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NVIS Antennas

by

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KL7BB

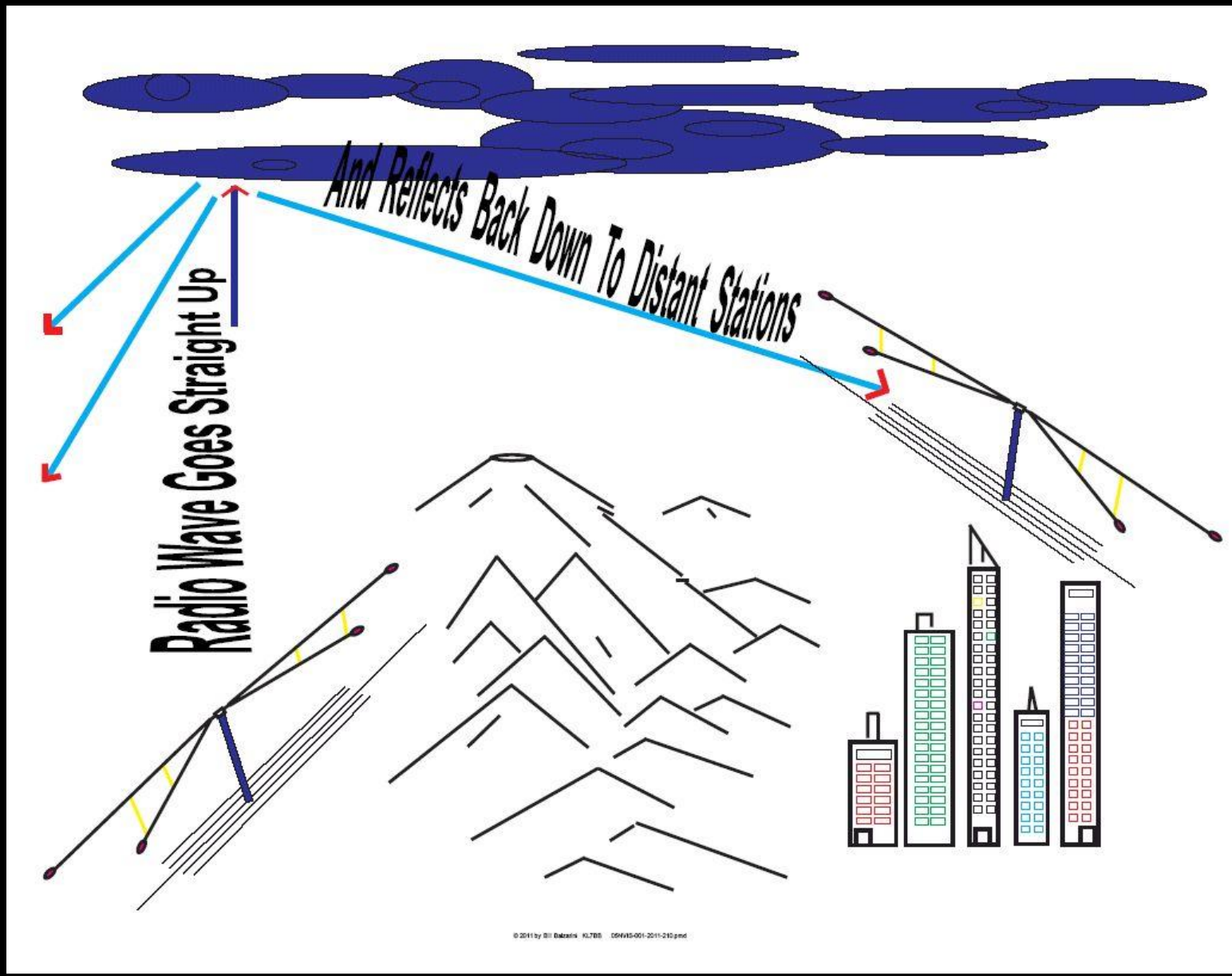
Served Agency

Federal Way
WA7FW
Amateur Radio Club

NVIS Antennas

The Words of ARRL Communications Manager George Hart W1NJM at the Washington State ARRL Hamfest in Yakima, paraphrased JFK's words and asked,

"Ask not what the ARRL can do for you, Ask what you can do for the ARRL and Amateur Radio".


And Reflects Back Down To Distant Stations
Radio Wave Goes Straight Up

Visualize the Dipole Antenna

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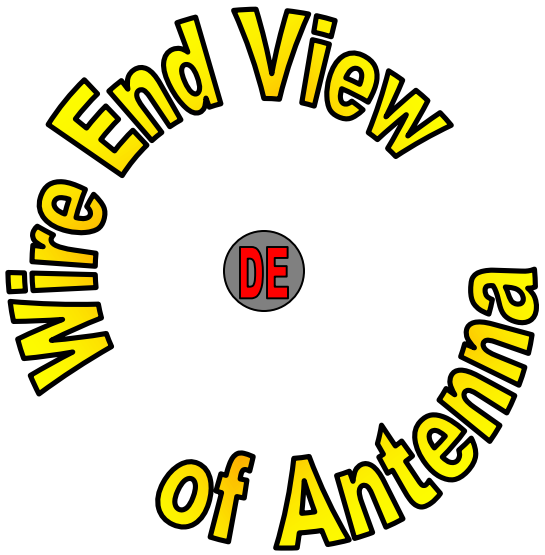

What is the Antenna's Frequency ?

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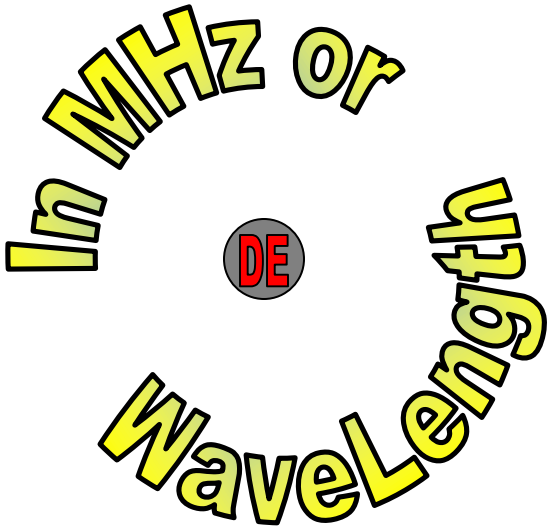

Visualize the RF Field !

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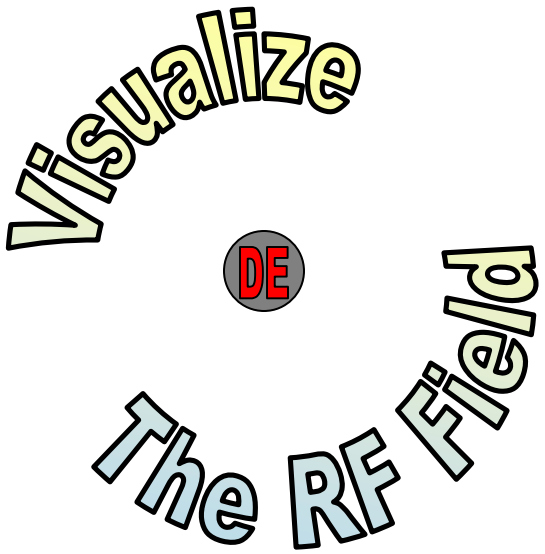

Visualize the RF Field !

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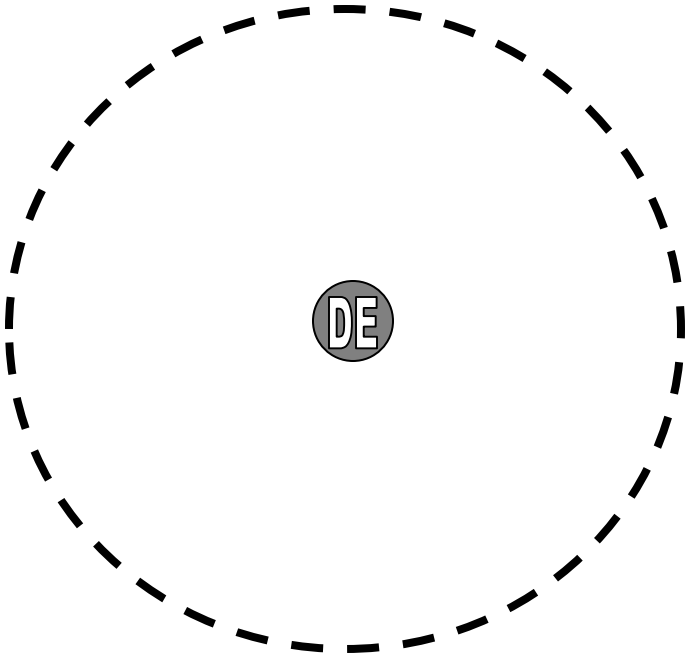
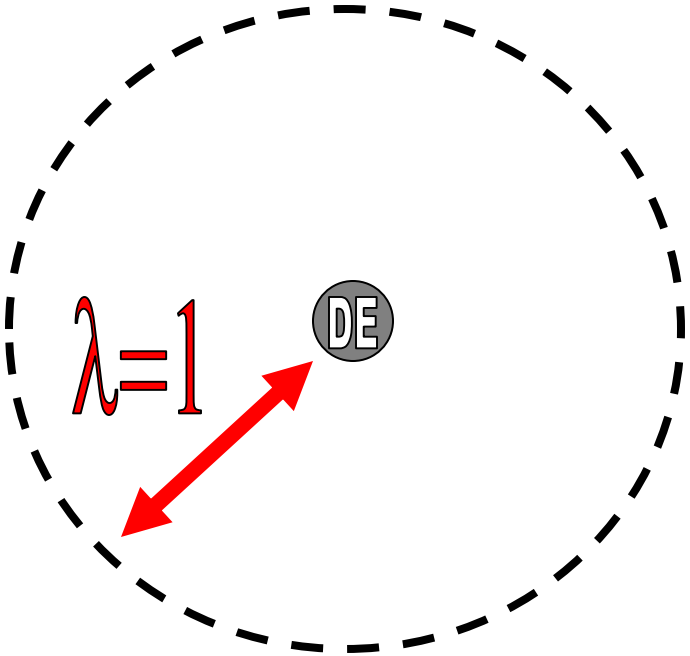
Visualize the RF Field λ



Visualize the RF Field $\lambda=1$



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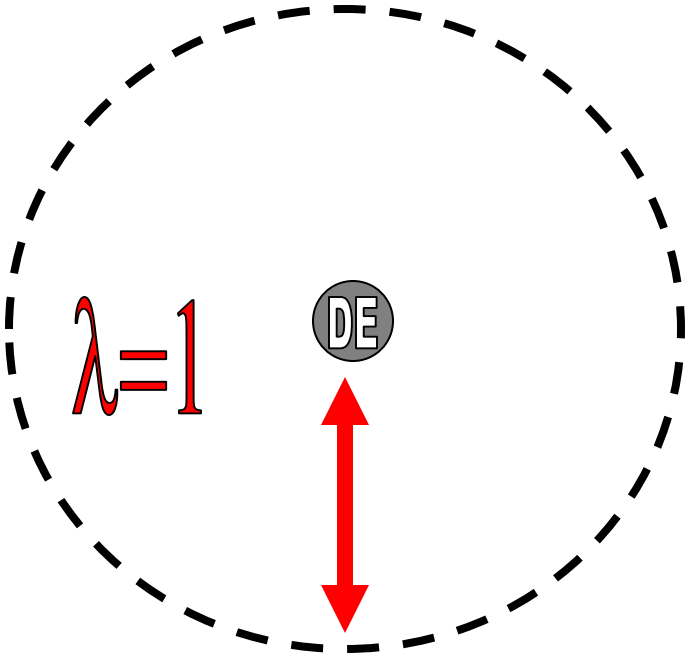

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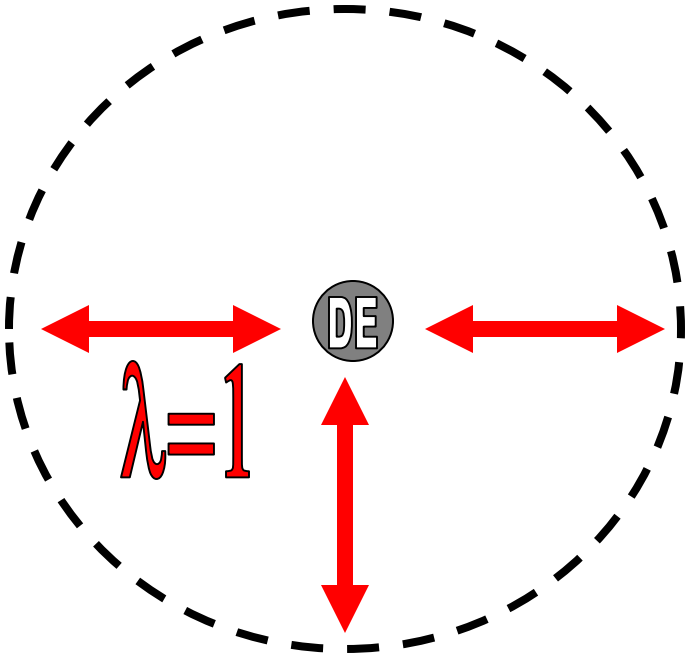

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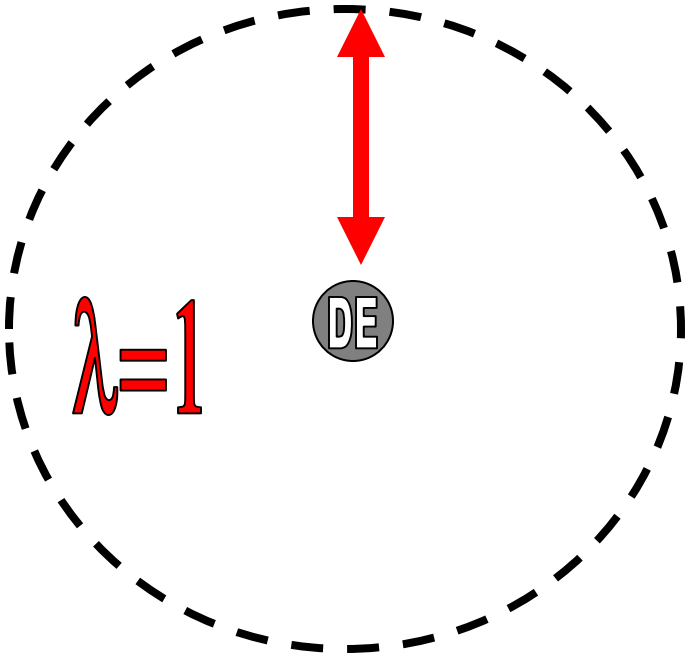

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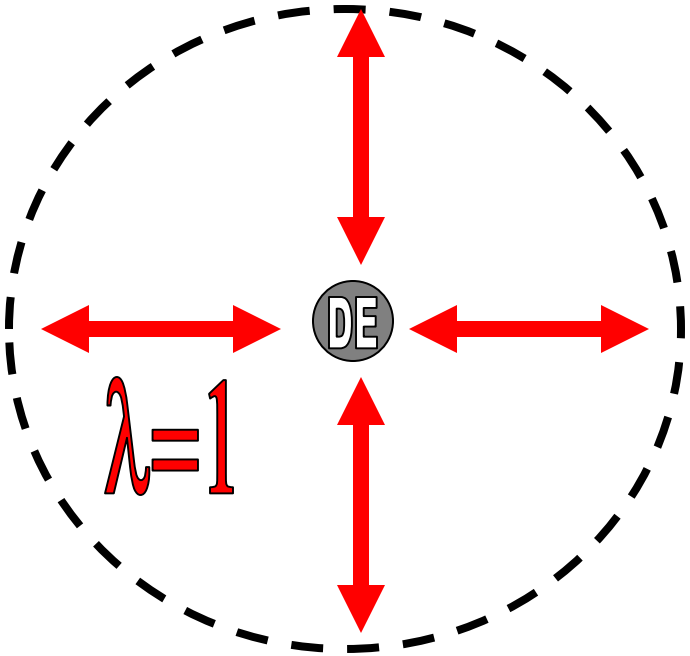

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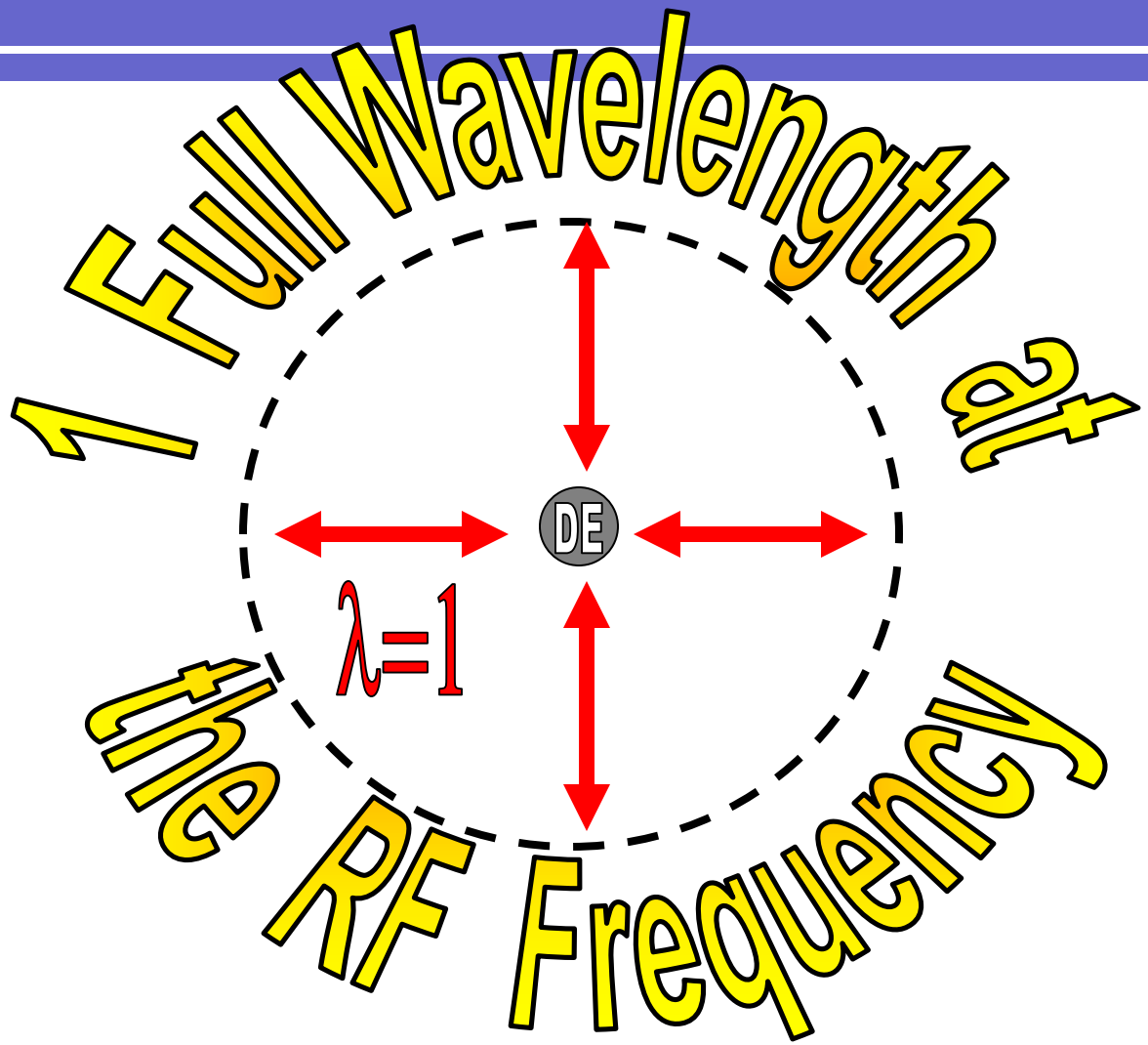

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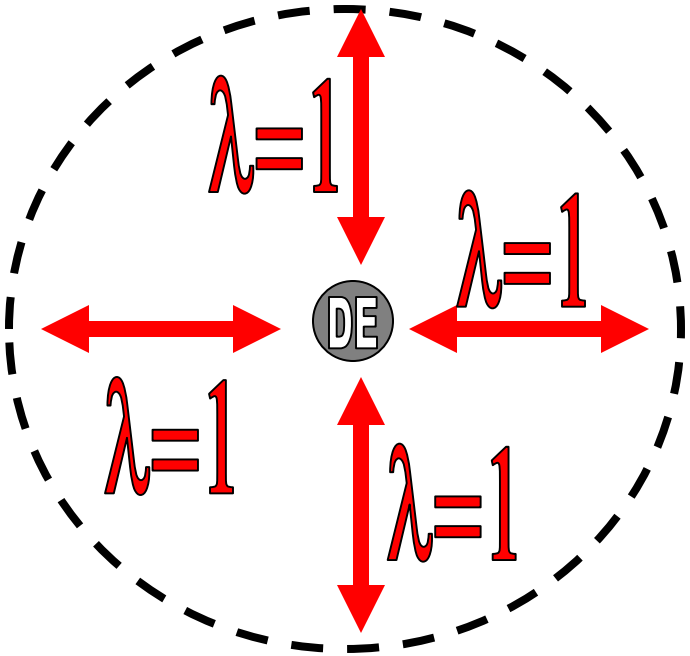

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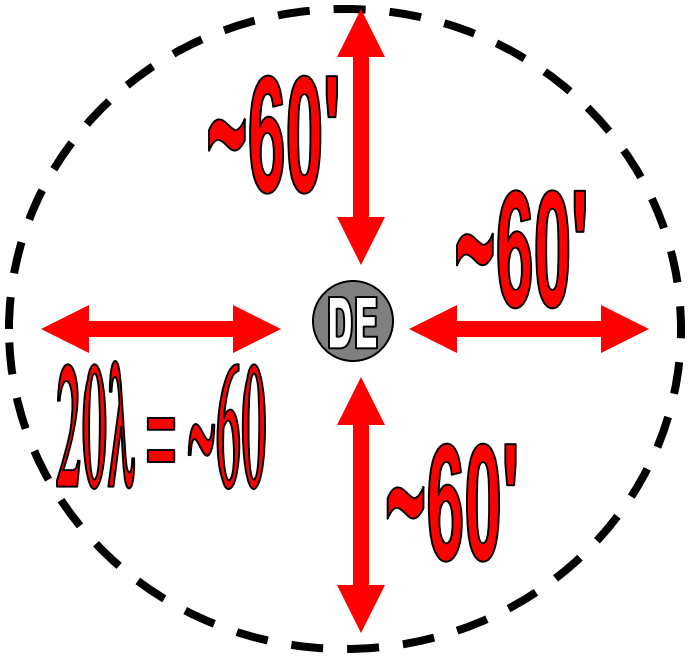

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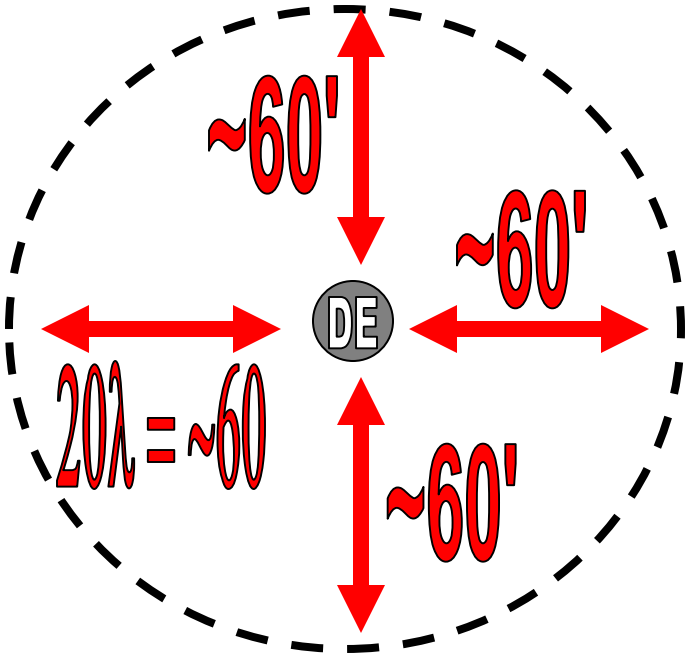
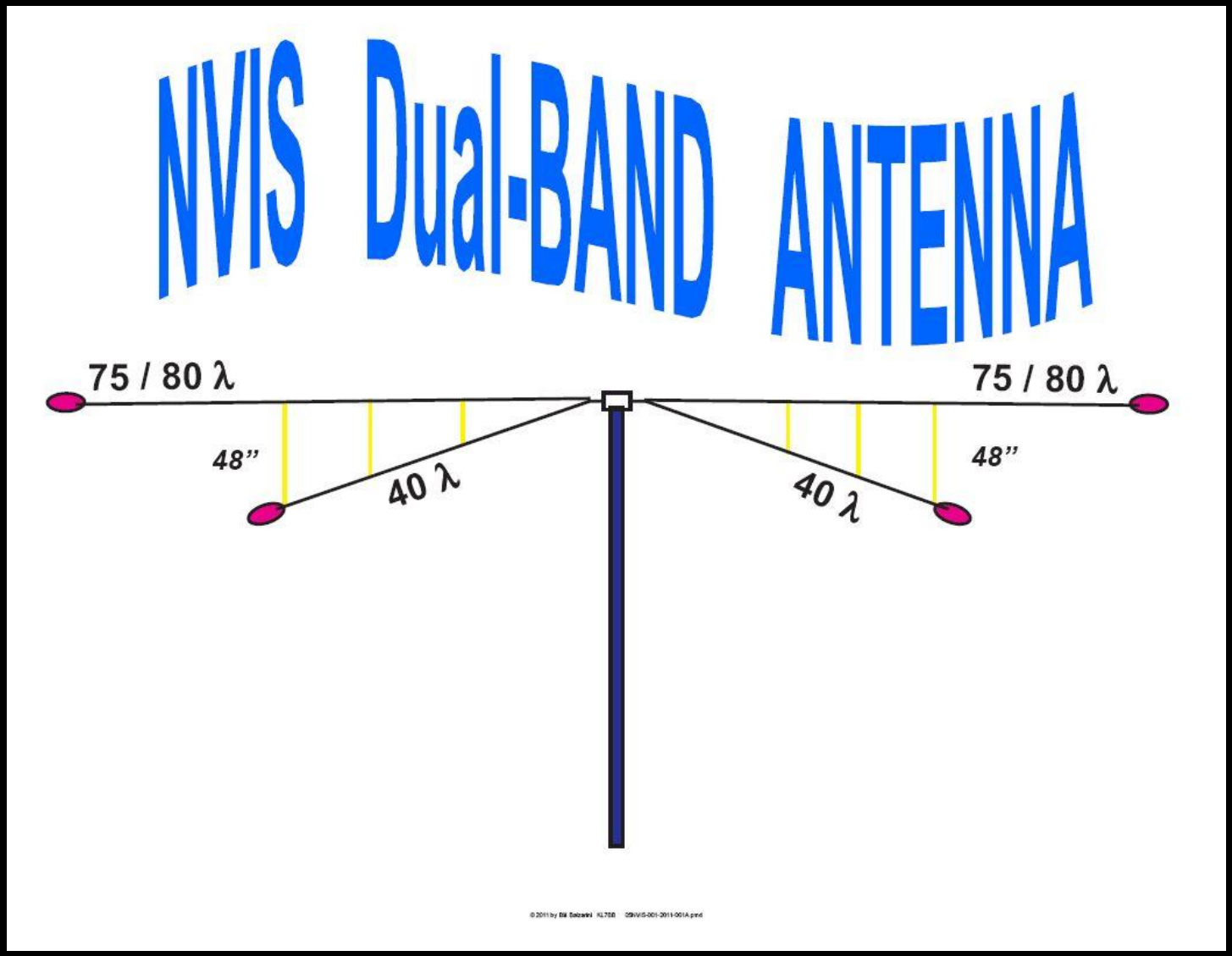


The Dipole RF Field at 14.225MHz

= ~60' Feet ($\lambda=1$)

Visualize the RF Field ?

