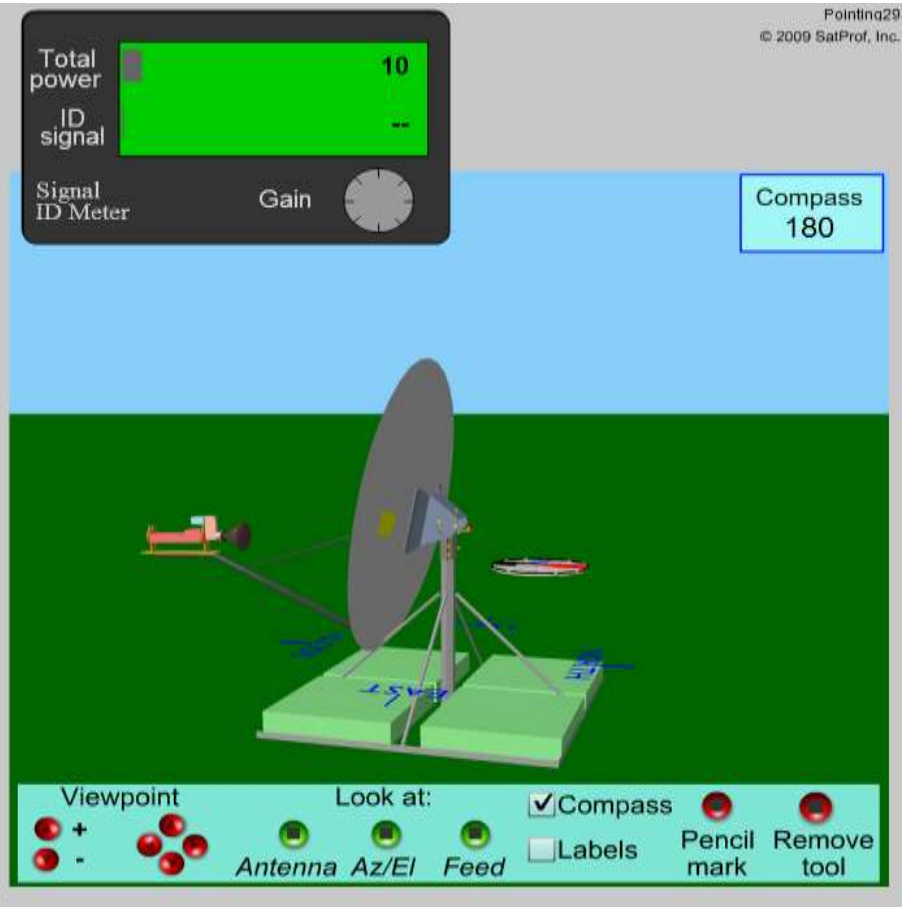
Remember your steps:

1. Preset the polarization. Use the Quick Reference Sheet to help make sure you are turning the right way.
2. Preset your elevation.
3. Scan coarse az to find the satellite. Step elevation up and down and scan az again if needed
4. Peak it with the el and fine az adjusters.
5. **Lock the coarse azimuth** but leave the **fine az, el, and pol locks loose**.

When you are ready (or if you need a hint), click the SHOW MY RESULTS button to see how well you did. If you are having trouble, click the HELP button.