NVIS Antennas



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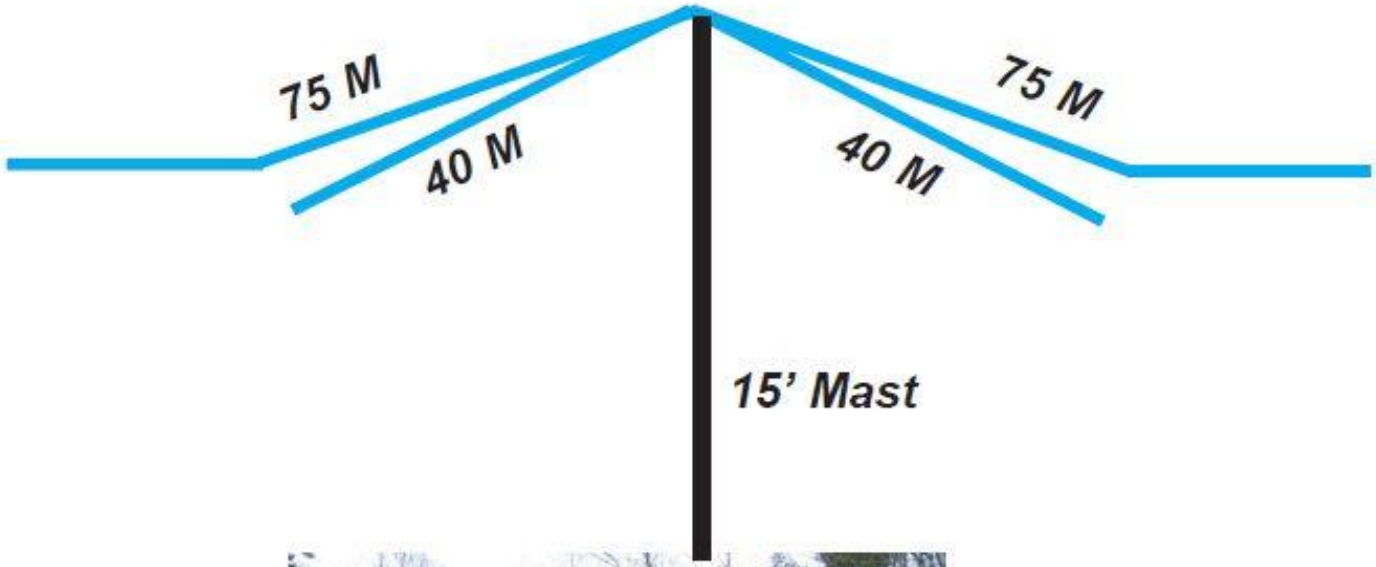


NVIS Antennas

NVIS Antennas
How to Fund the Project

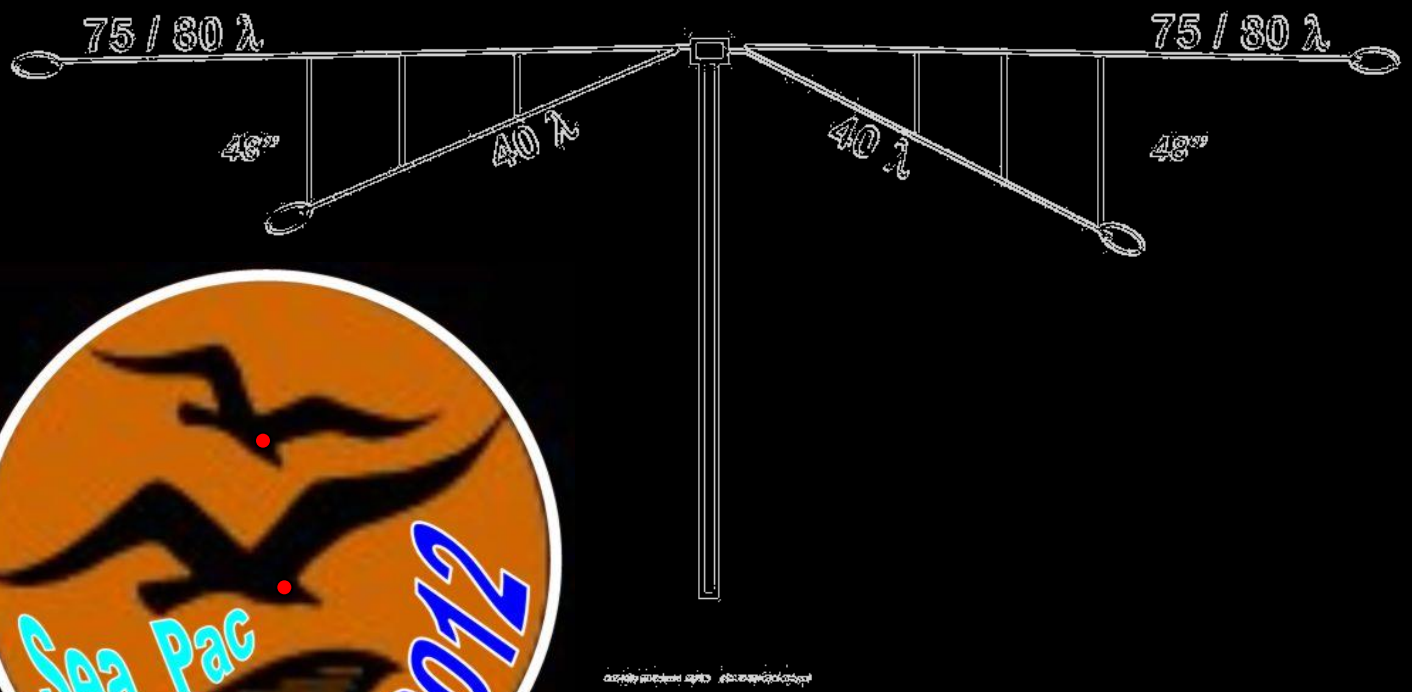
Use Infinite Money in

Planning the Very Best Desired Results,
No Holds Barred.

This produces the very best product and makes the best use of your Imagination

People with Funding usually Follow.

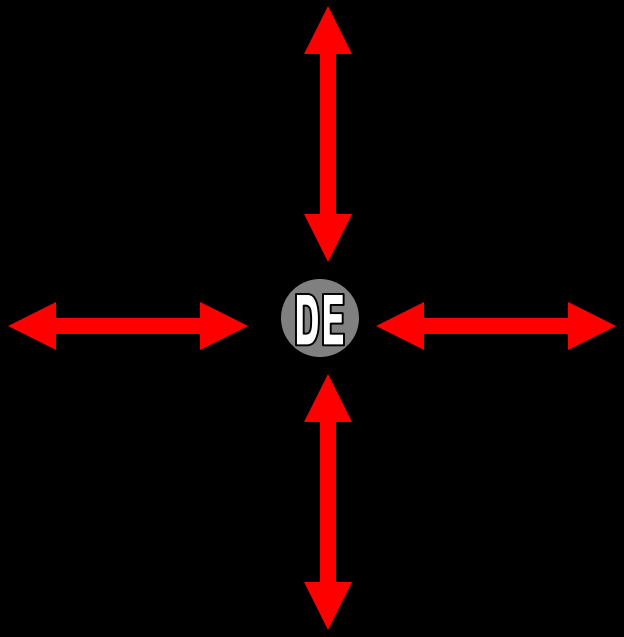
NVIS Dual-BAND ANTENNA



Sea Pac 2012

Visualize the RF Field ?

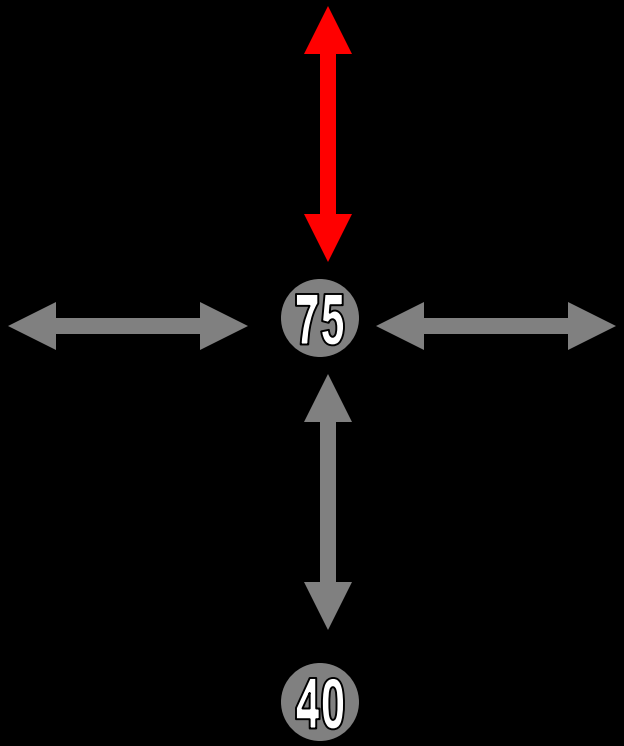
Wire “End View” of Dipole Antenna and RF Field



DE and RF Field are now 1 wave-length above the Ground

Visualize the RF Field ?

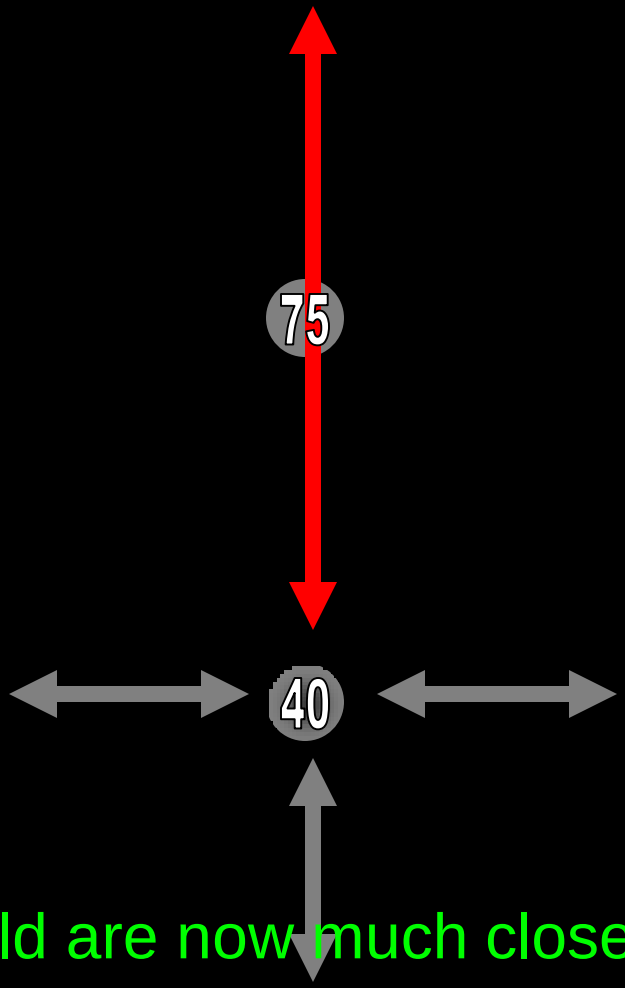
Wire “End View” of NVIS Antenna and RF Field



DE and RF Field are now much closer to the Ground

Visualize the RF Field ?

Wire “End View” of NVIS Antenna and RF Field



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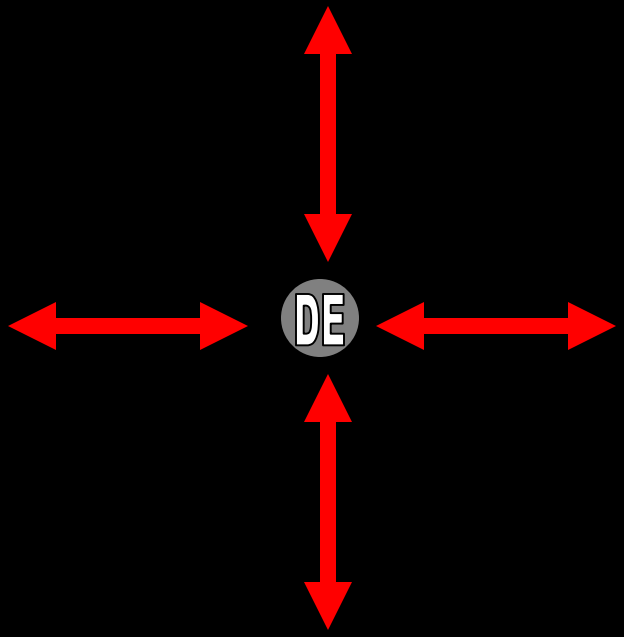

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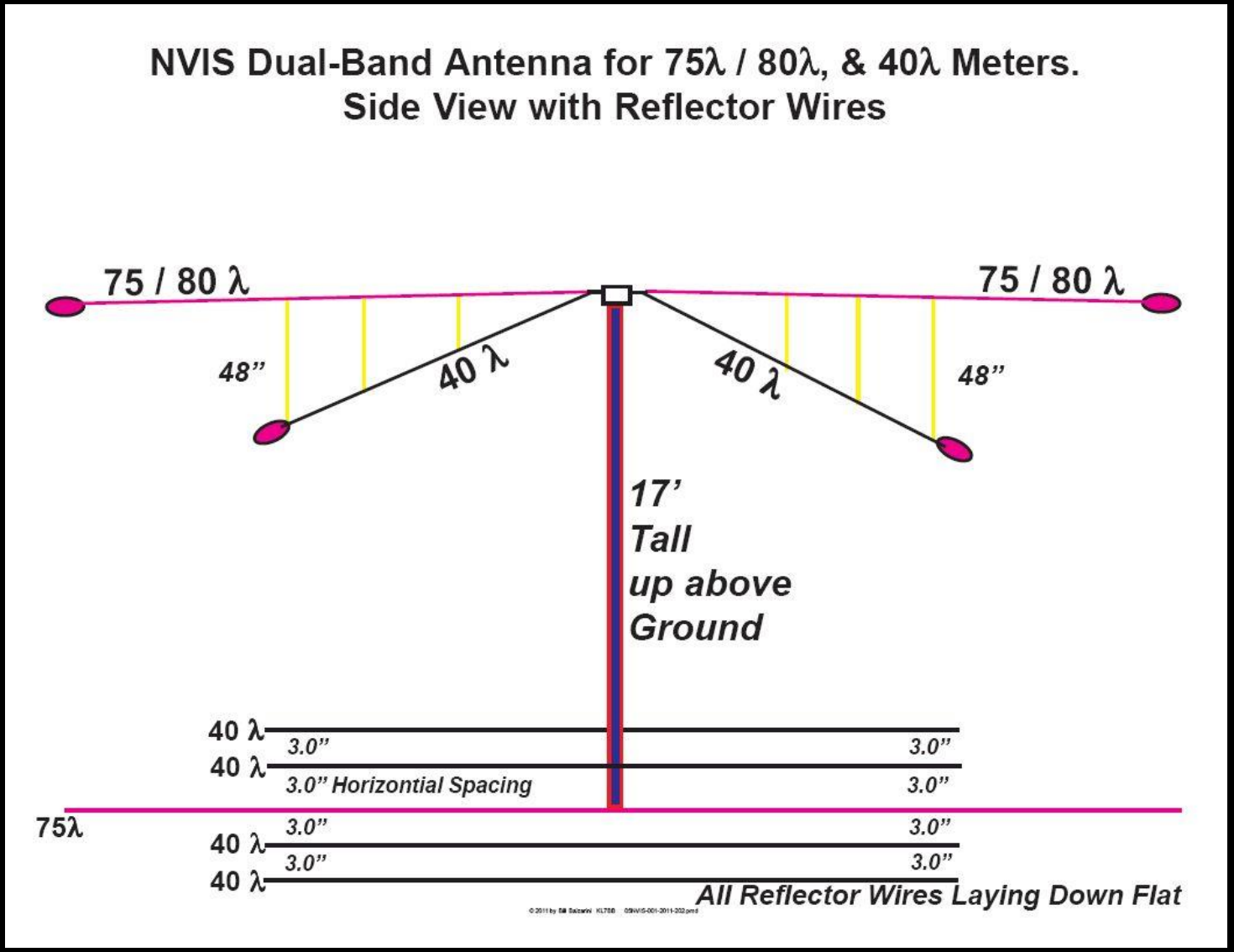

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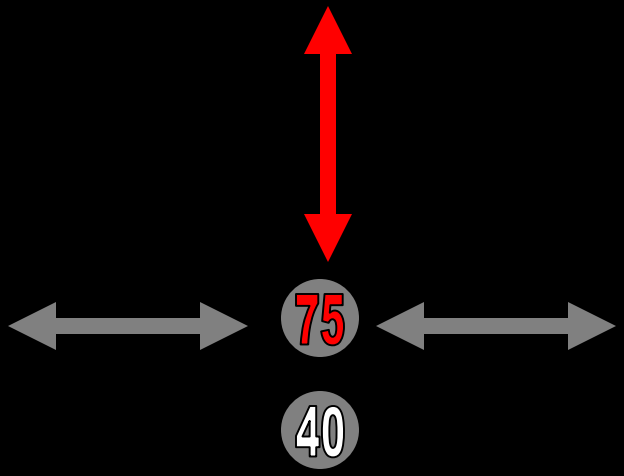

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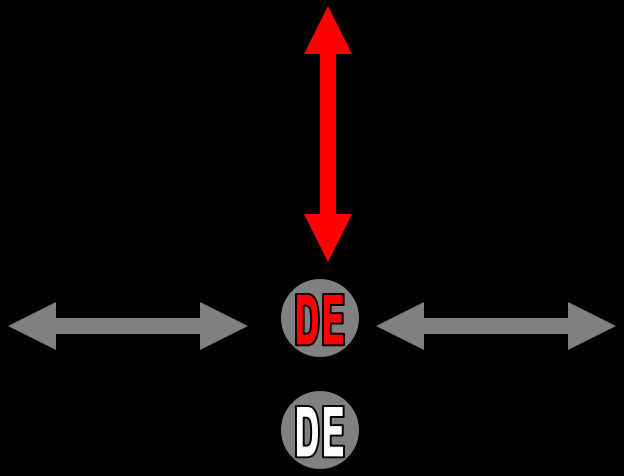

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R R R R R

NVIS Antennas

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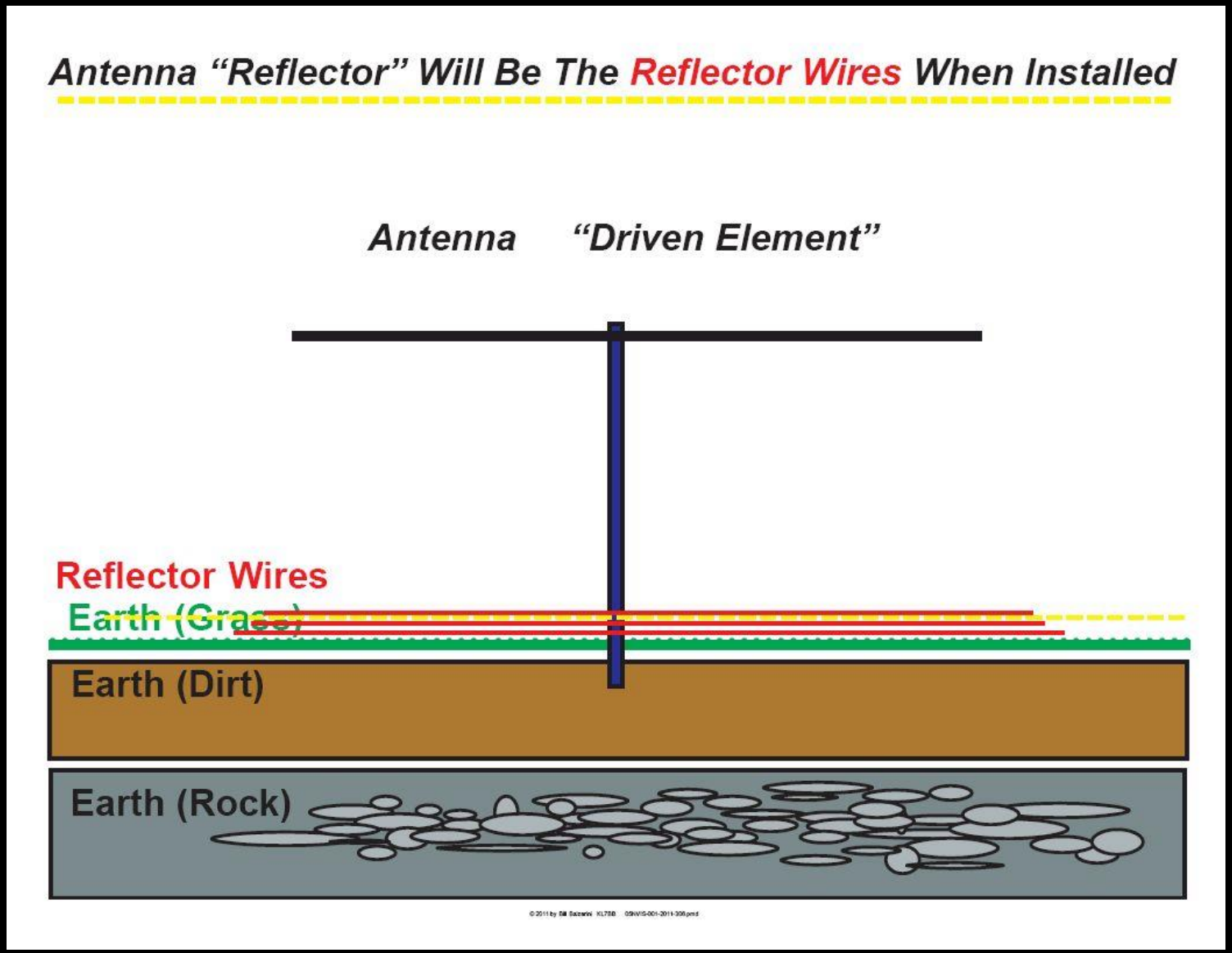

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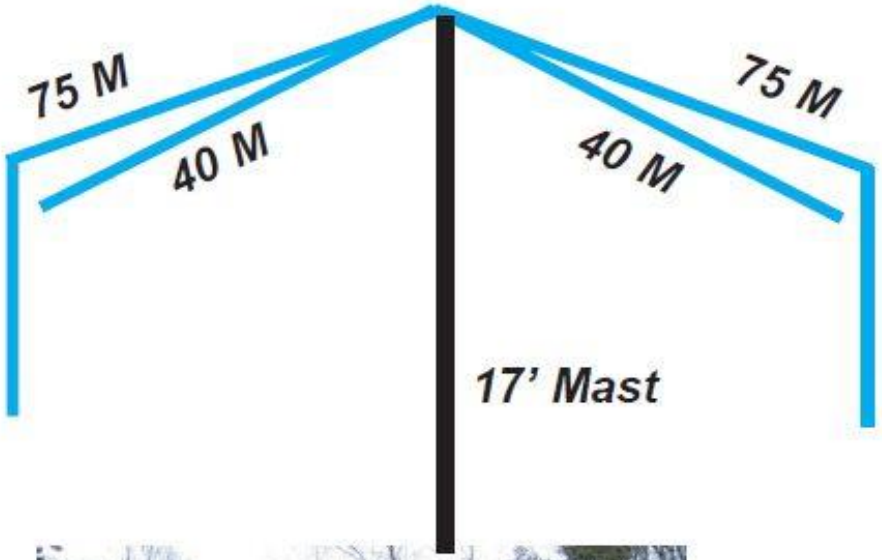