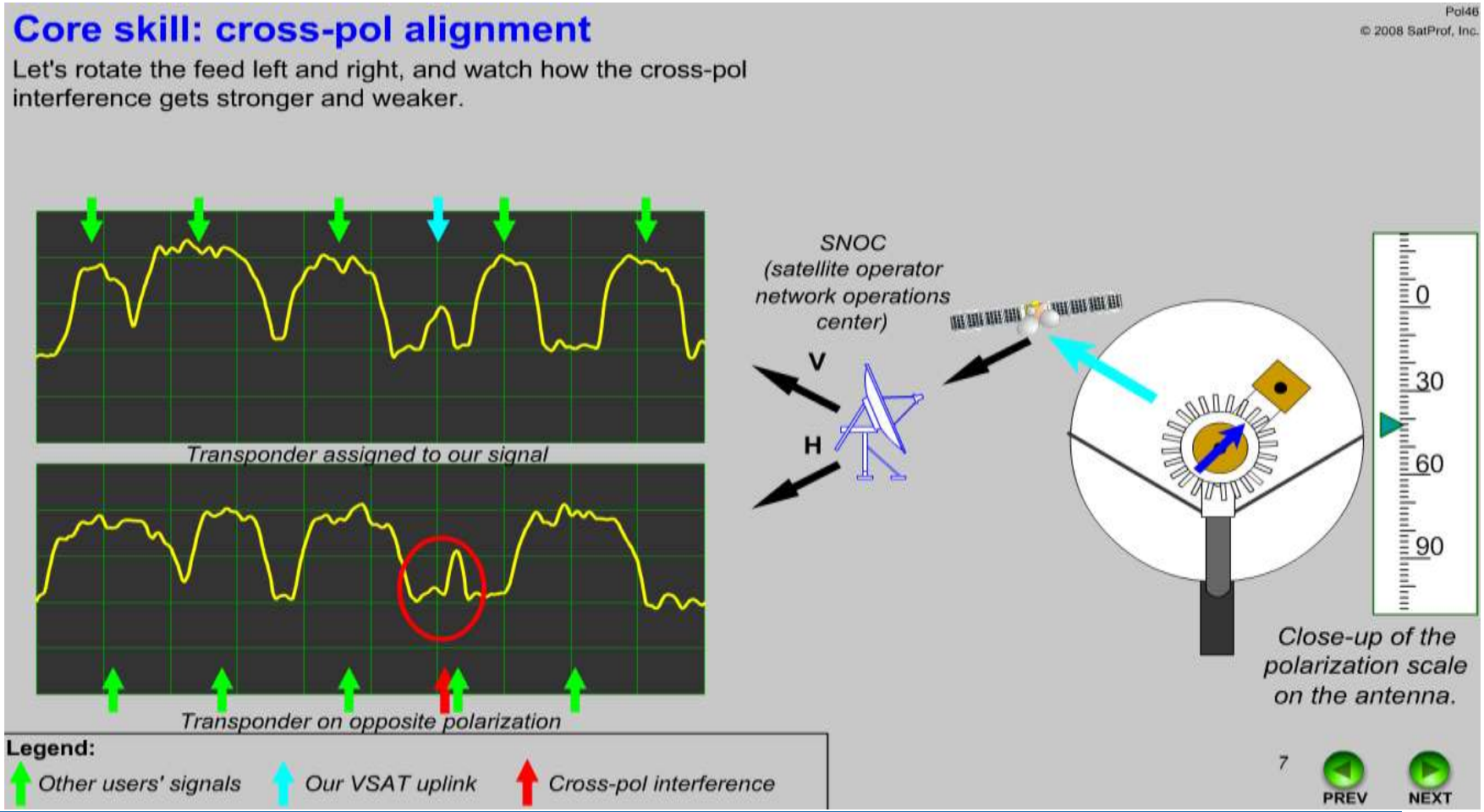
? HELP

SHOW MY RESULTS



Pre-Positioned Satellite-Based ICTs:

Example Training Online Pages 2 – Cross-Pol Alignment



Pre-Positioned Satellite-Based ICTs:

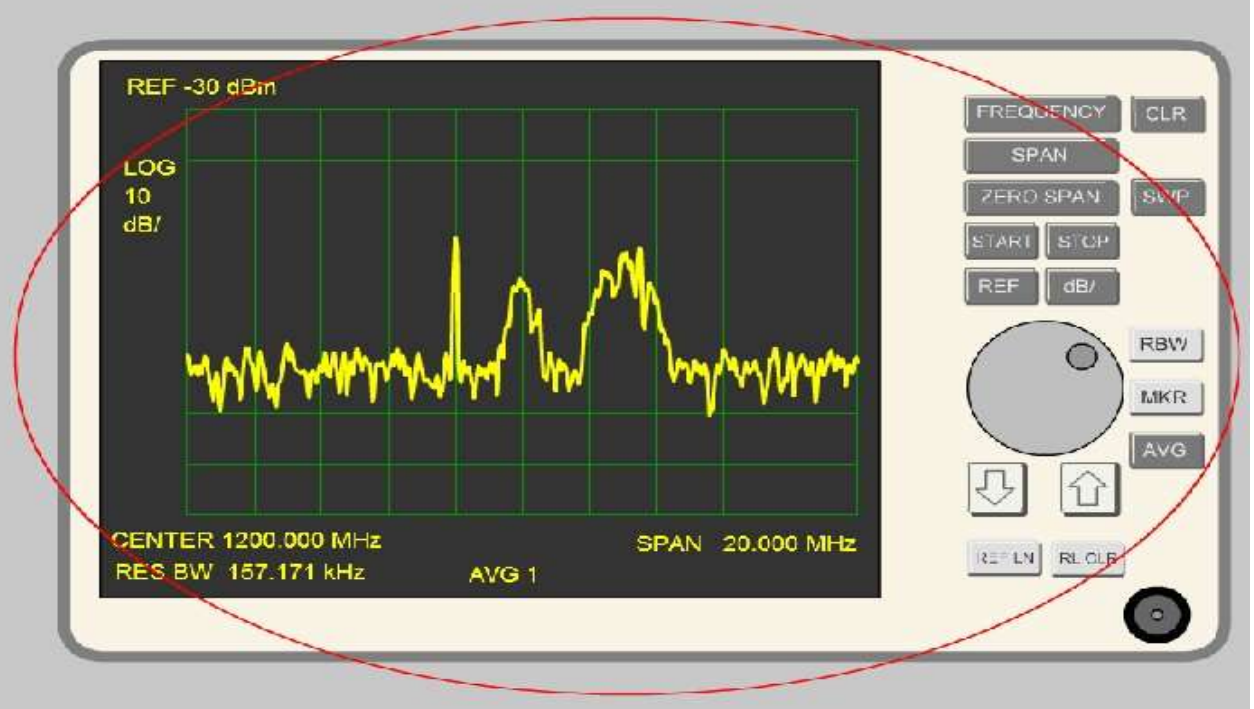
Example Training Online Pages 3 – Spectrum Analyser

Spectrum analyzer tour

SpectrumAnalyzer1
© 2005 SatProf Inc.

The display layout and the buttons and dial on our simulator are generally similar to a conventional Agilent (HP) laboratory SA.

Other analyzers will have different appearances and may have more or fewer functions, but the general behavior of the controls will be similar.



PREV 1 NEXT RESET ALL SETTINGS

GVF Satellite. Solutions. The World.

Thank You

Martin Jarrold

martin.jarrold@gvf.org

Fourth United Nations International UN-SPIDER Bonn Workshop on Disaster Management and Space Technology
12-14 October 2010