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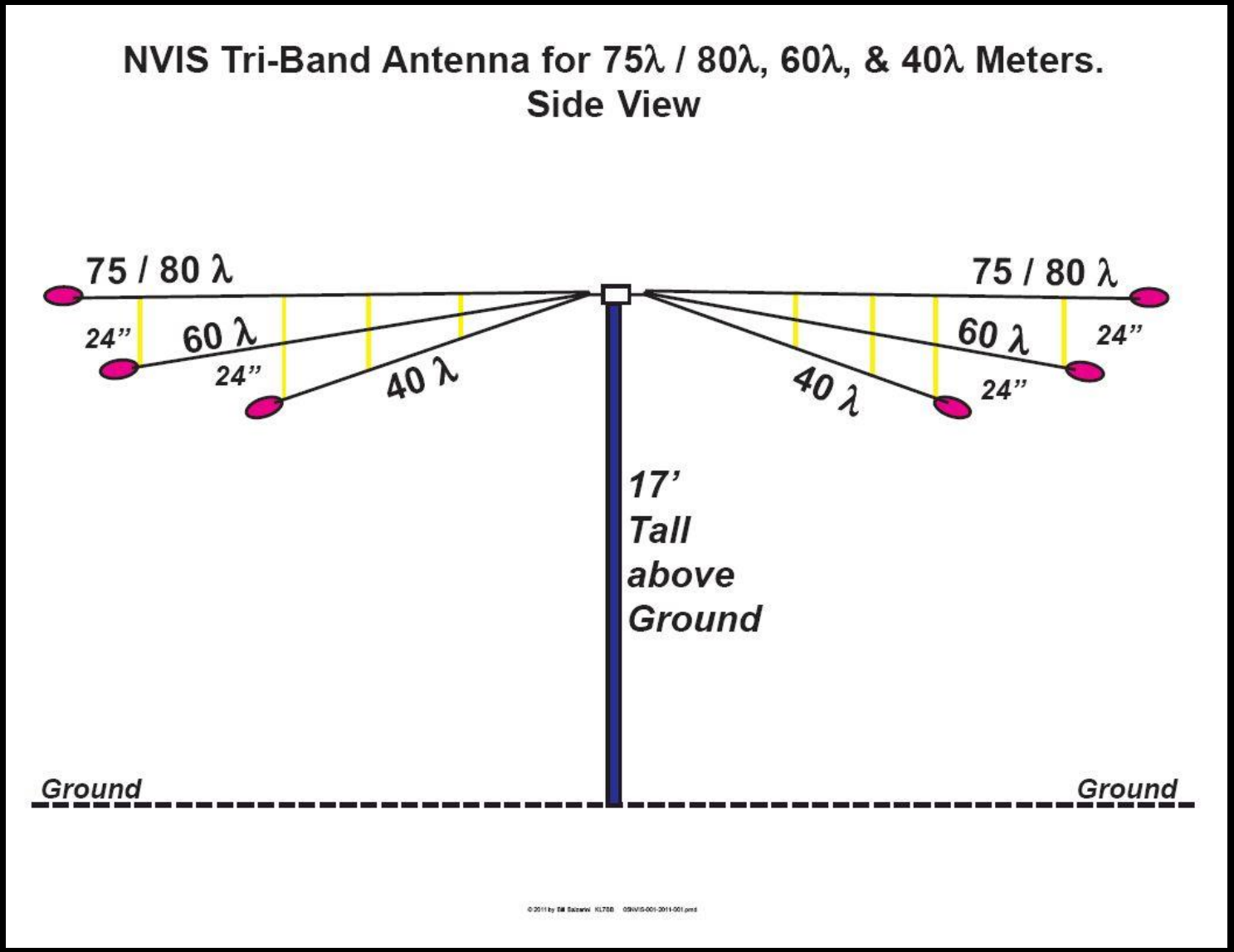

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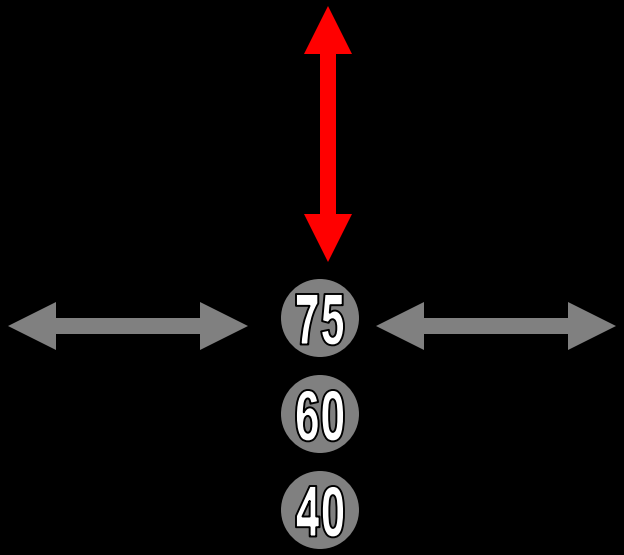
Wire “End View” of NVIS 3 Band Antenna and RF Field



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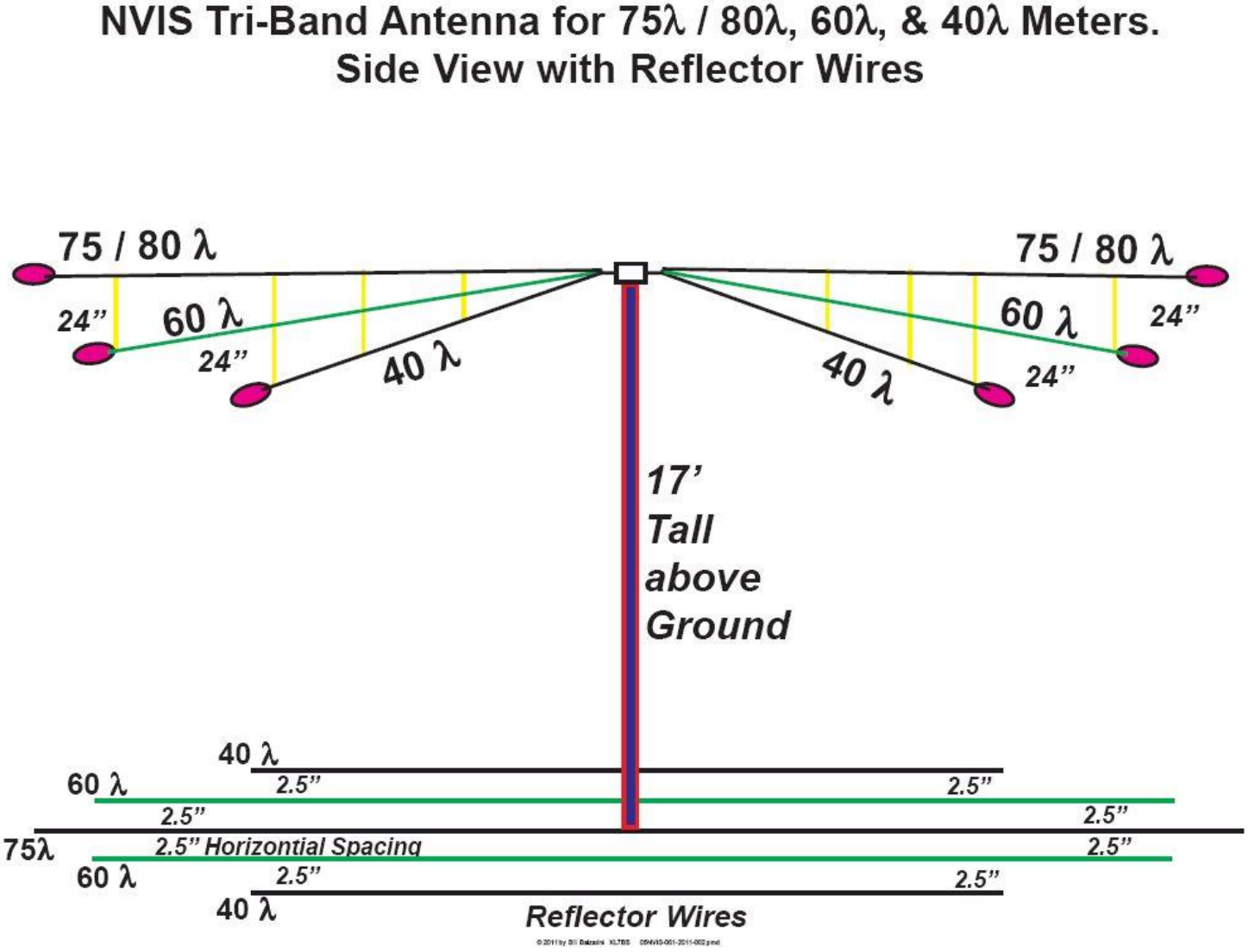

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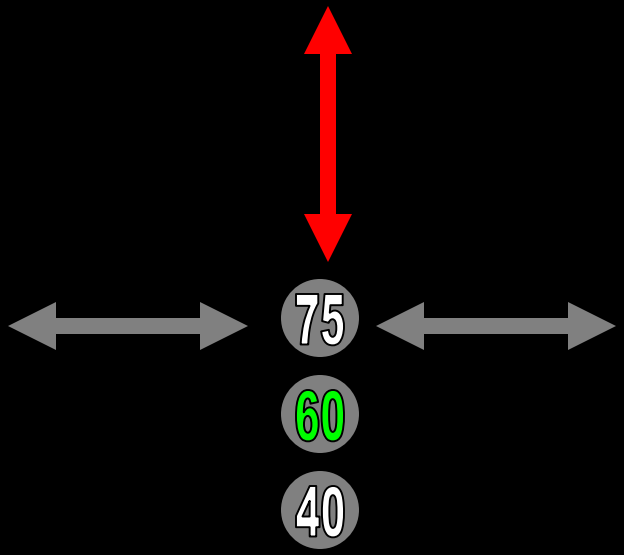

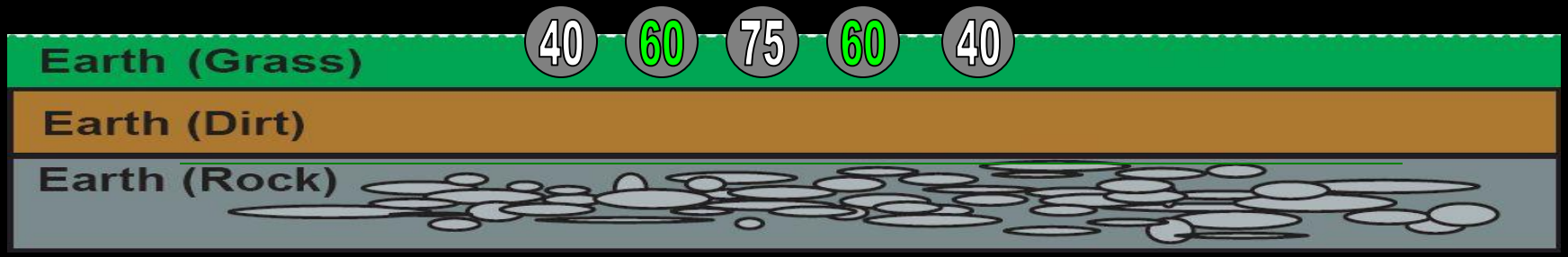

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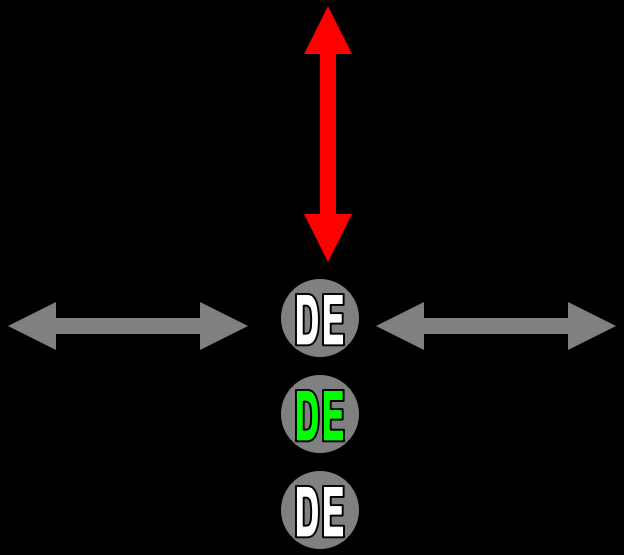
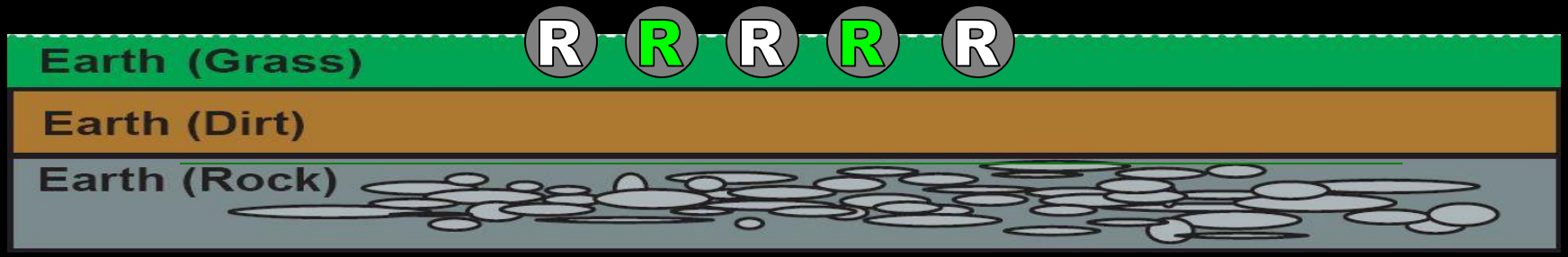
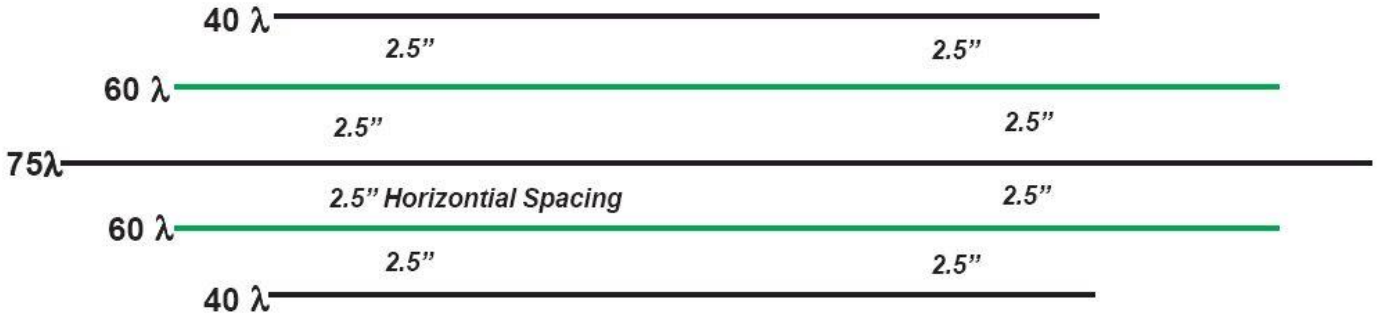




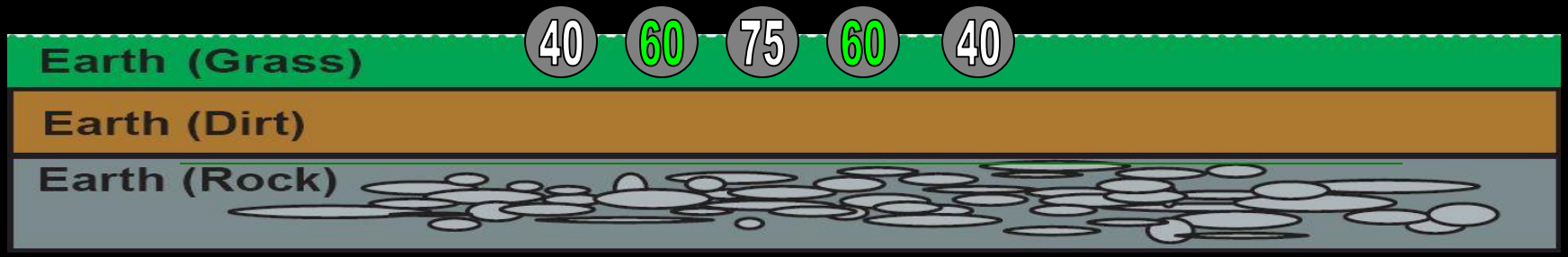
NVIS Antennas

NVIS Tri-Band Antenna for 75λ / 80λ, 60λ, & 40λ Meters.
Top-Down View of Reflector Wires
laying flat on the Surface/Ground.



Visualize the RF Field ?

Wire “End View” of NVIS 3 Band Antenna Reflectors



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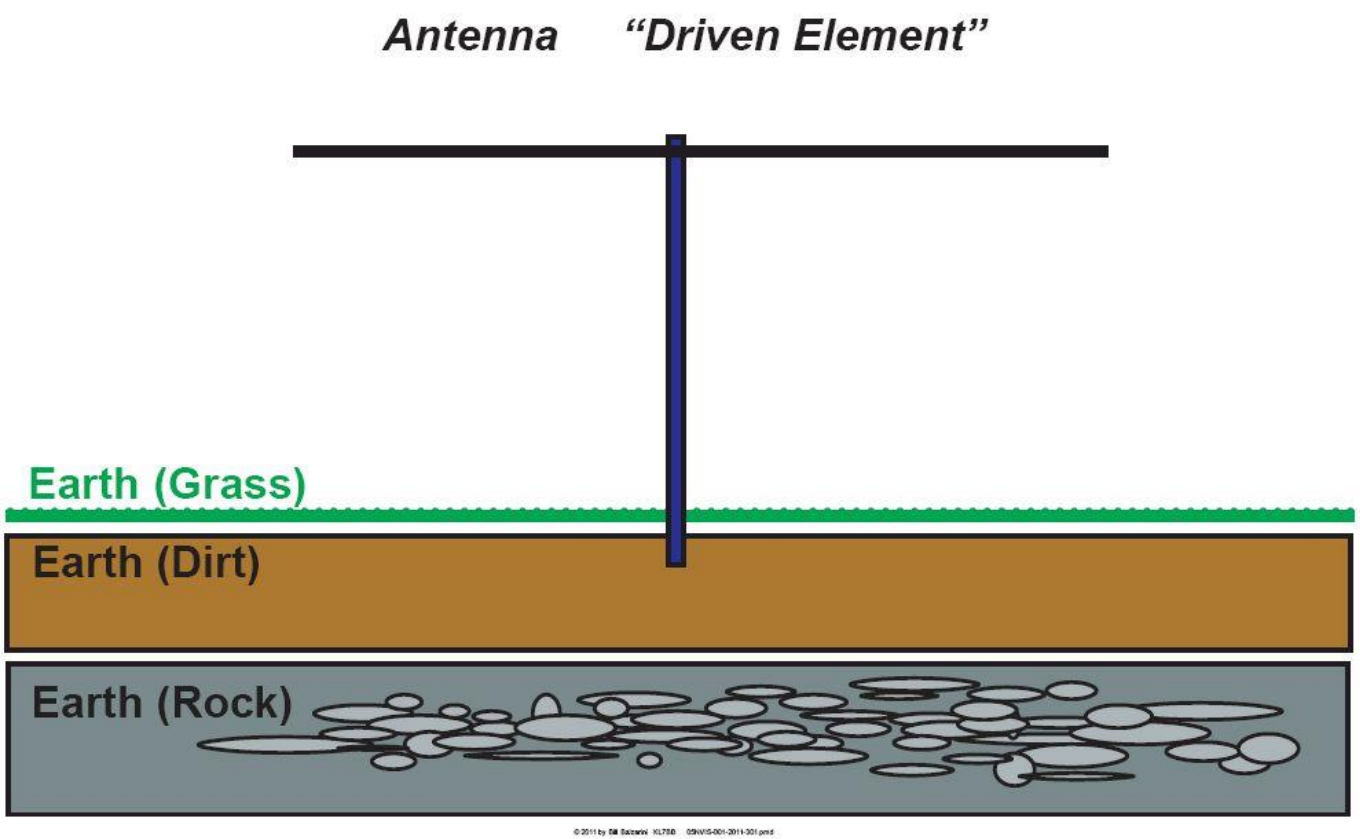

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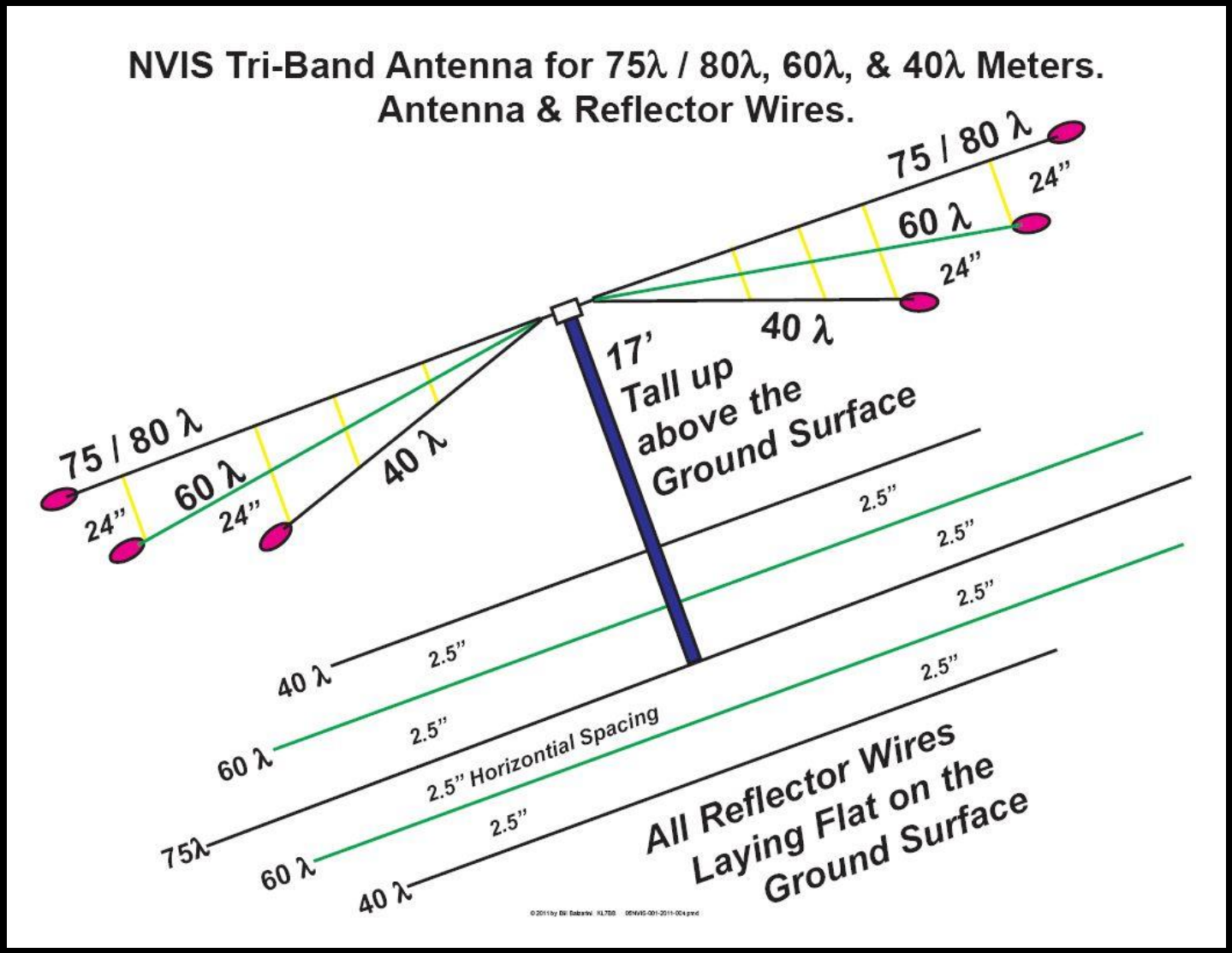

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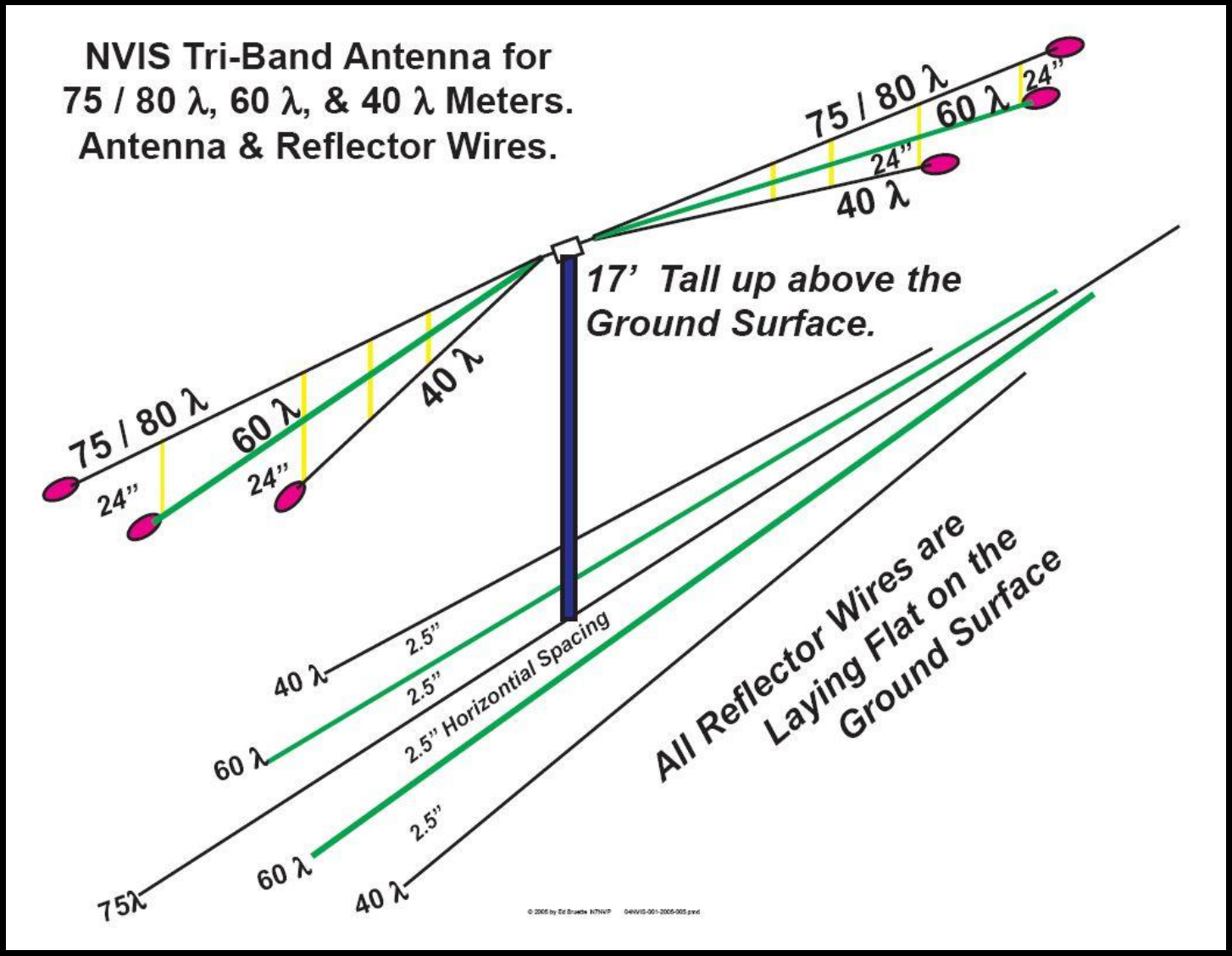

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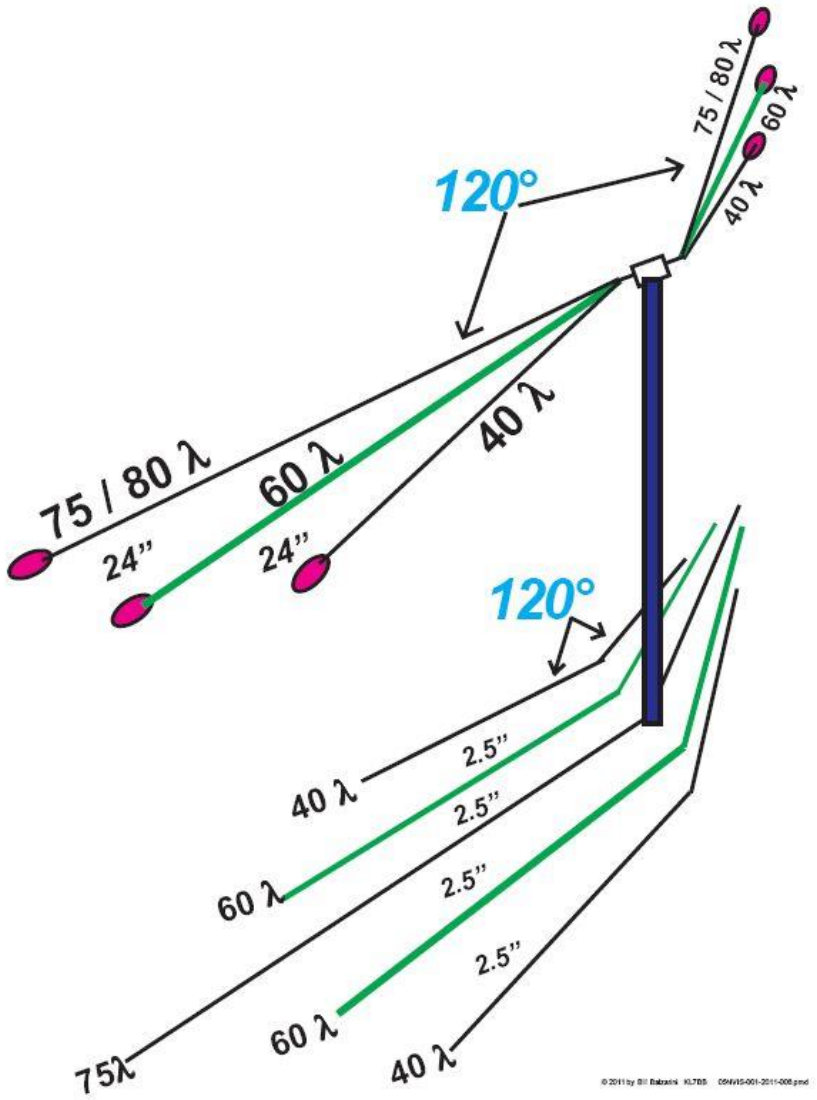


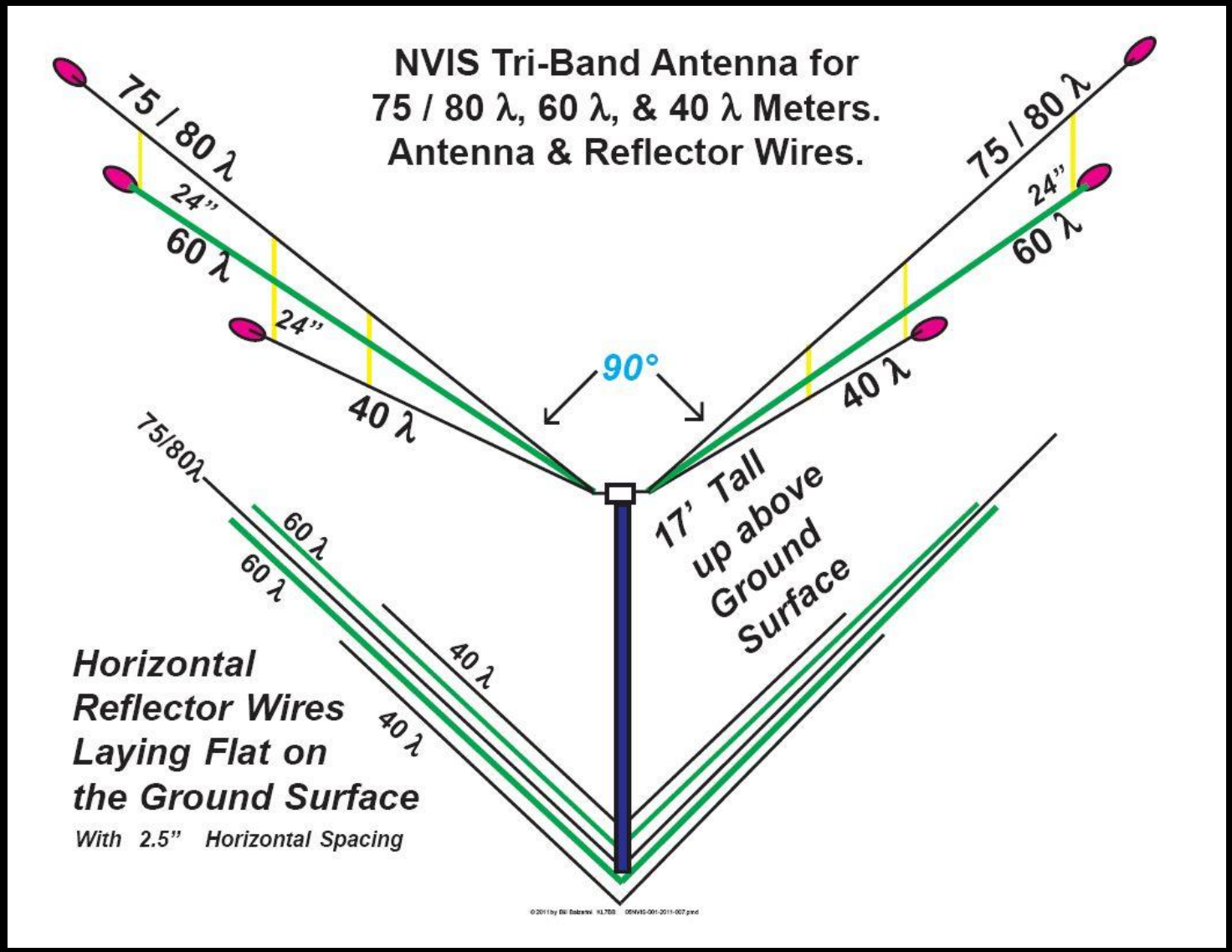
NVIS Tri-Band Antenna for 75 / 80 λ, 60 λ, & 40 λ Meters.

Antenna &

Reflector Ground Wires

@ 120°.

NVIS Antennas



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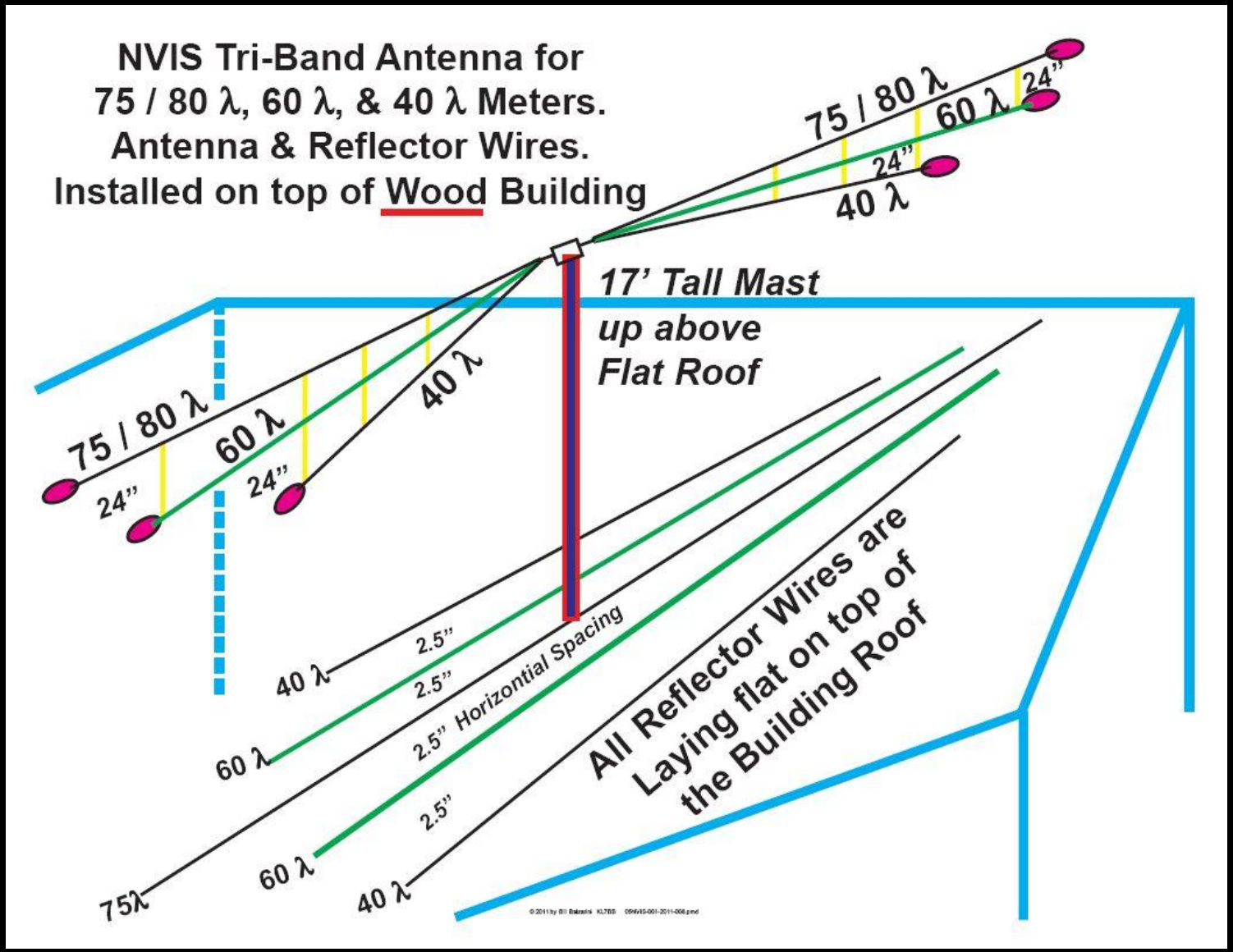
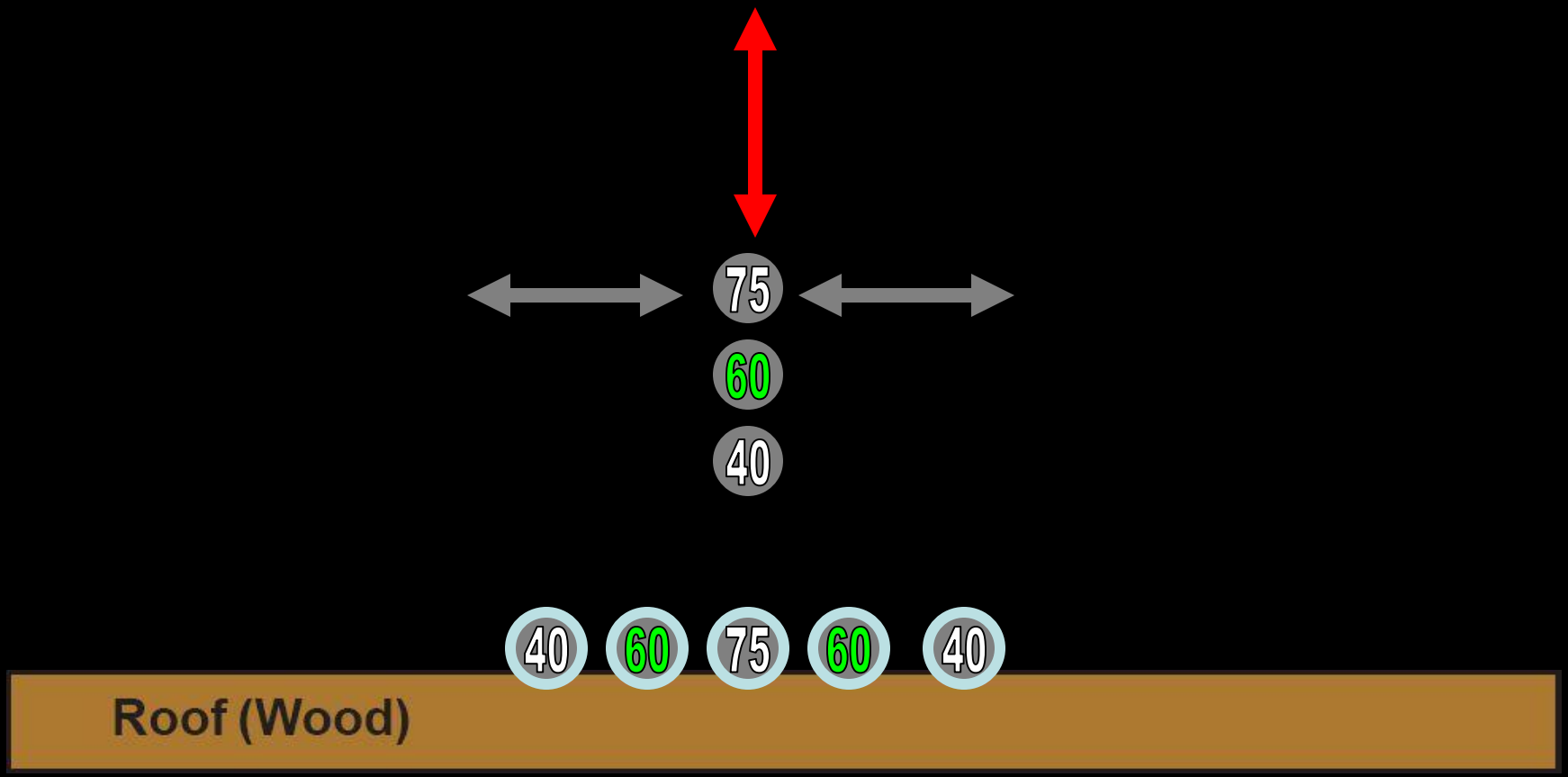


Visualize the RF Field ?

Wire “End View” of NVIS 3 Band Antenna and RF Field



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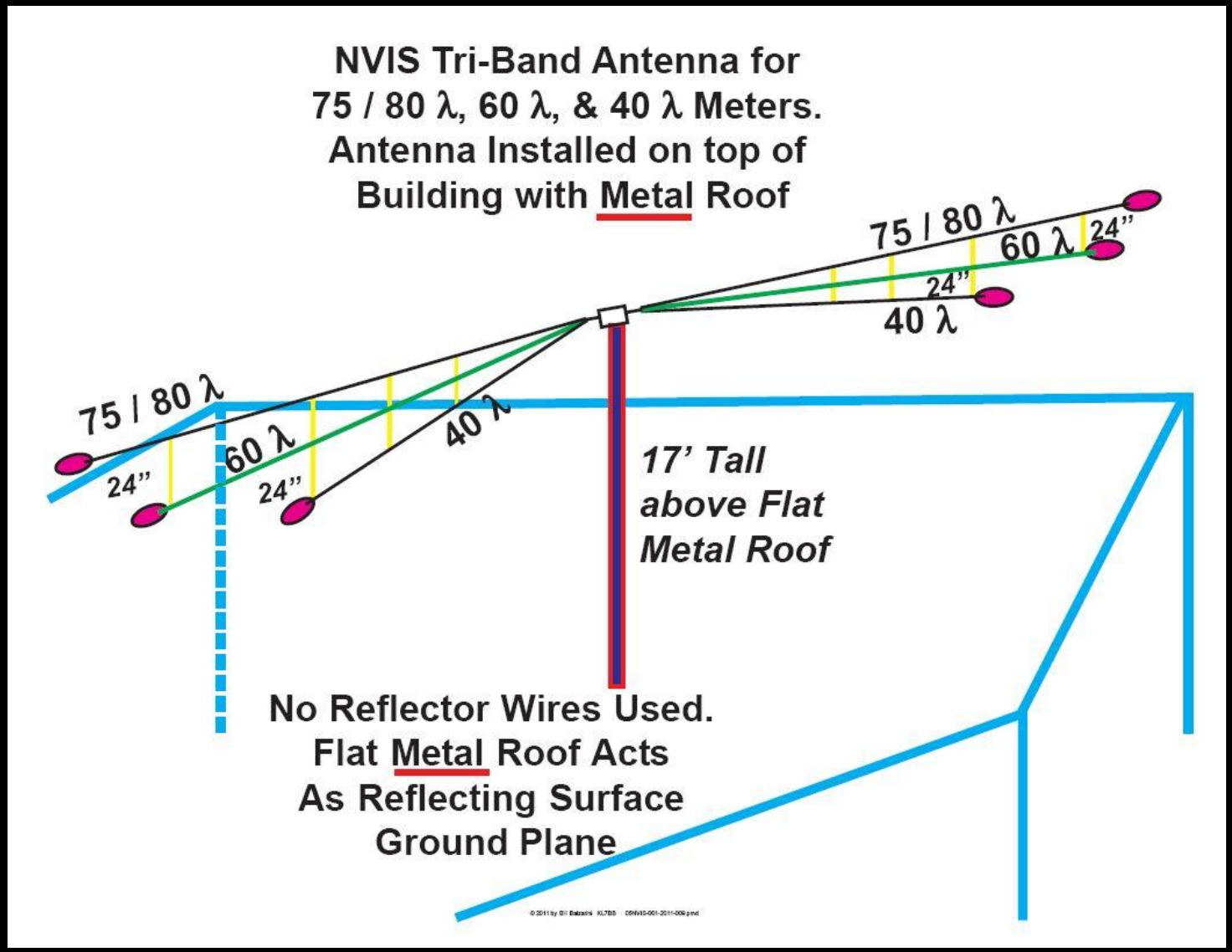

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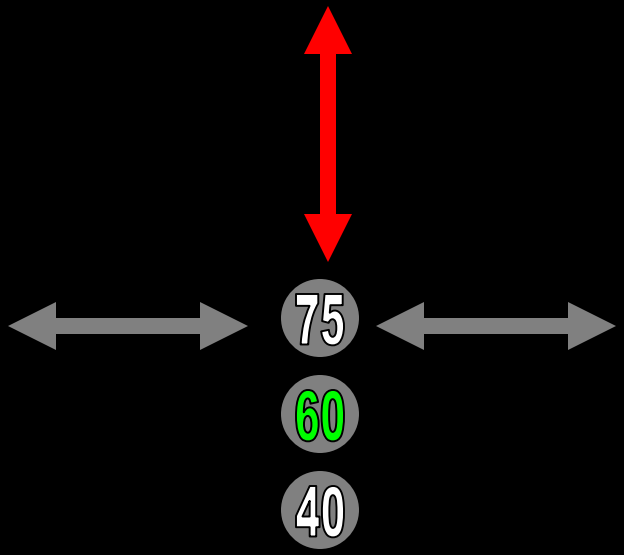

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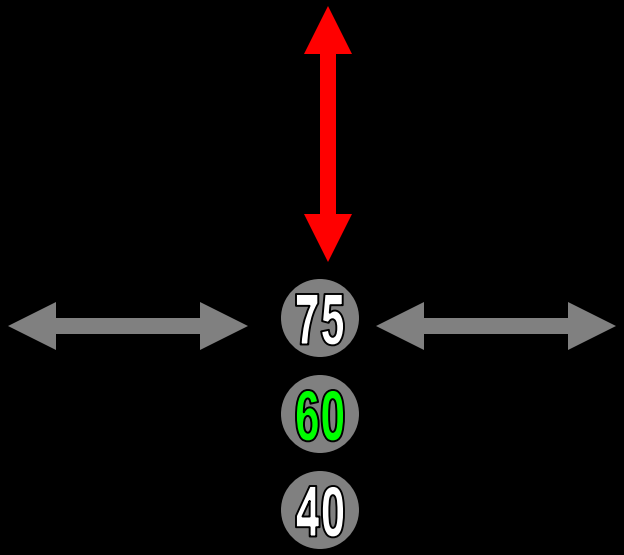

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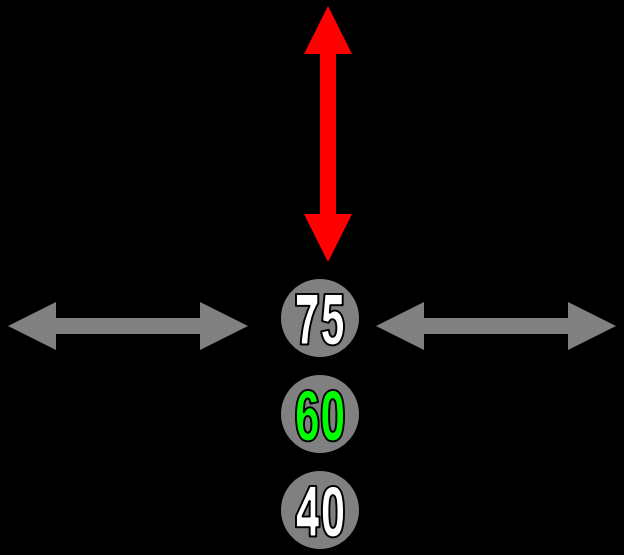

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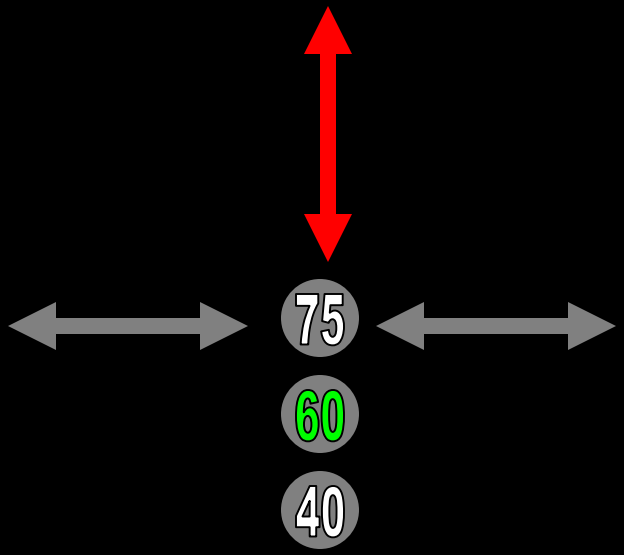
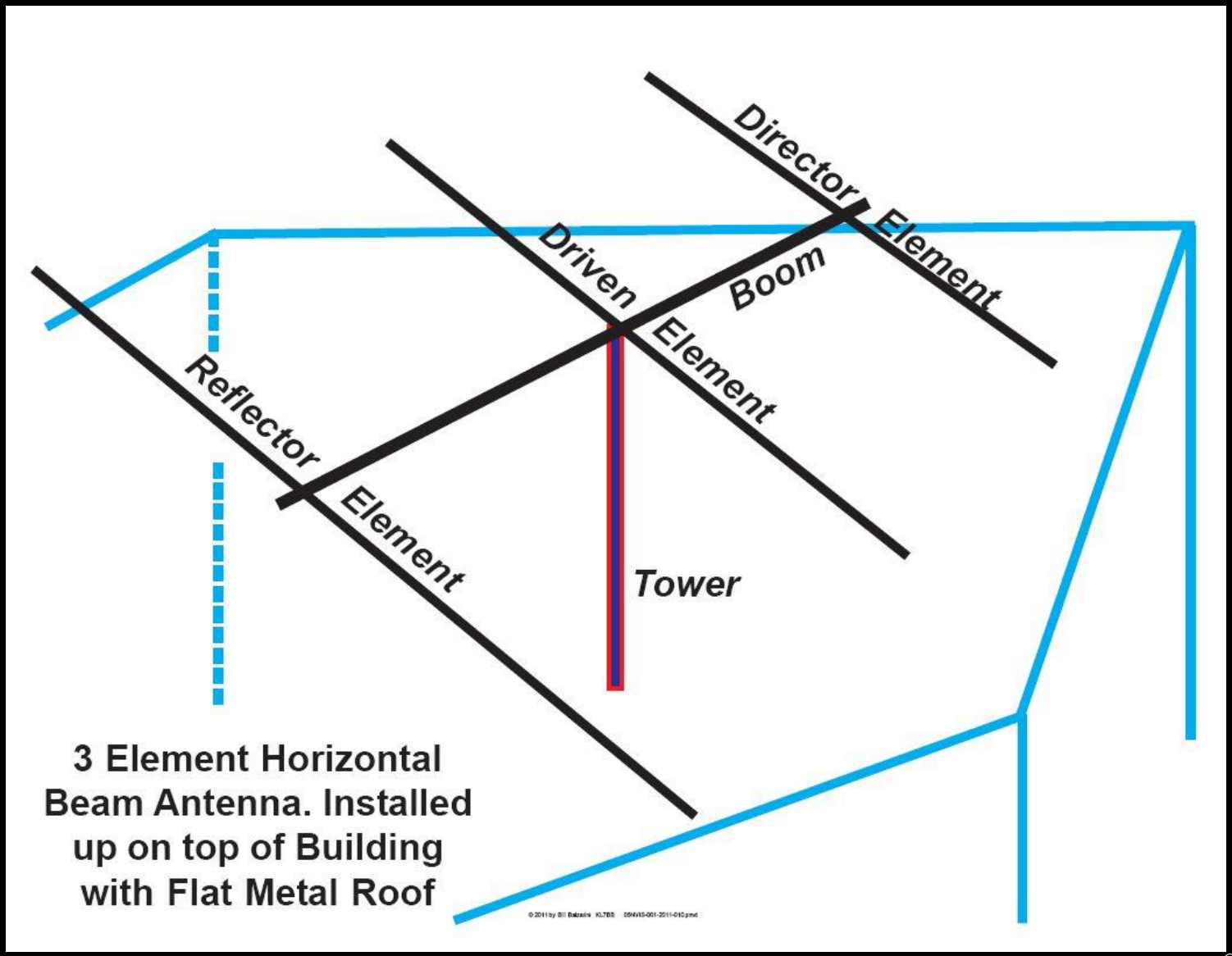


Roof (Metal)

NVIS Antennas



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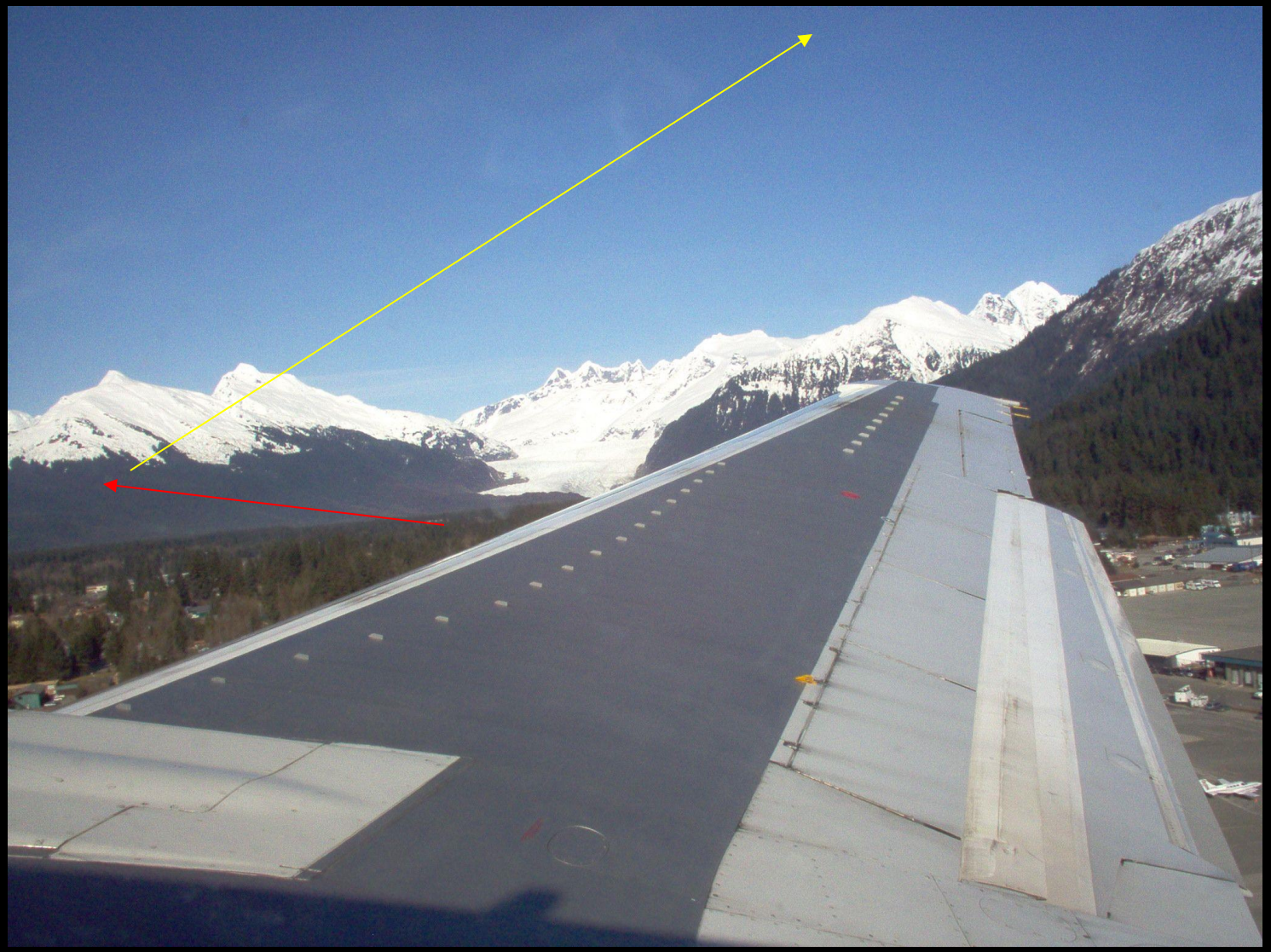

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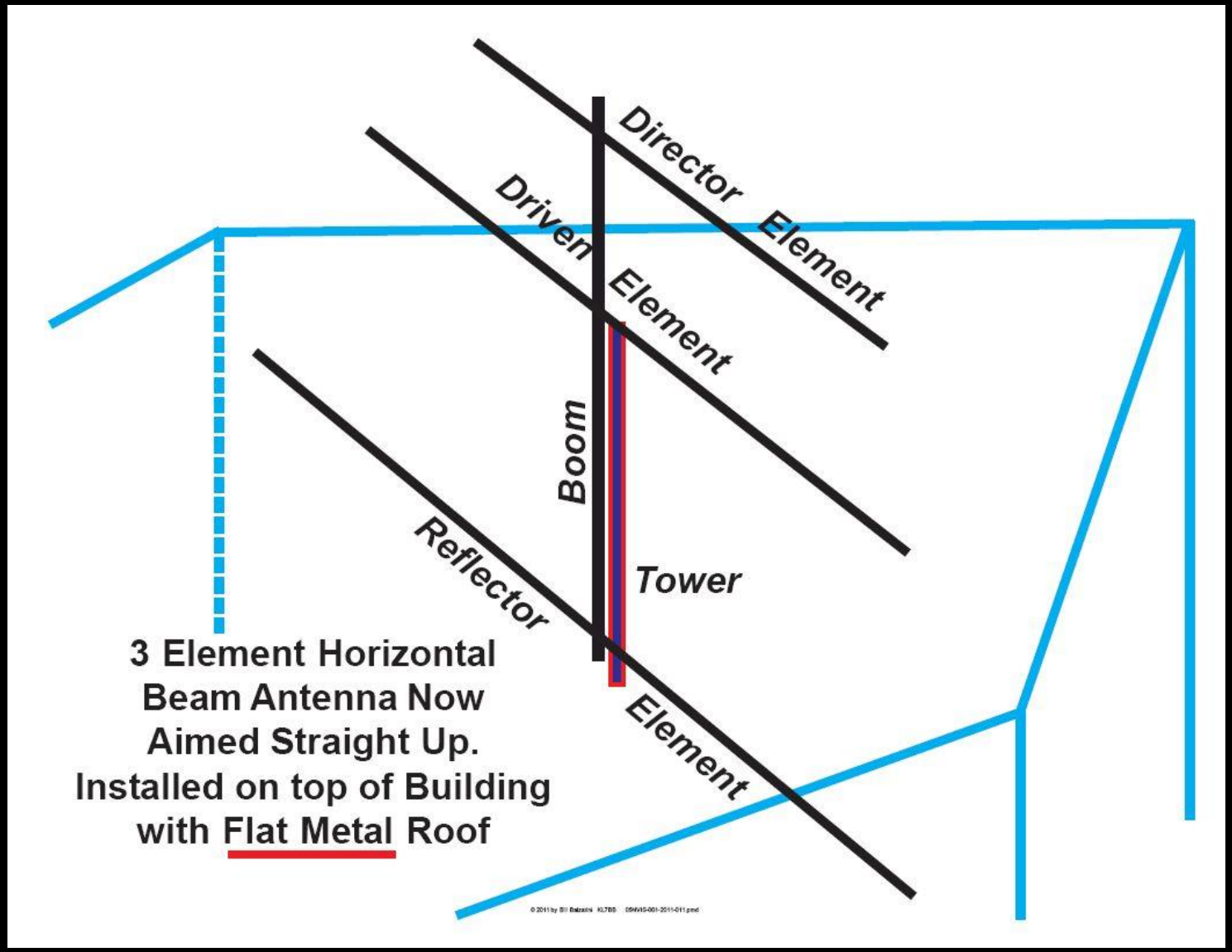

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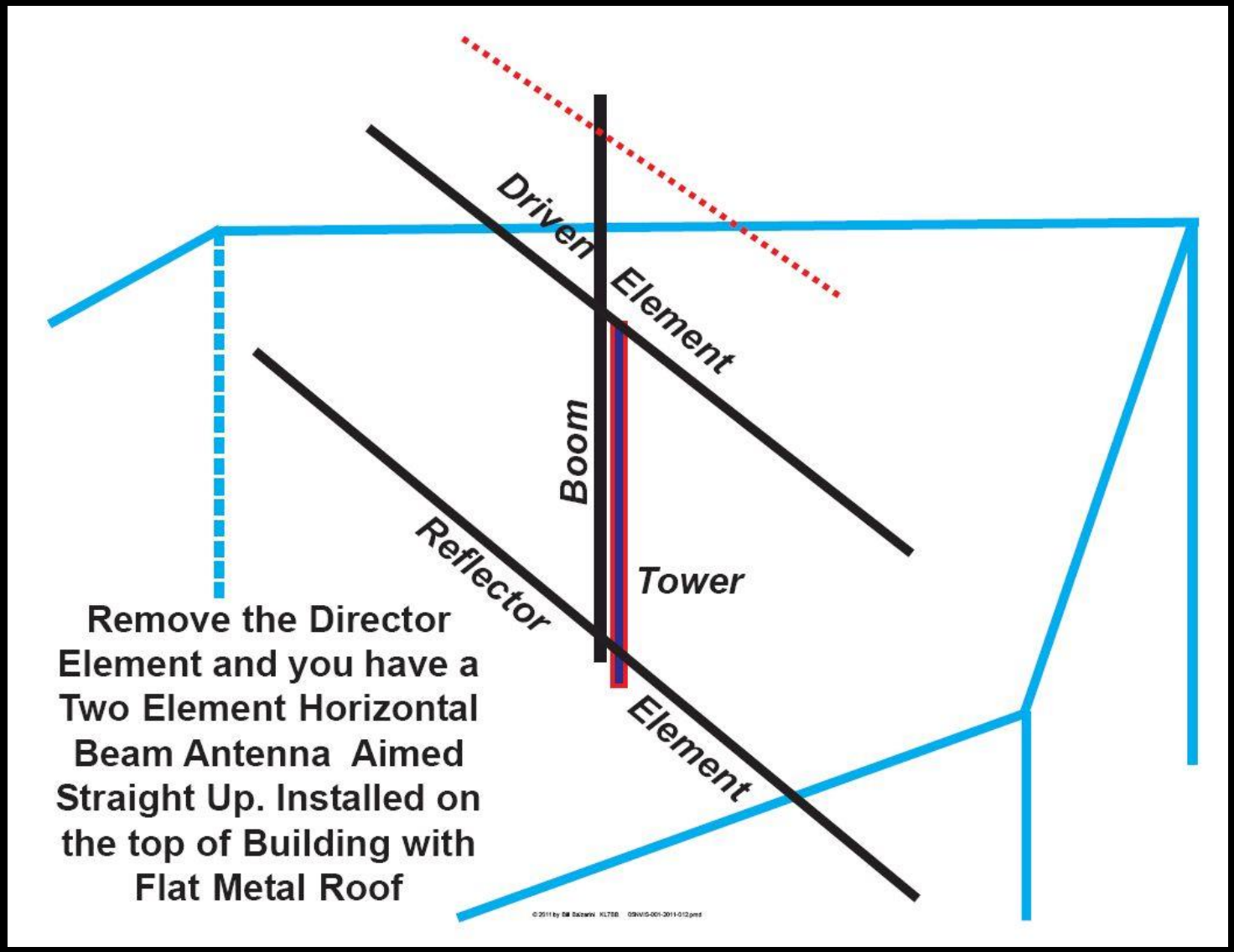

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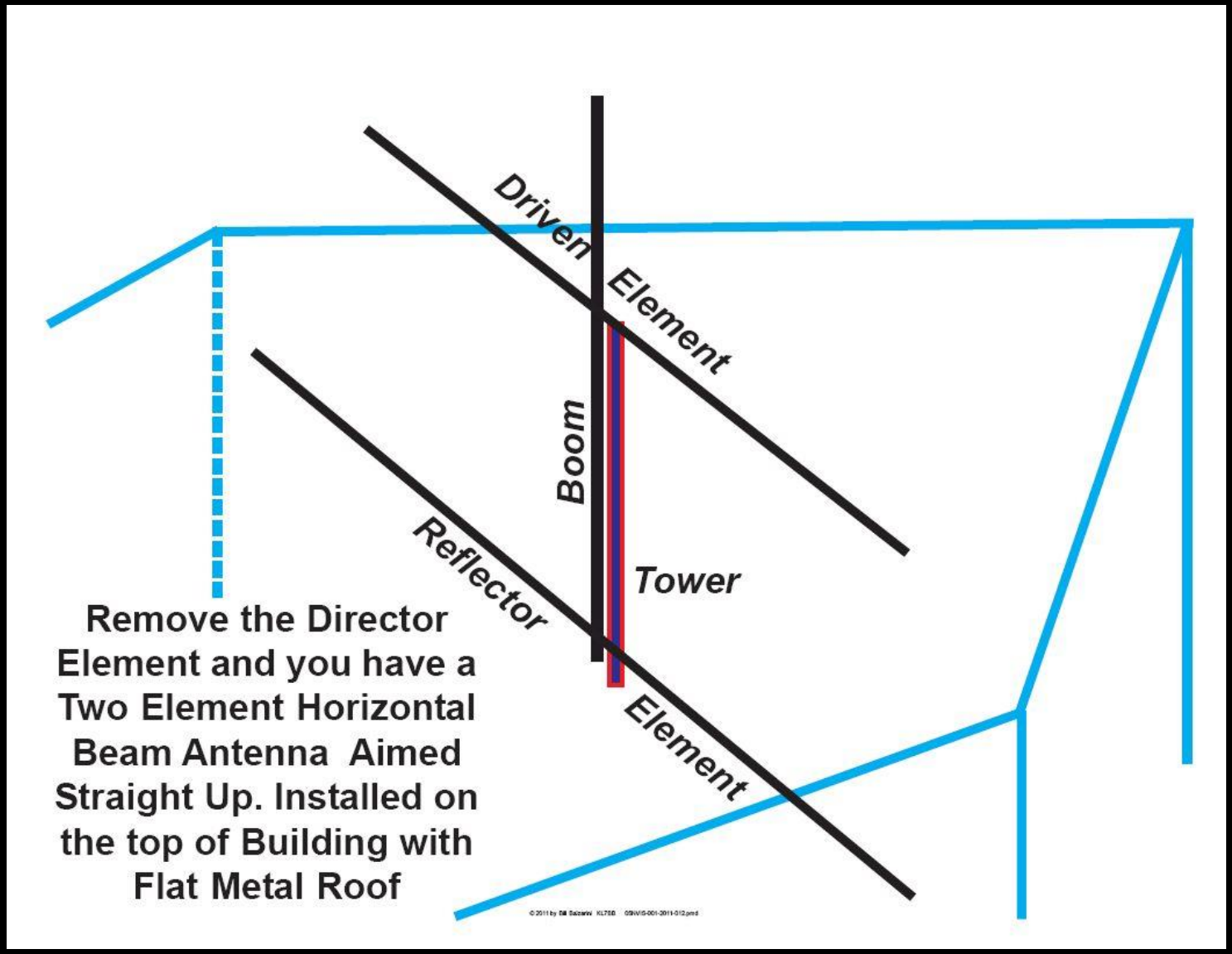

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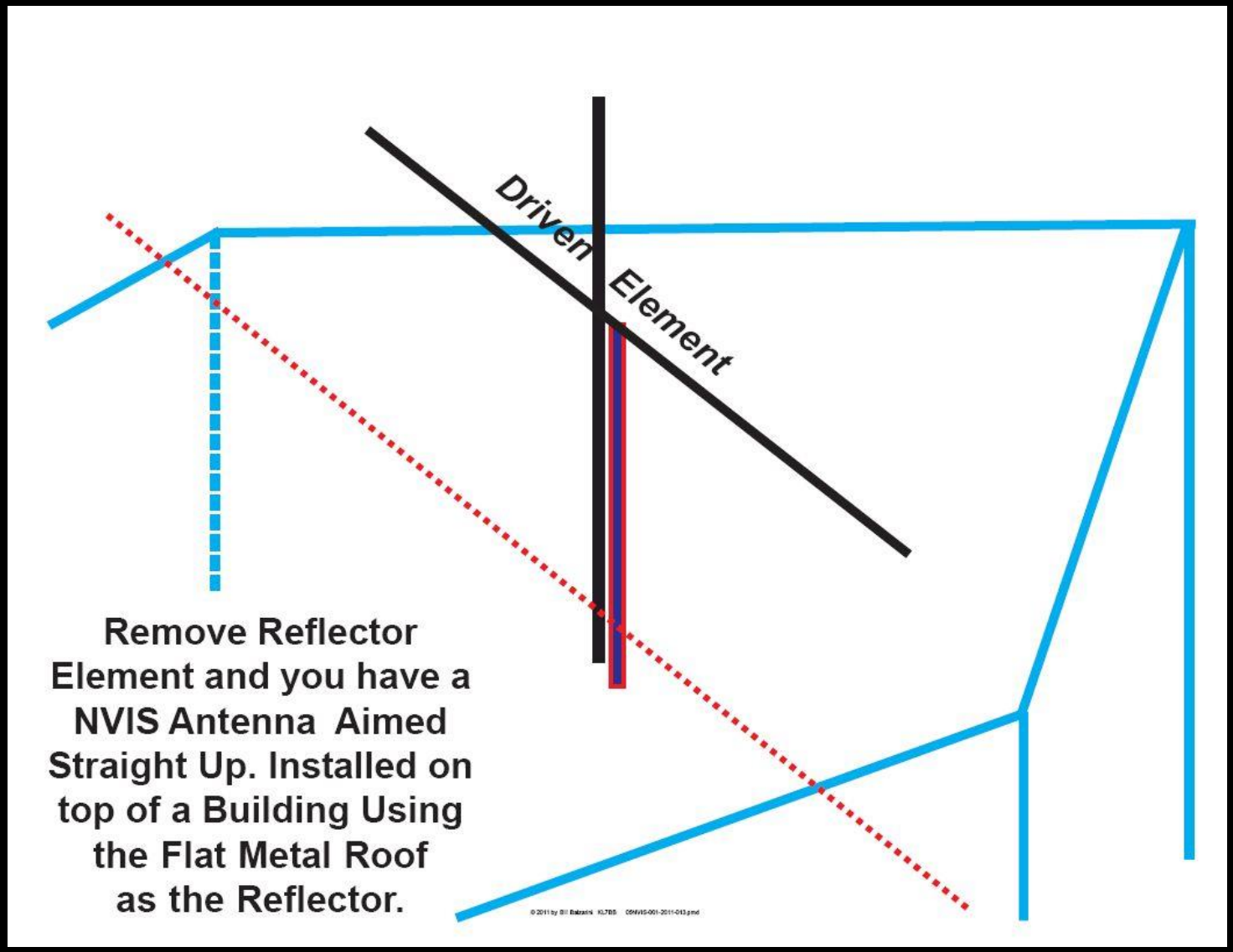
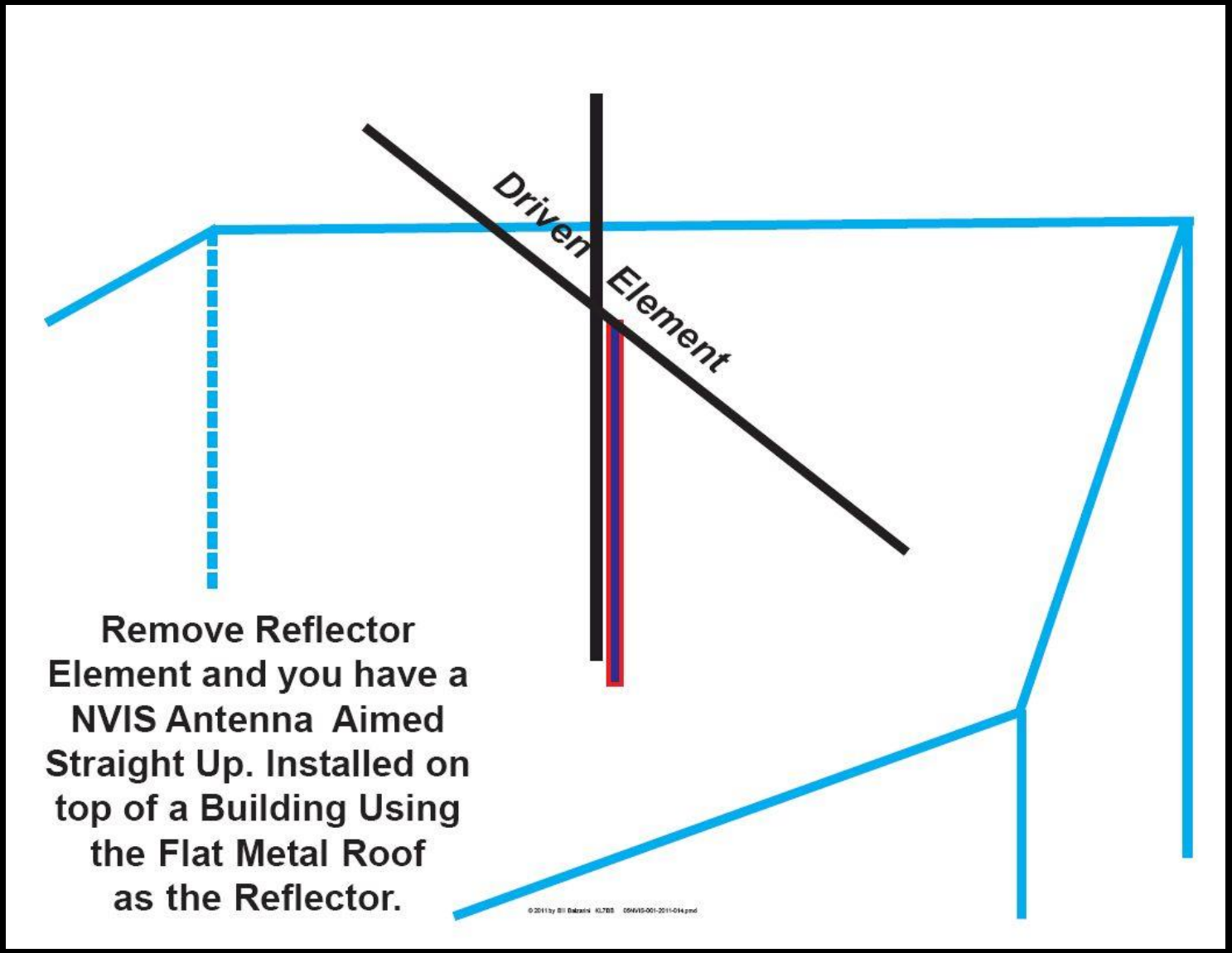
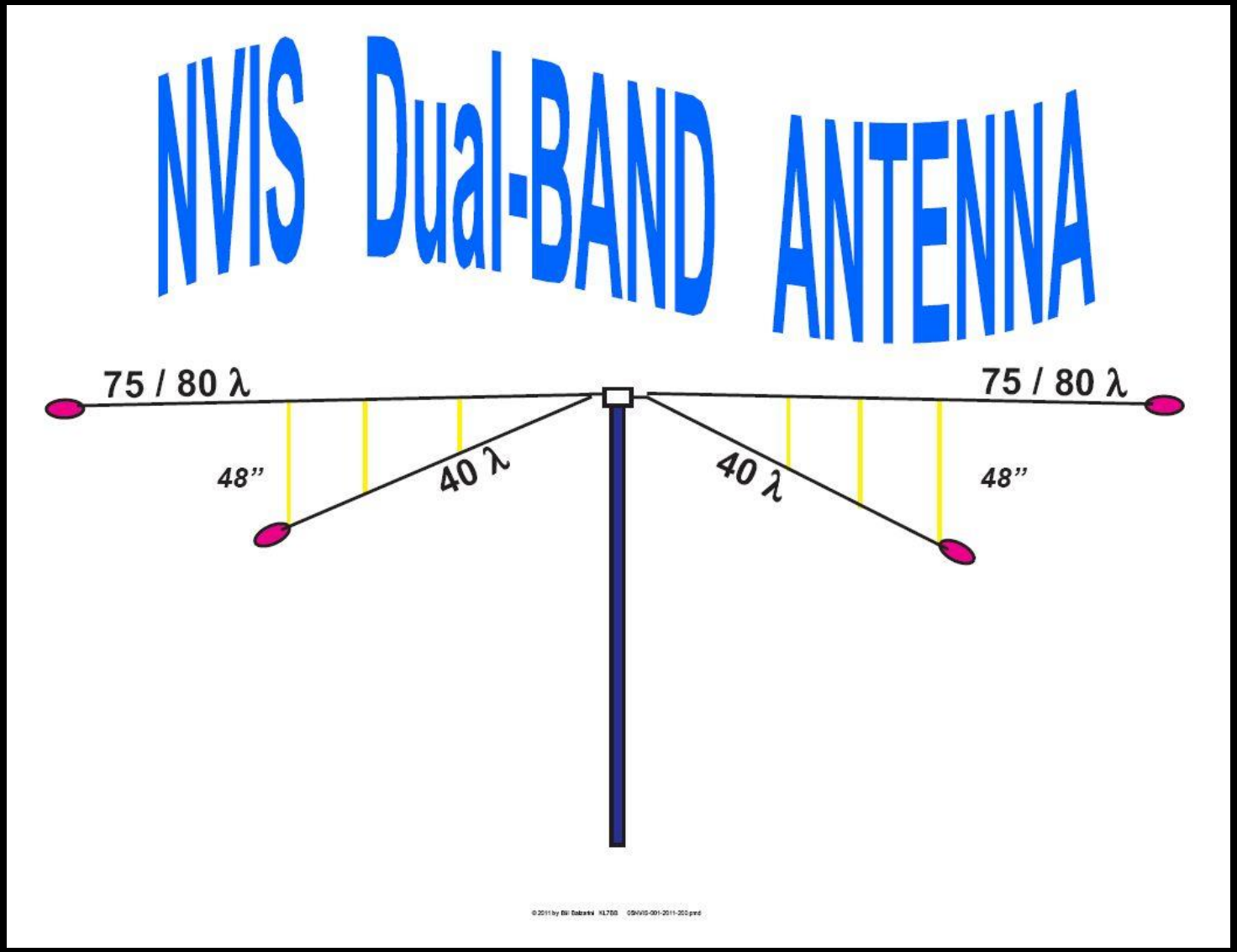


NVIS Antennas

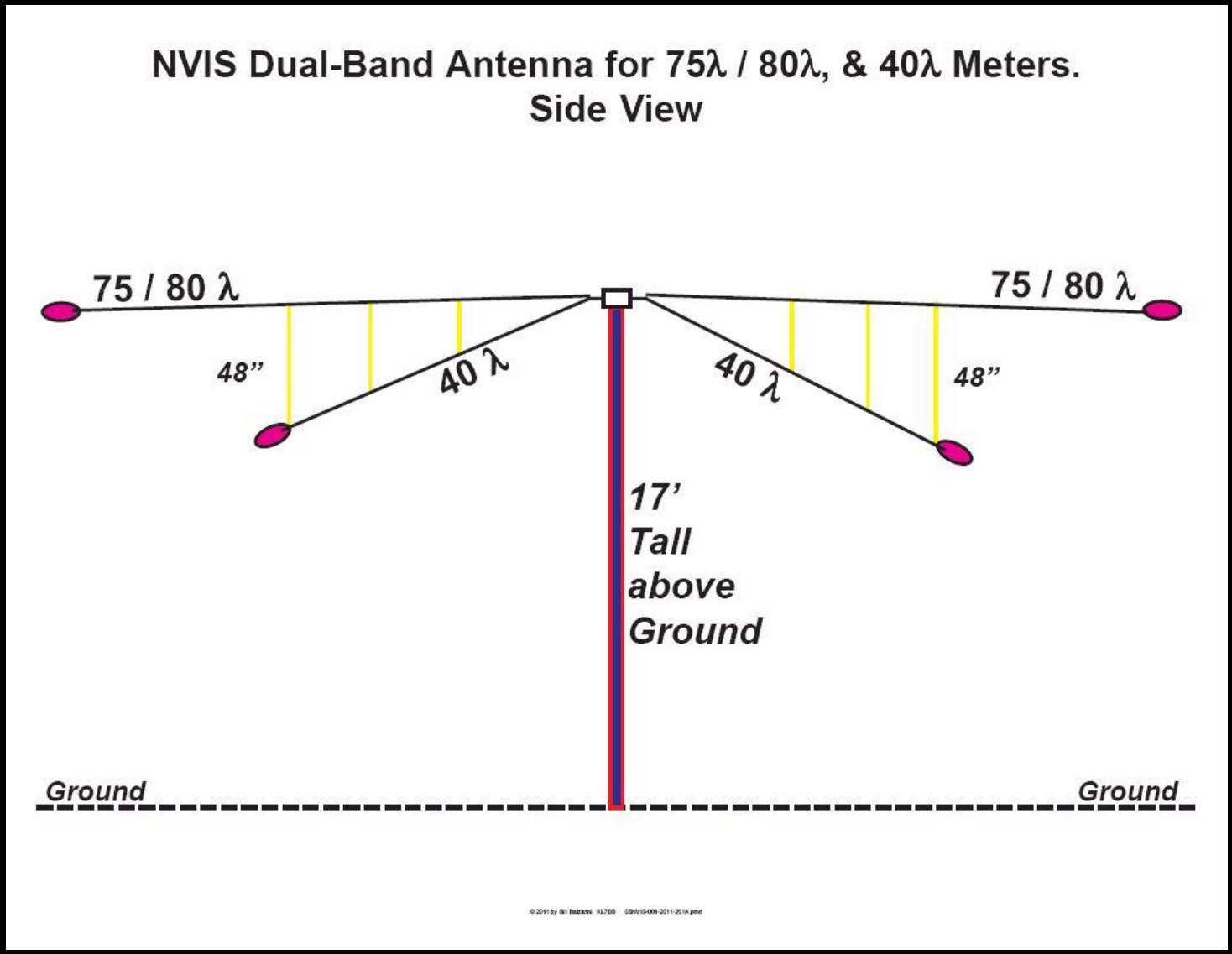


NVIS Antennas



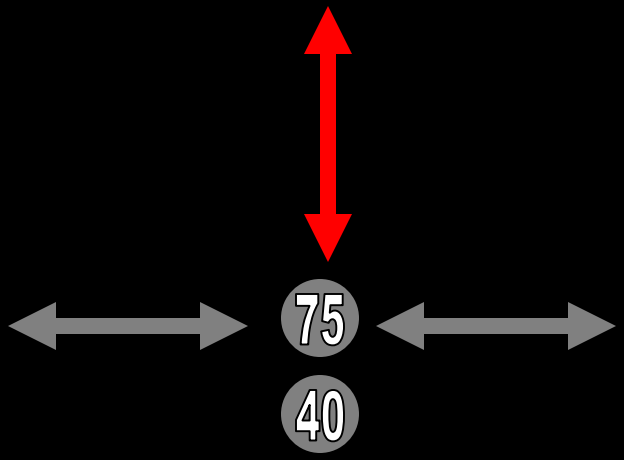
NVIS Antennas

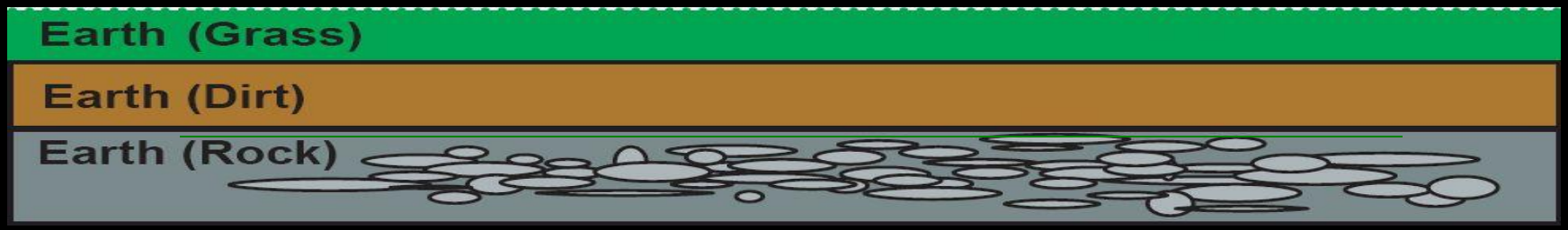
NVIS Antennas



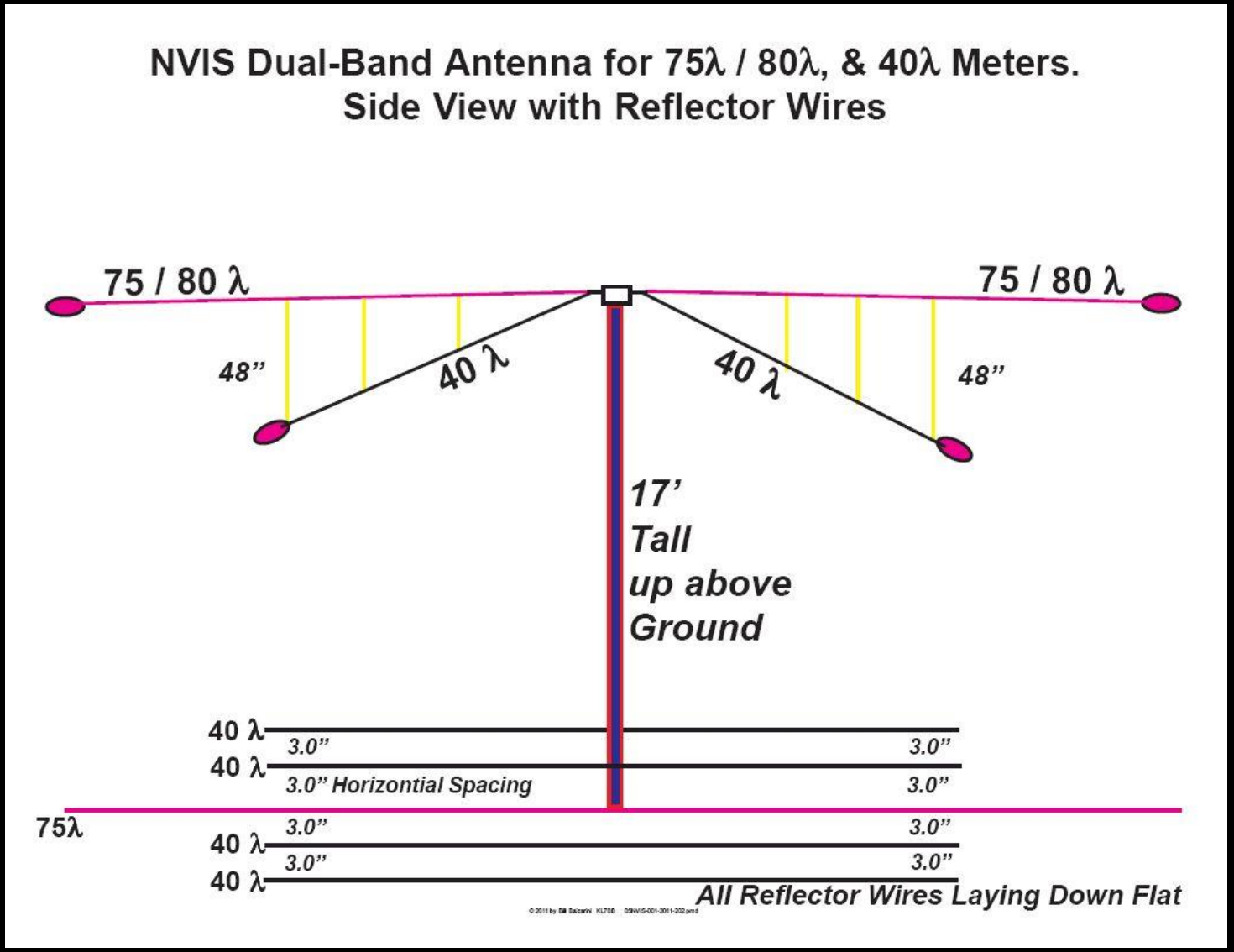
Visualize the RF Field ?

Wire “End View” of NVIS 2 Band Antenna and RF Field



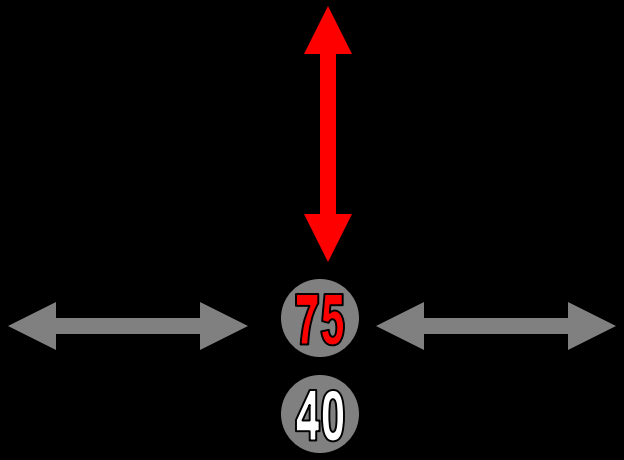


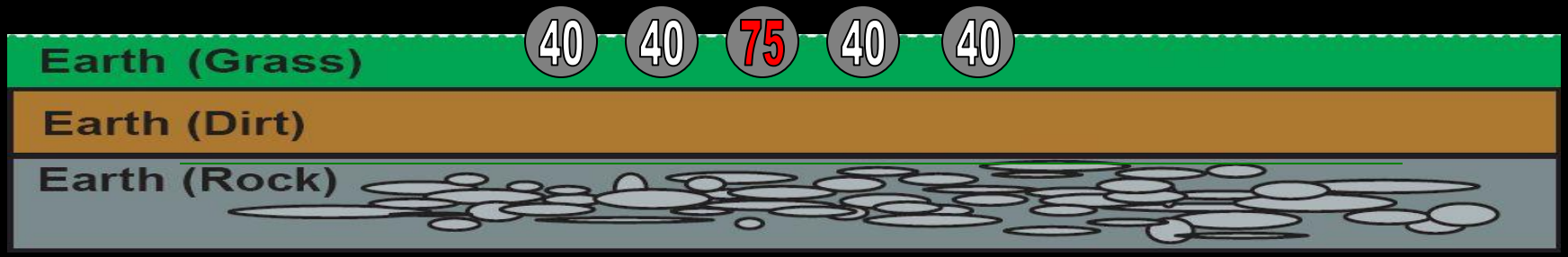
NVIS Antennas



Visualize the RF Field ?

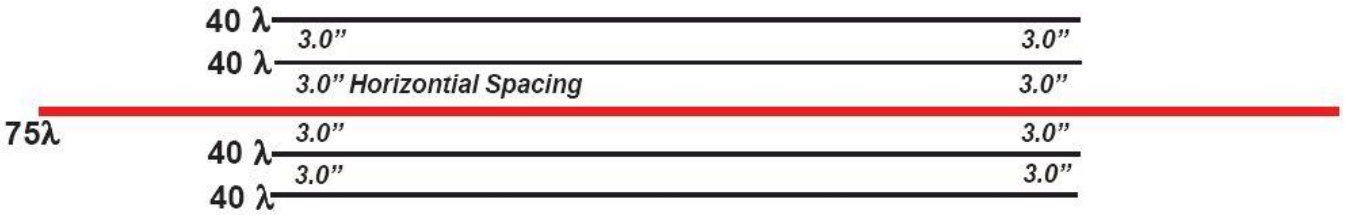
Wire “End View” of NVIS 2 Band Antenna and RF Field





NVIS Antennas

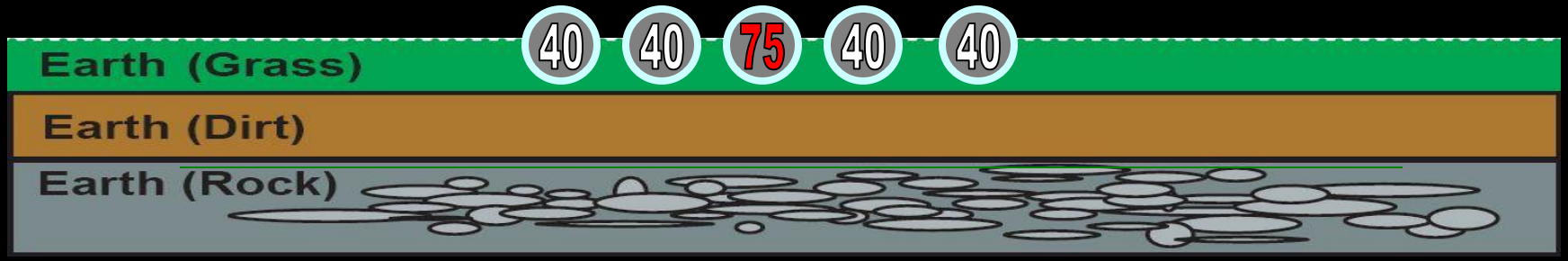
NVIS Dual-Band Antenna for 75λ / 80λ, & 40λ Meters.
Top Down View of Reflector Wires.



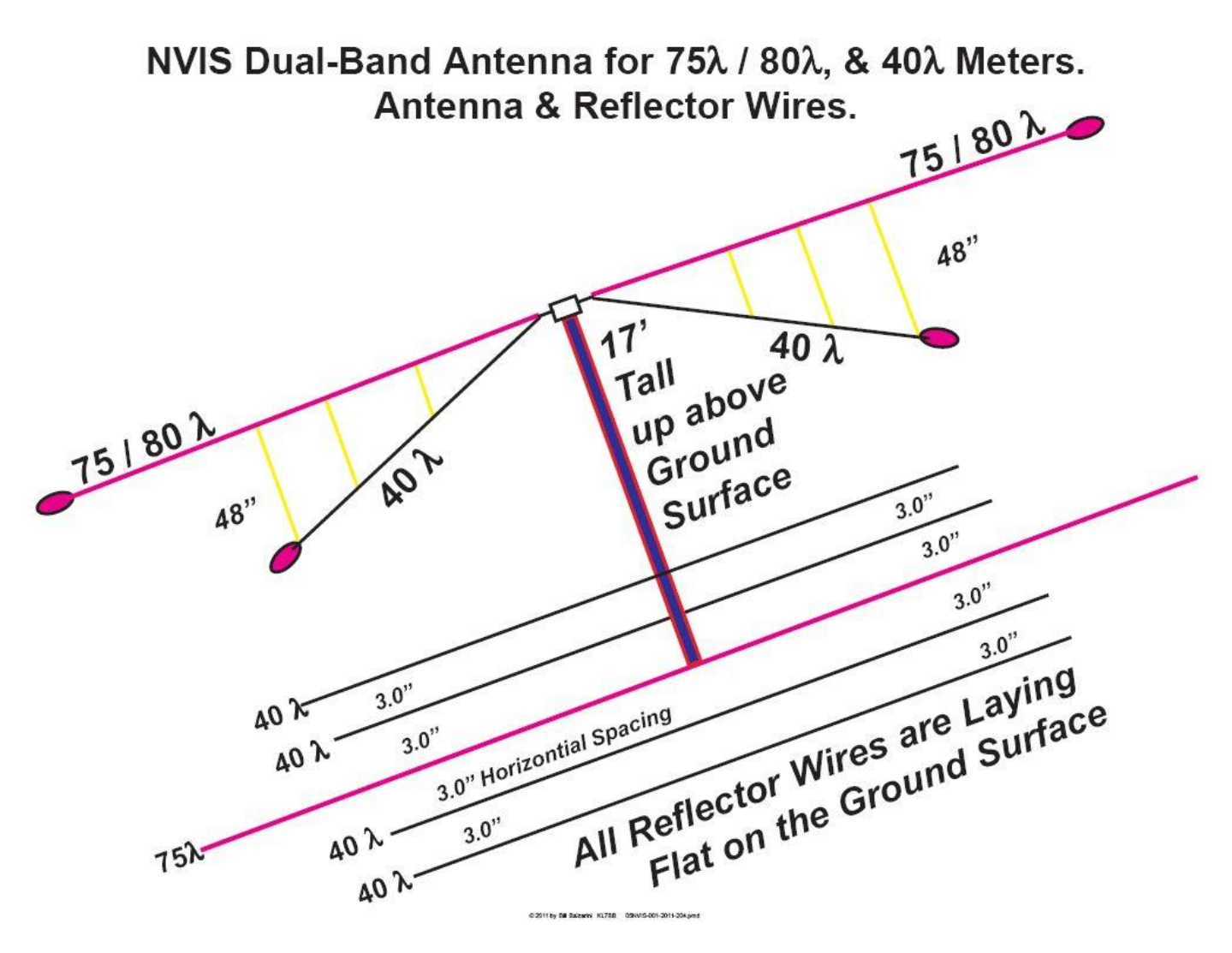
All Reflector Wires are Laying Down Flat on the Ground Surface

Visualize the RF Field ?

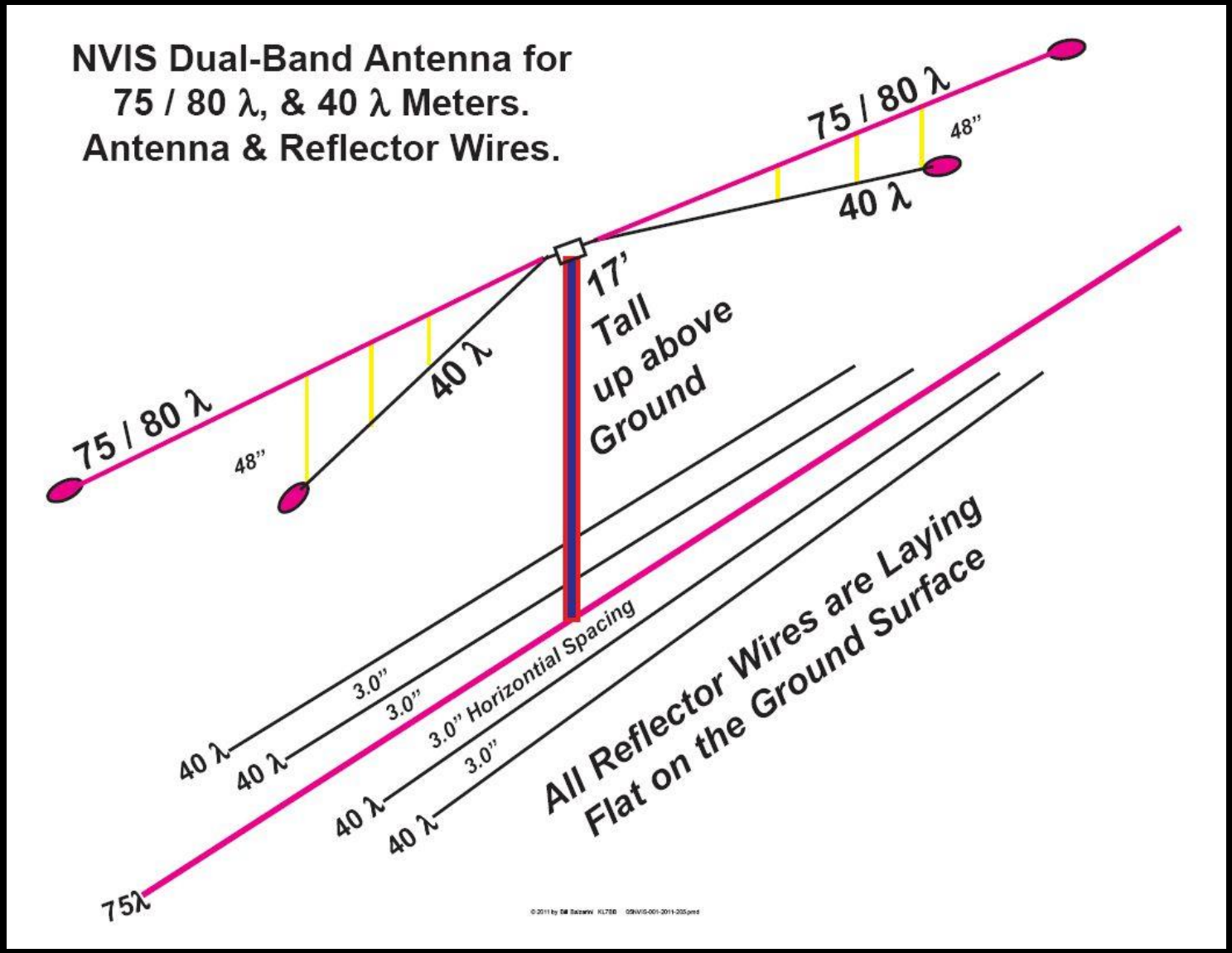
Wire “End View” of NVIS Reflectors



NVIS Antennas



NVIS Antennas



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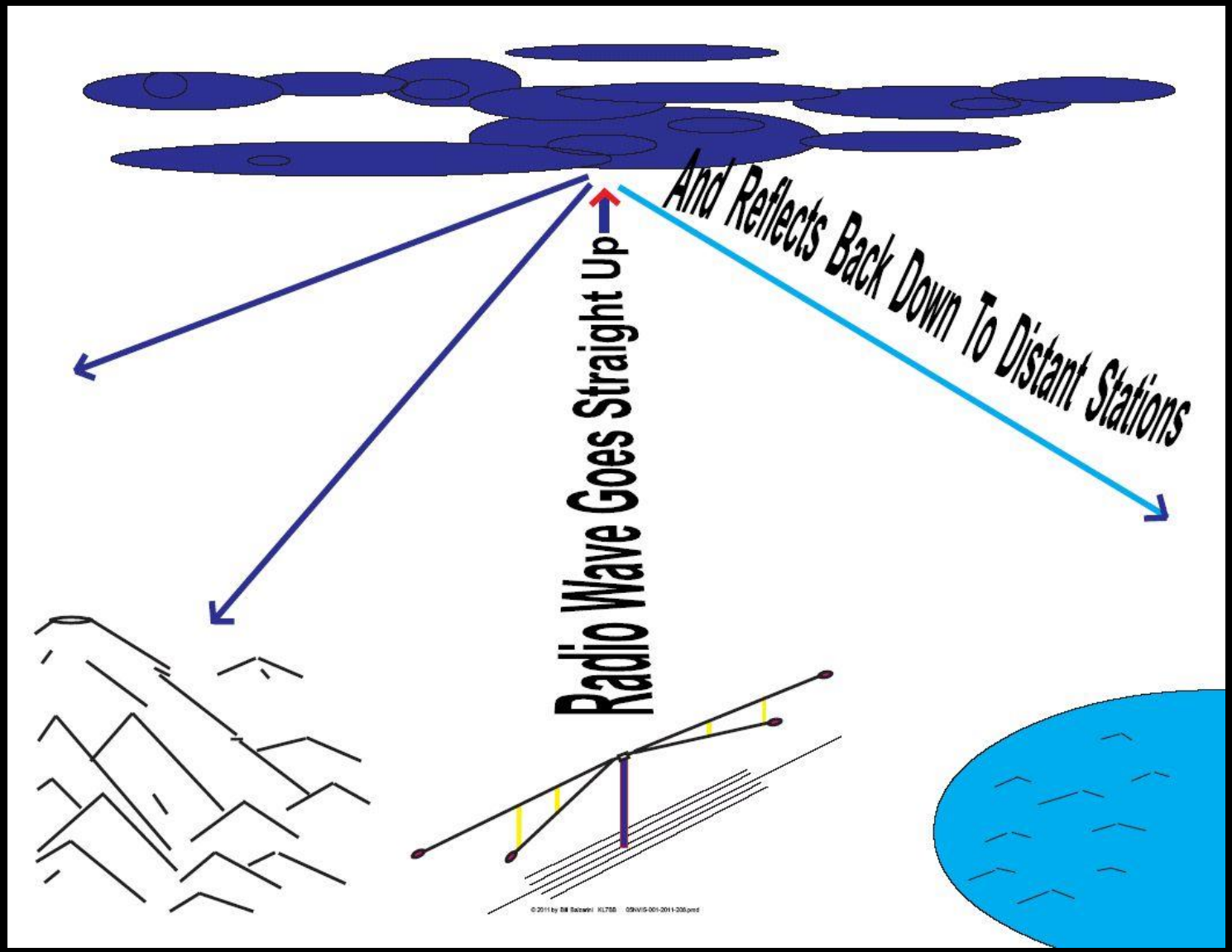
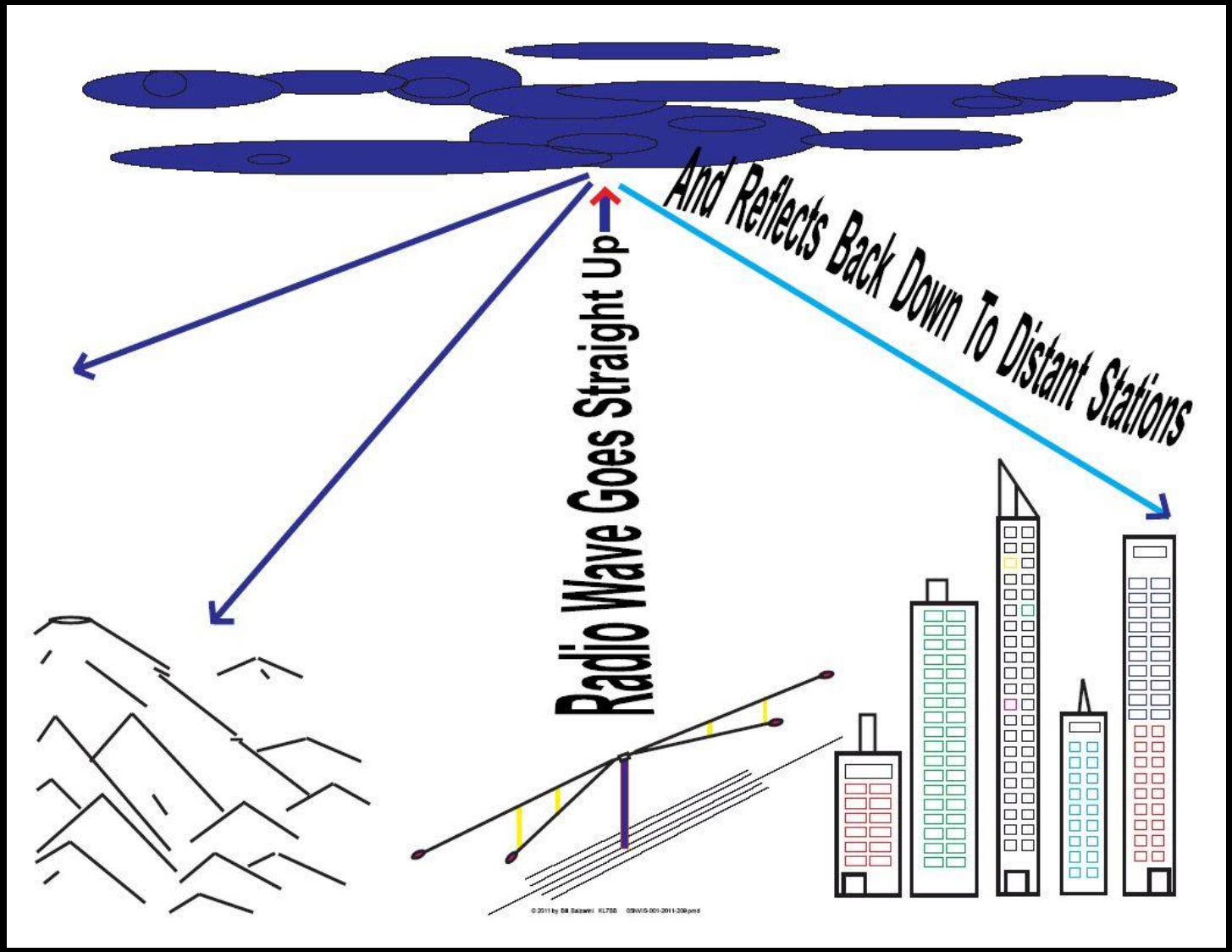


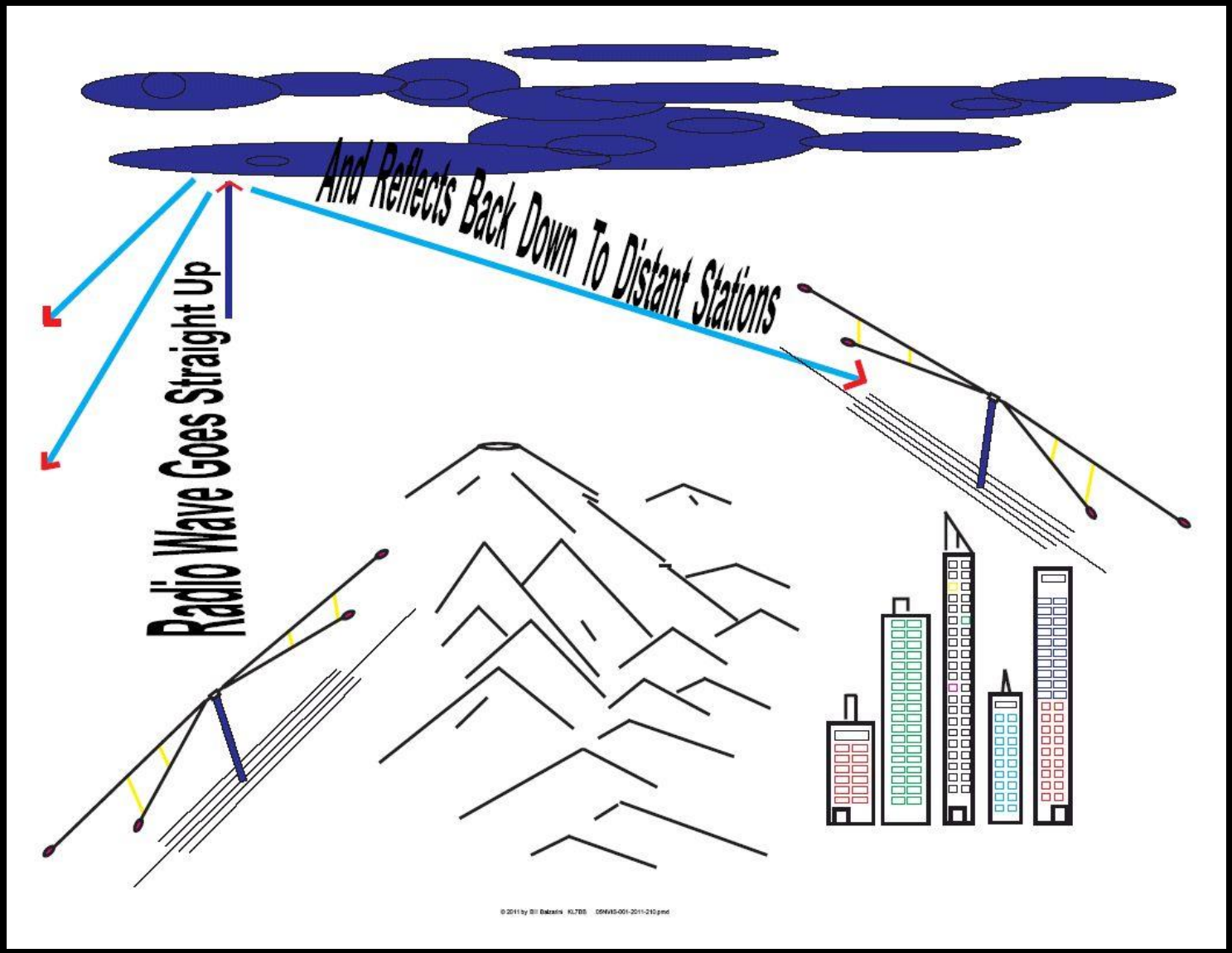
NVIS Antennas

NVIS Antennas

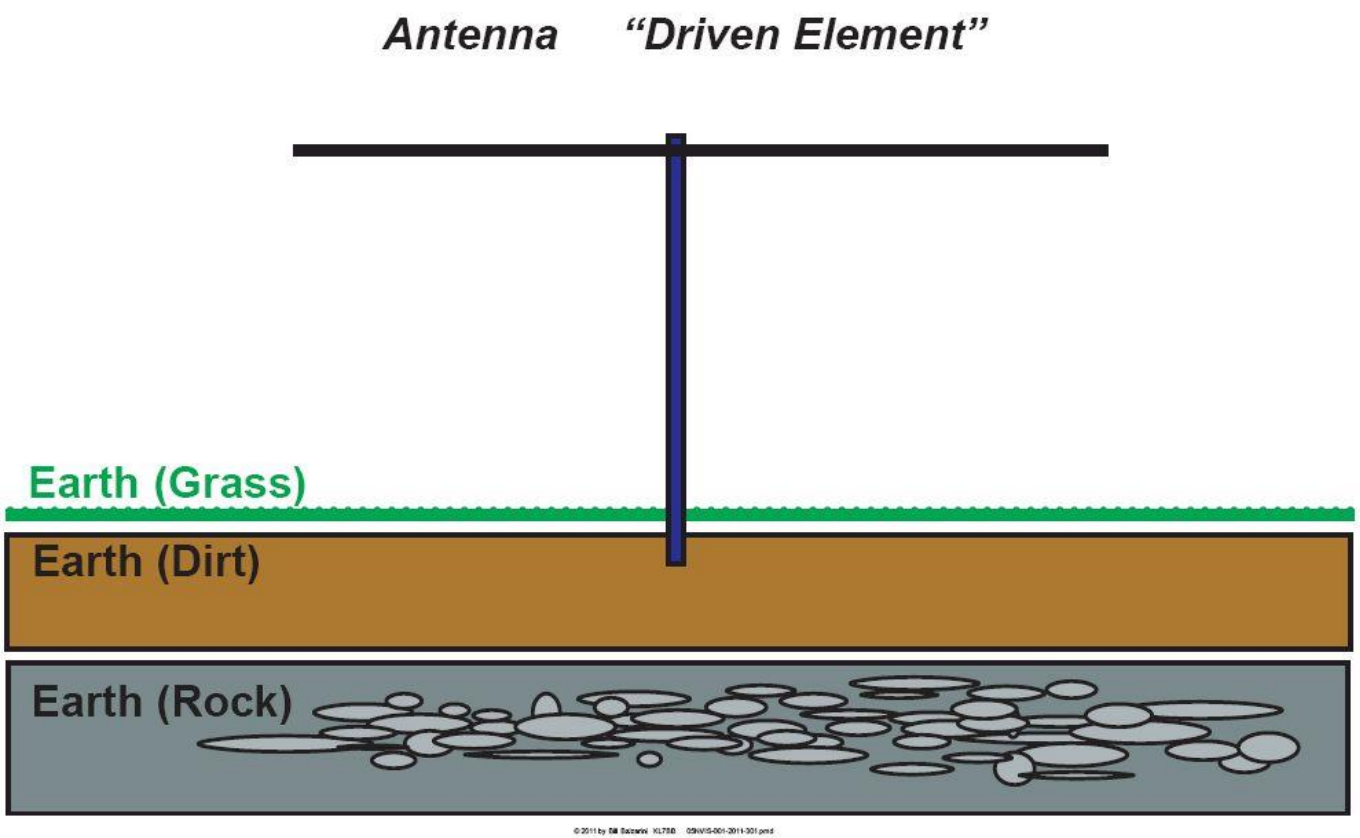


NVIS Antennas

NVIS Antennas

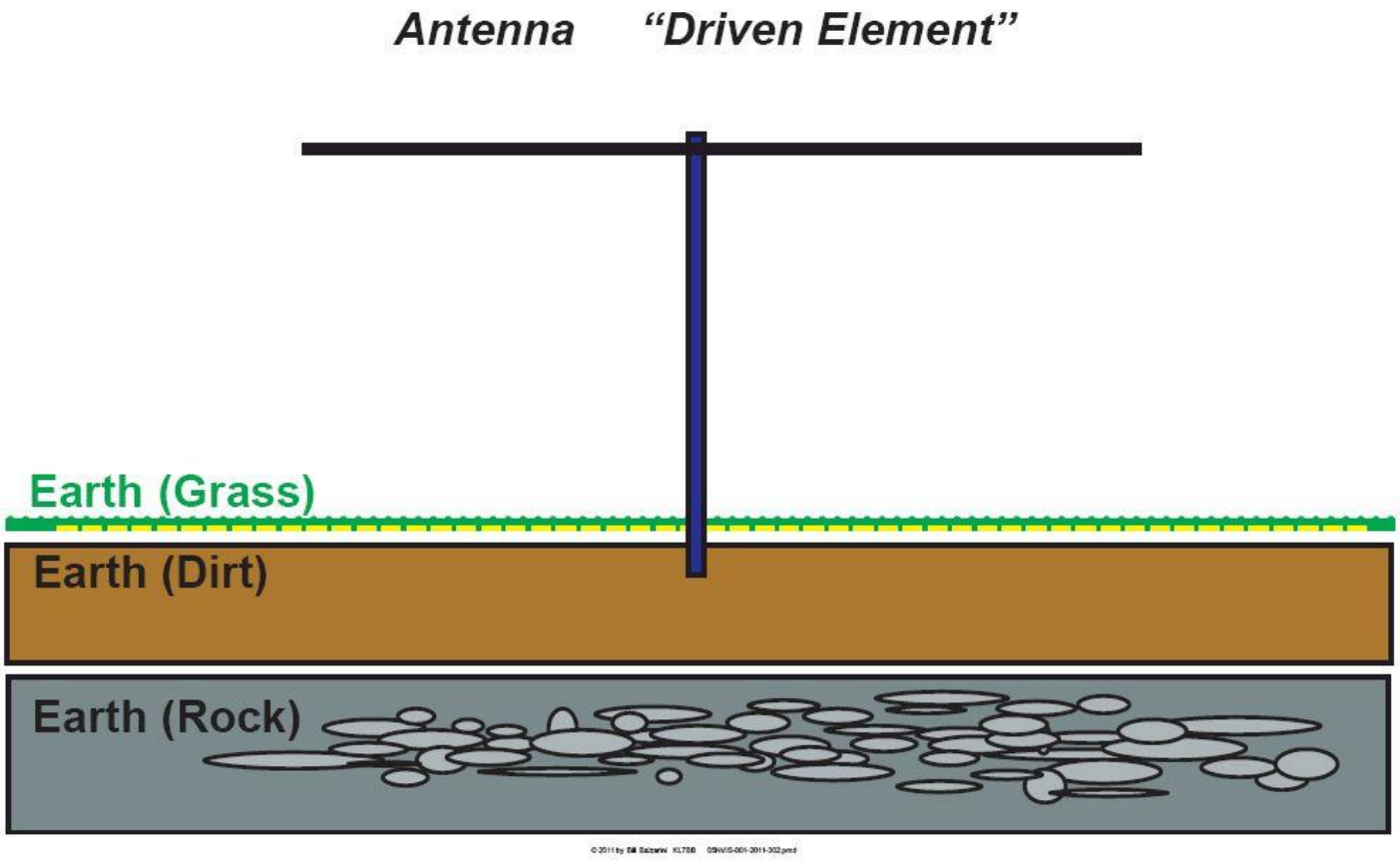


NVIS Antennas



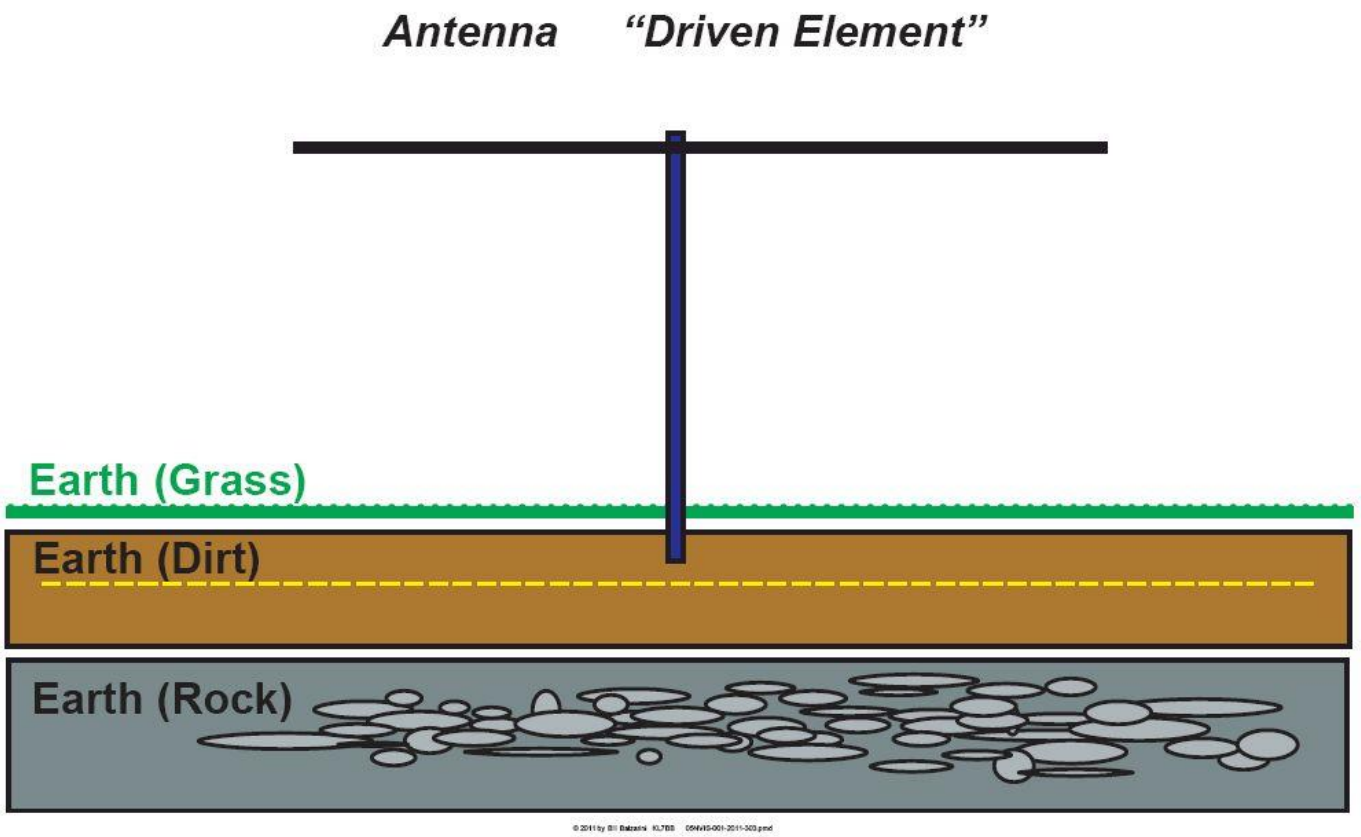
NVIS Antennas

Antenna "Reflector" Could Be The Grass Layer if Really Wet.



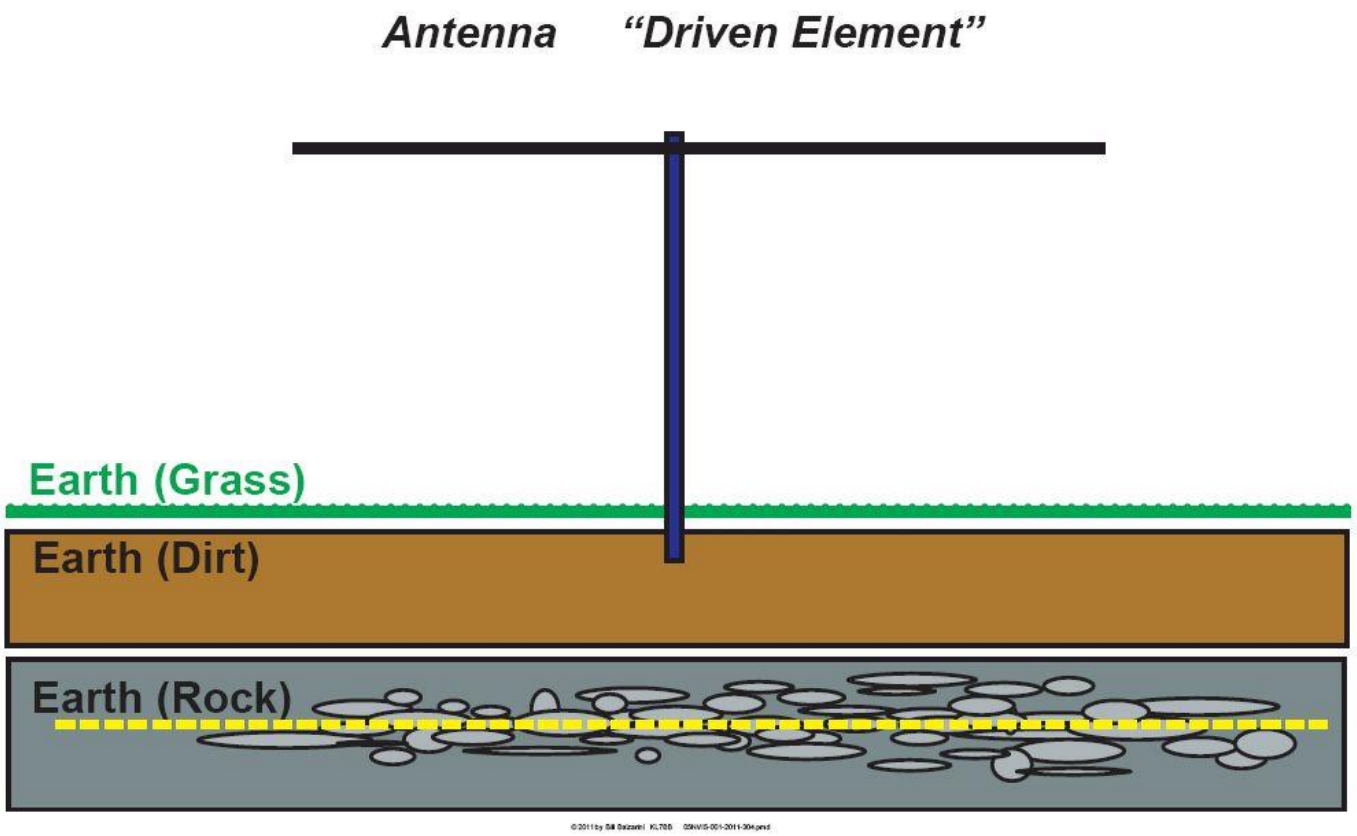
NVIS Antennas

Antenna "Reflector" Could Be The Dirt Layer, if Really Wet.



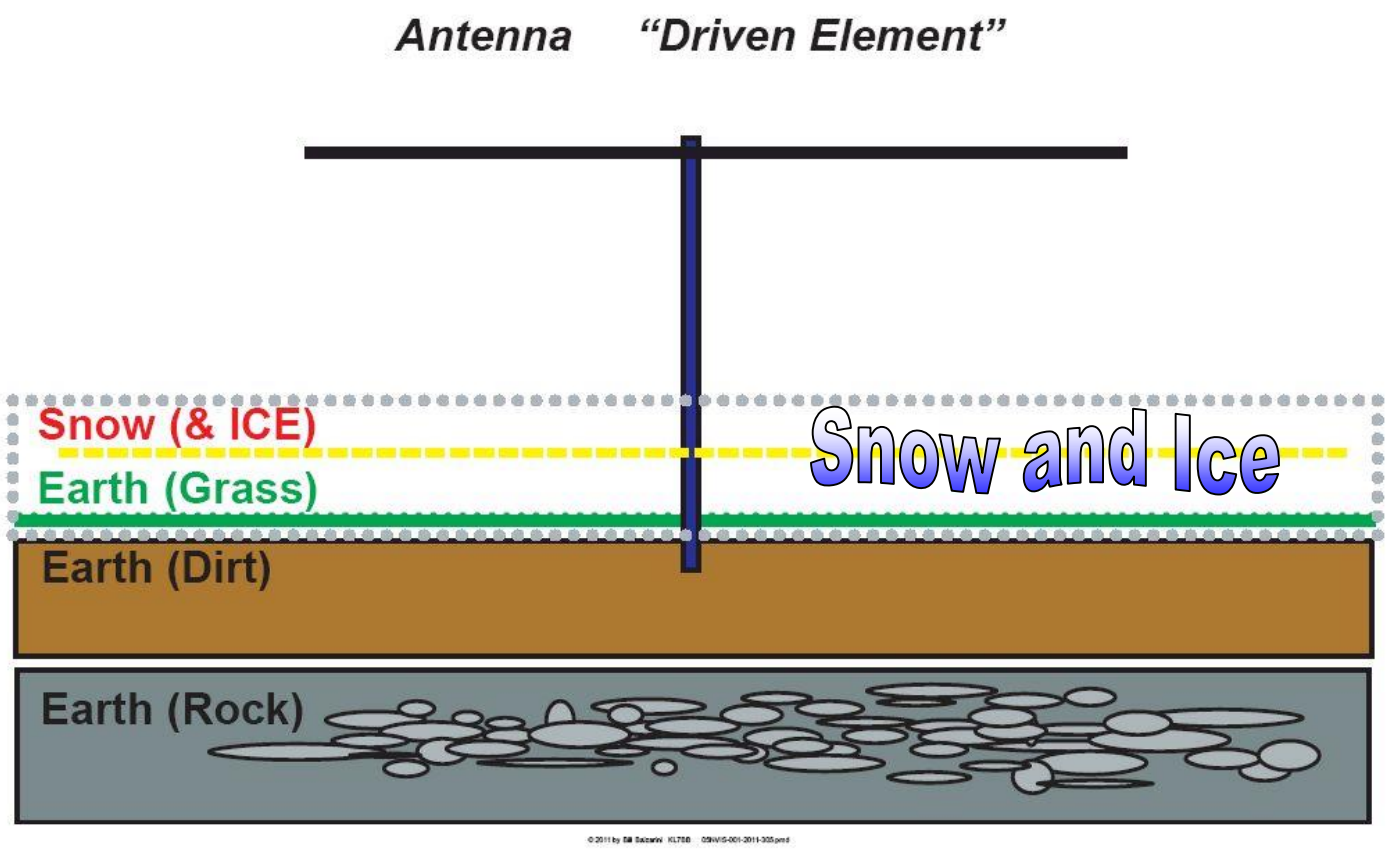
NVIS Antennas

Antenna "Reflector" Could Be The Rock Layer, if Right Material.

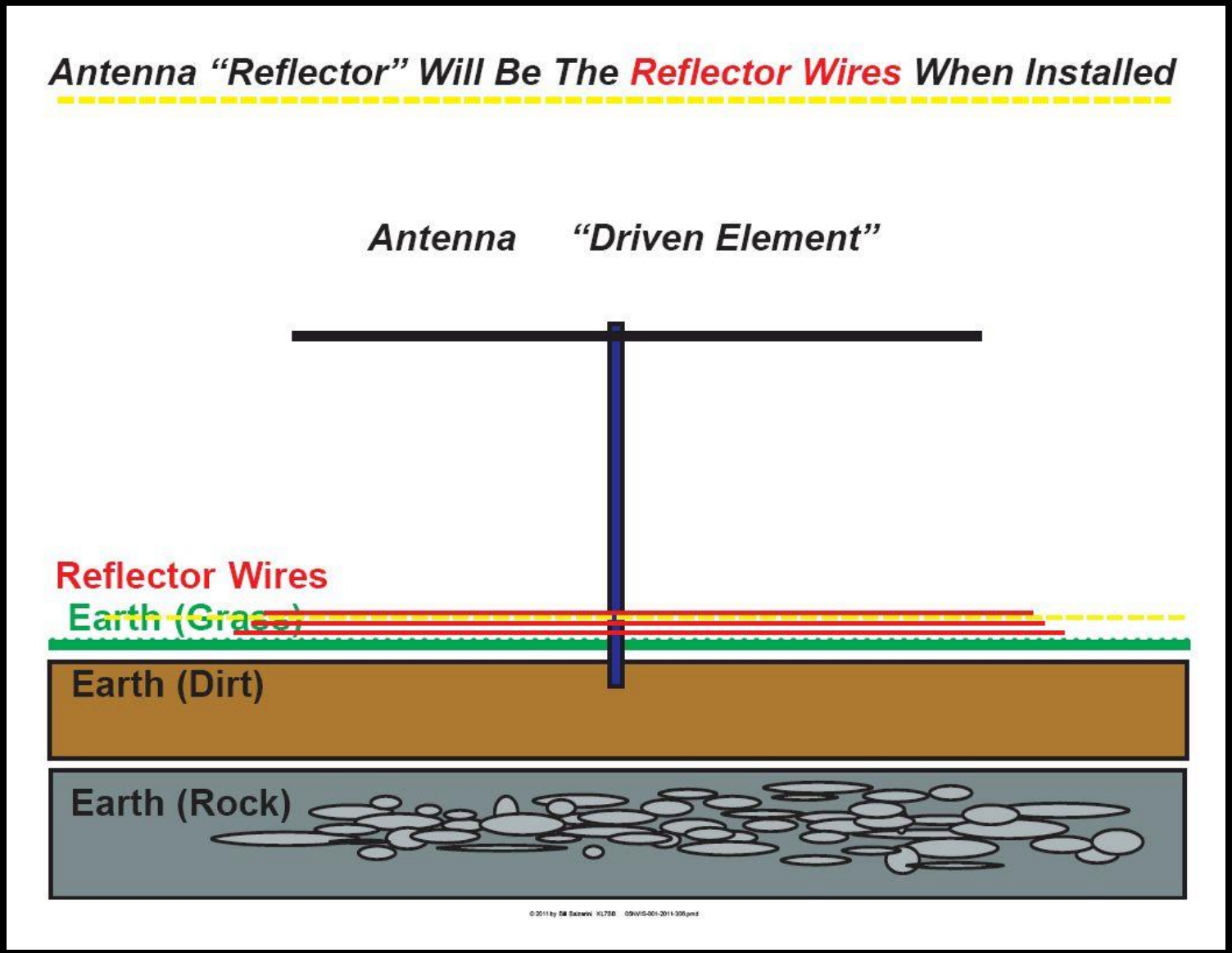


NVIS Antennas

Antenna "Reflector" Could Be The Snow & ICE, Layer.

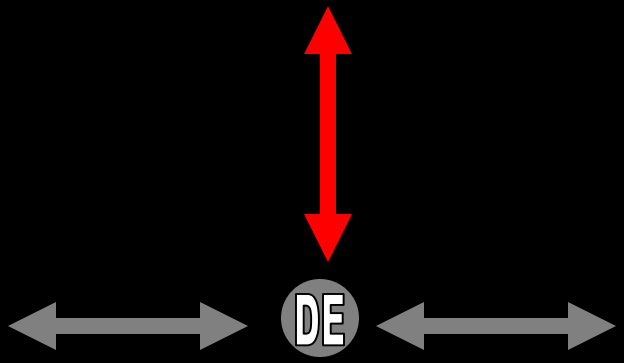


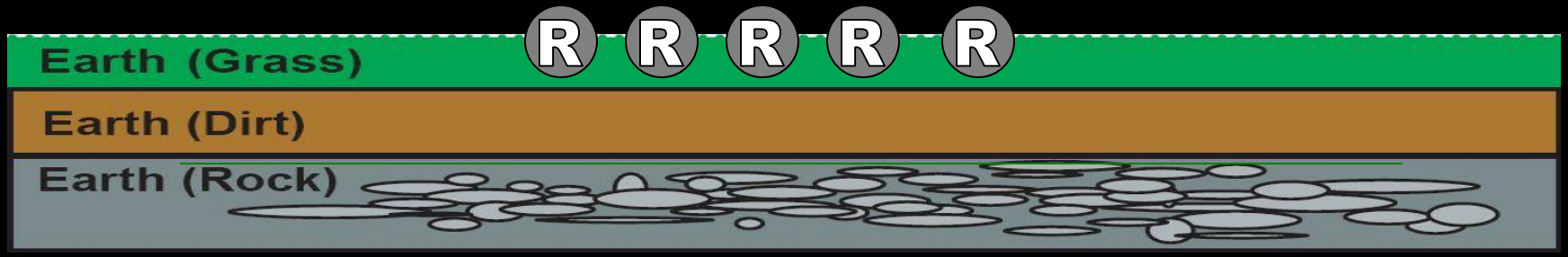
NVIS Antennas



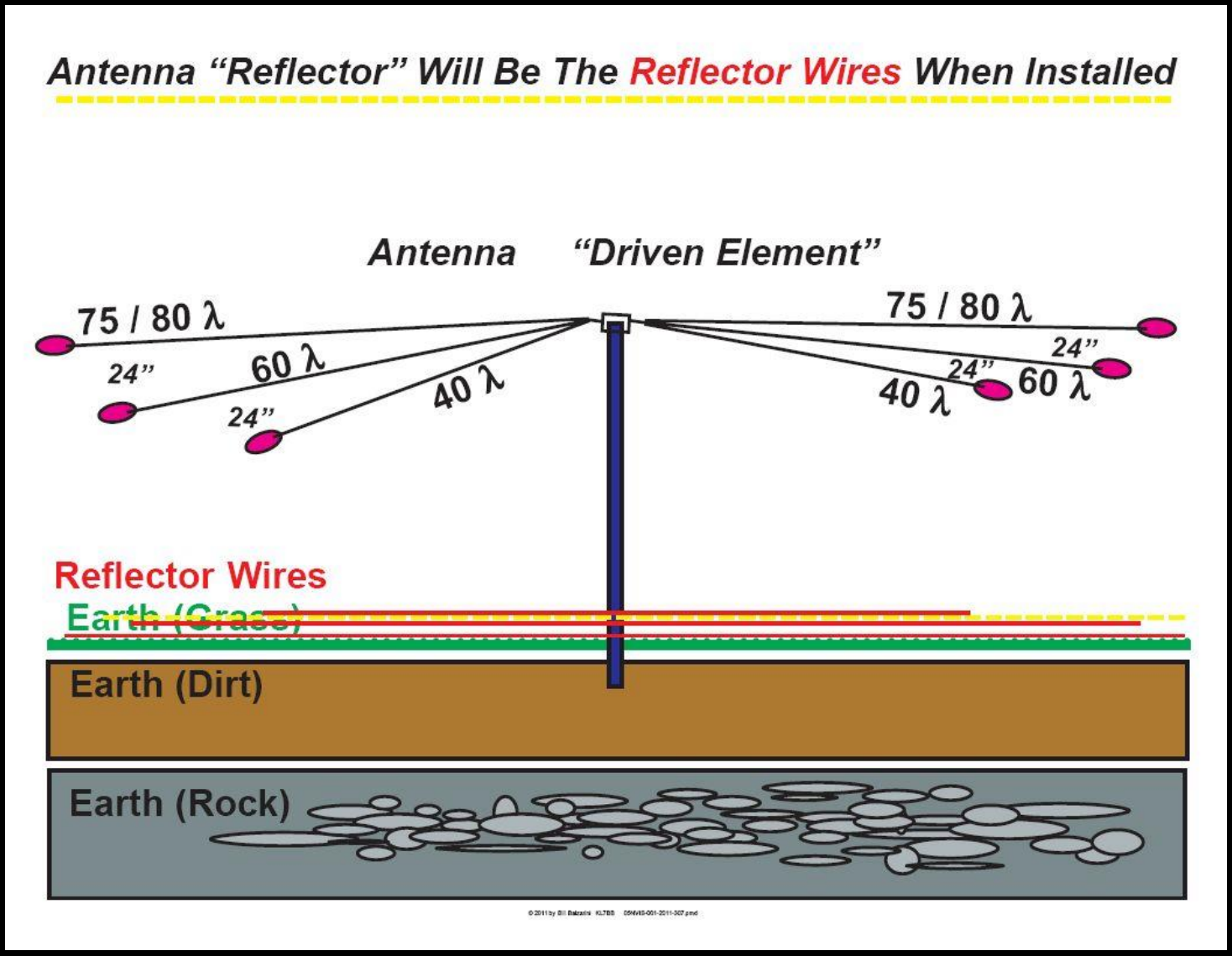
Visualize the RF Field ?

Wire “End View” of NVIS Antenna and RF Field



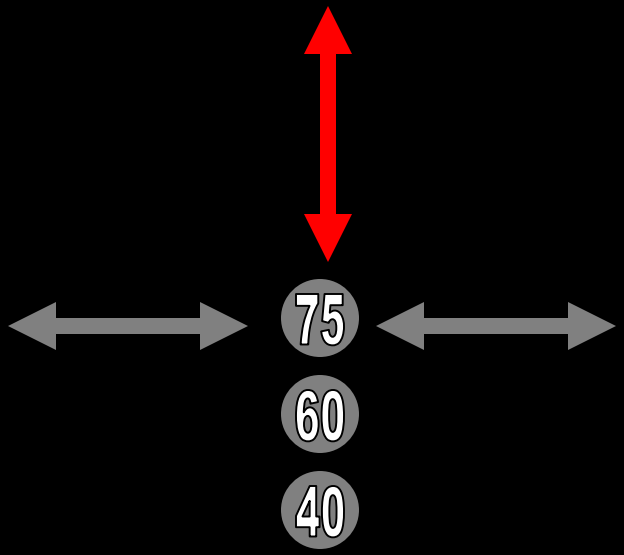


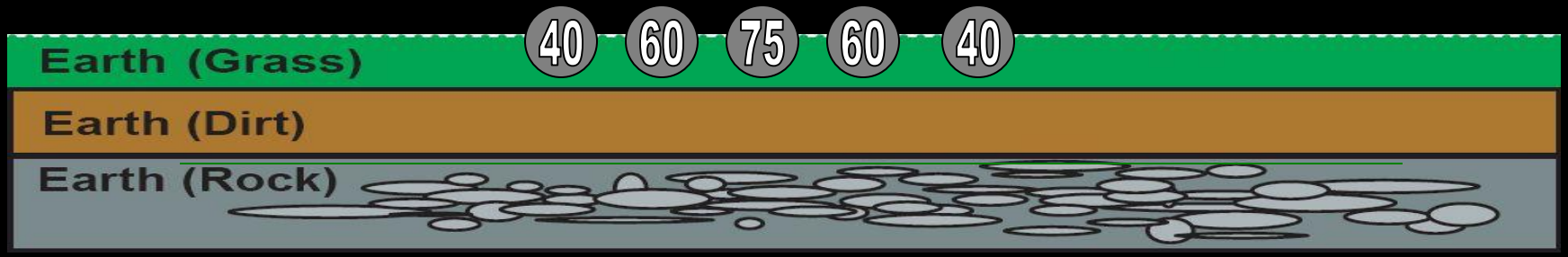
NVIS Antennas



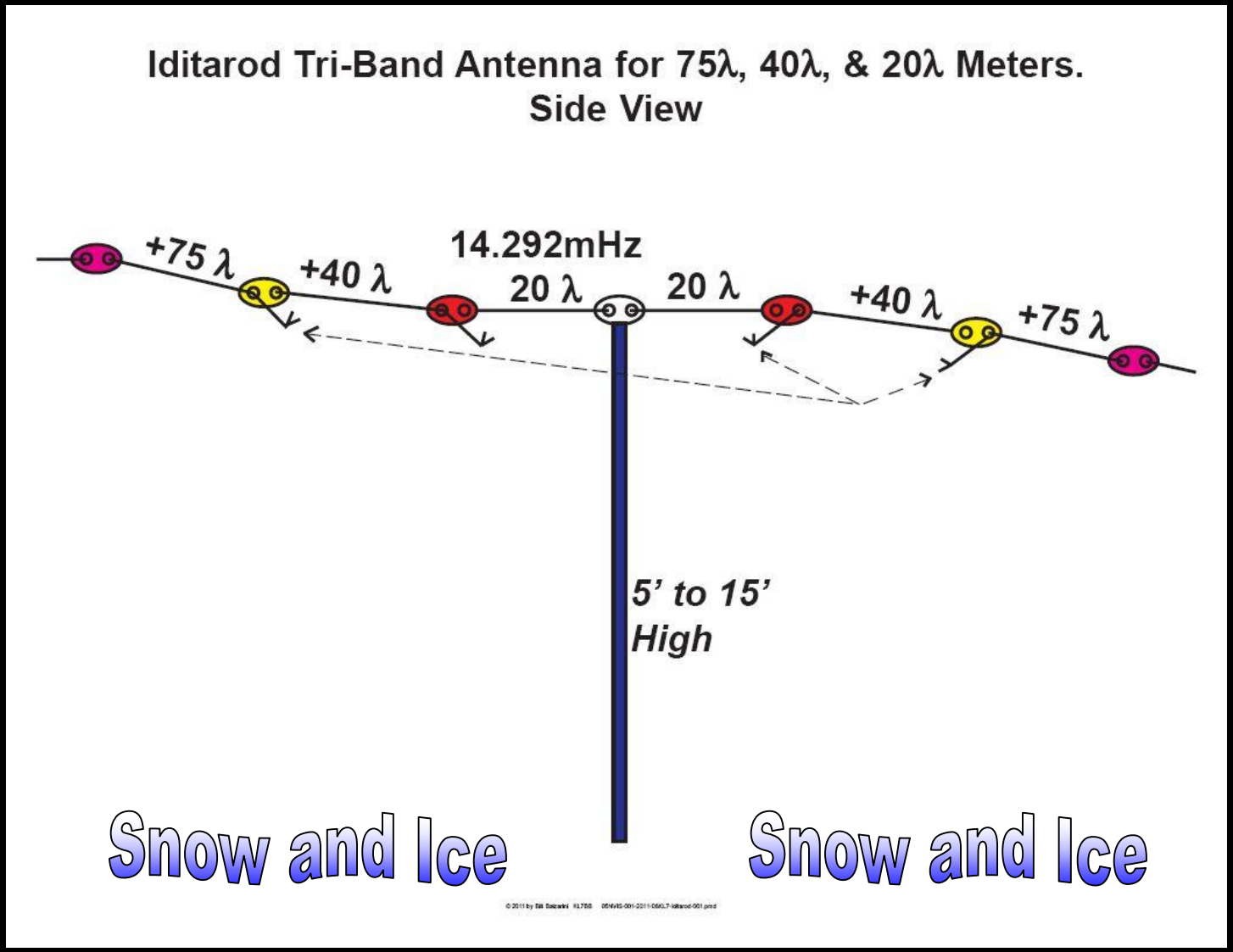
Visualize the RF Field ?

Wire “End View” of NVIS 3 Band Antenna and RF Field





NVIS Antennas



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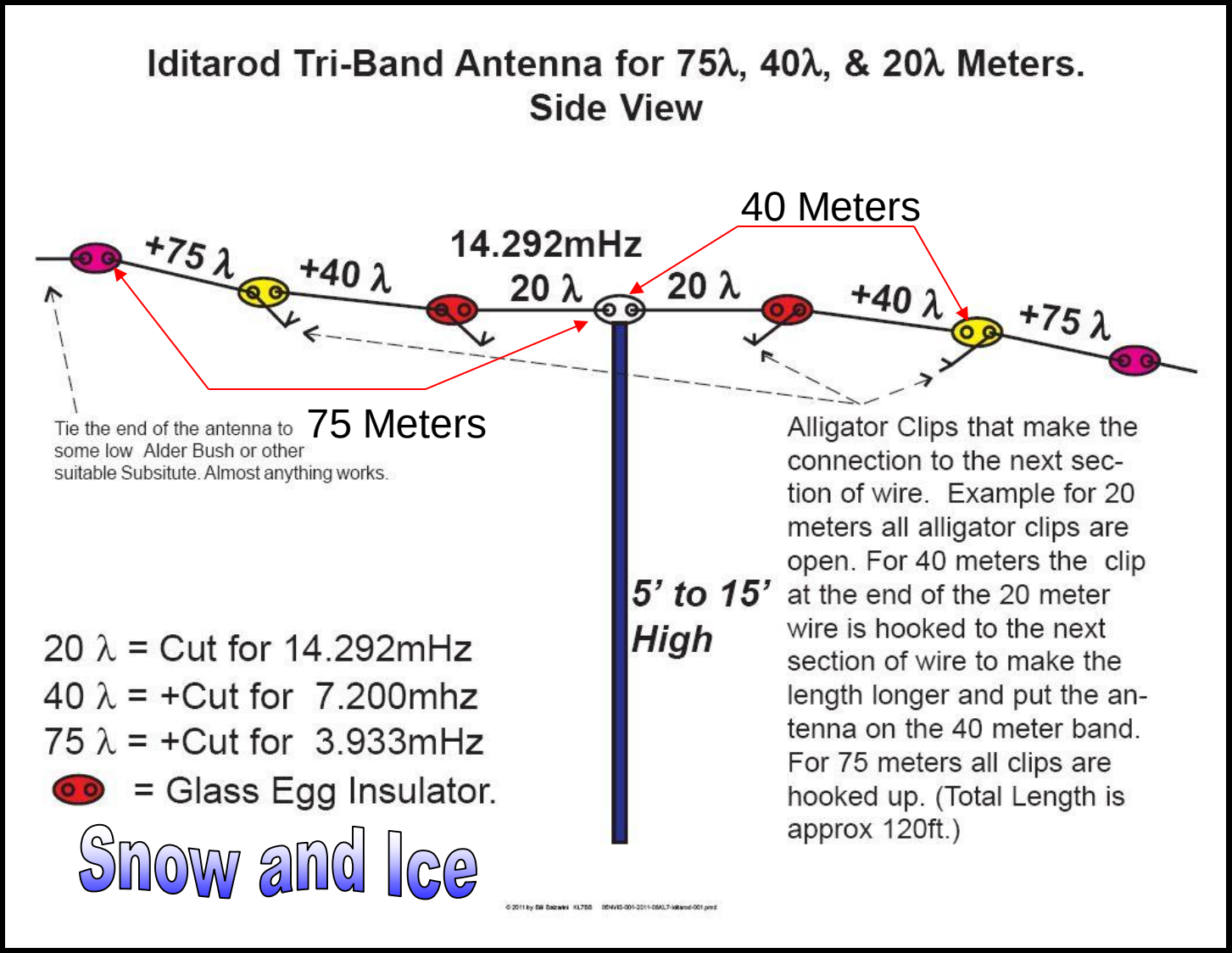
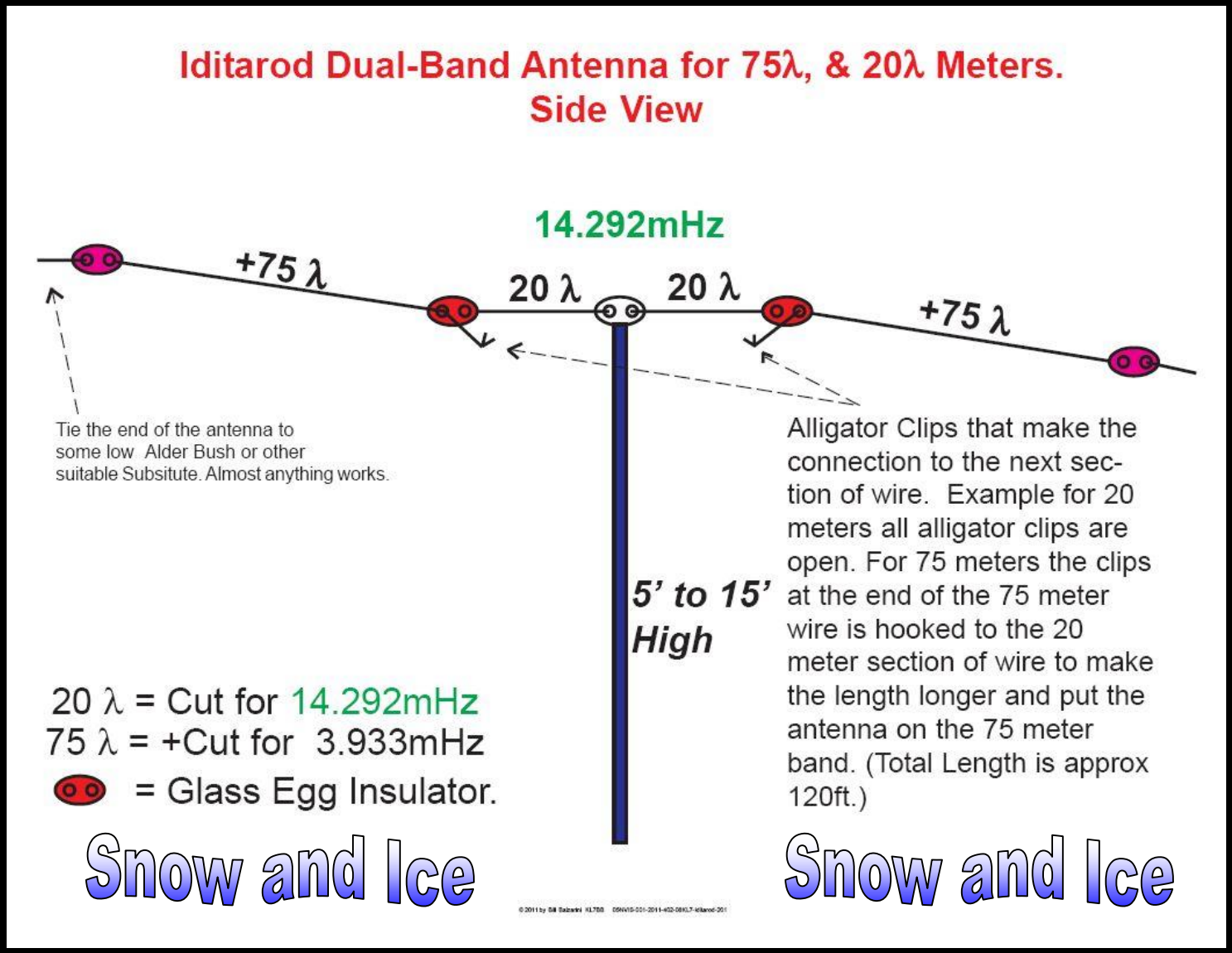


NVIS Antennas

NVIS Antennas



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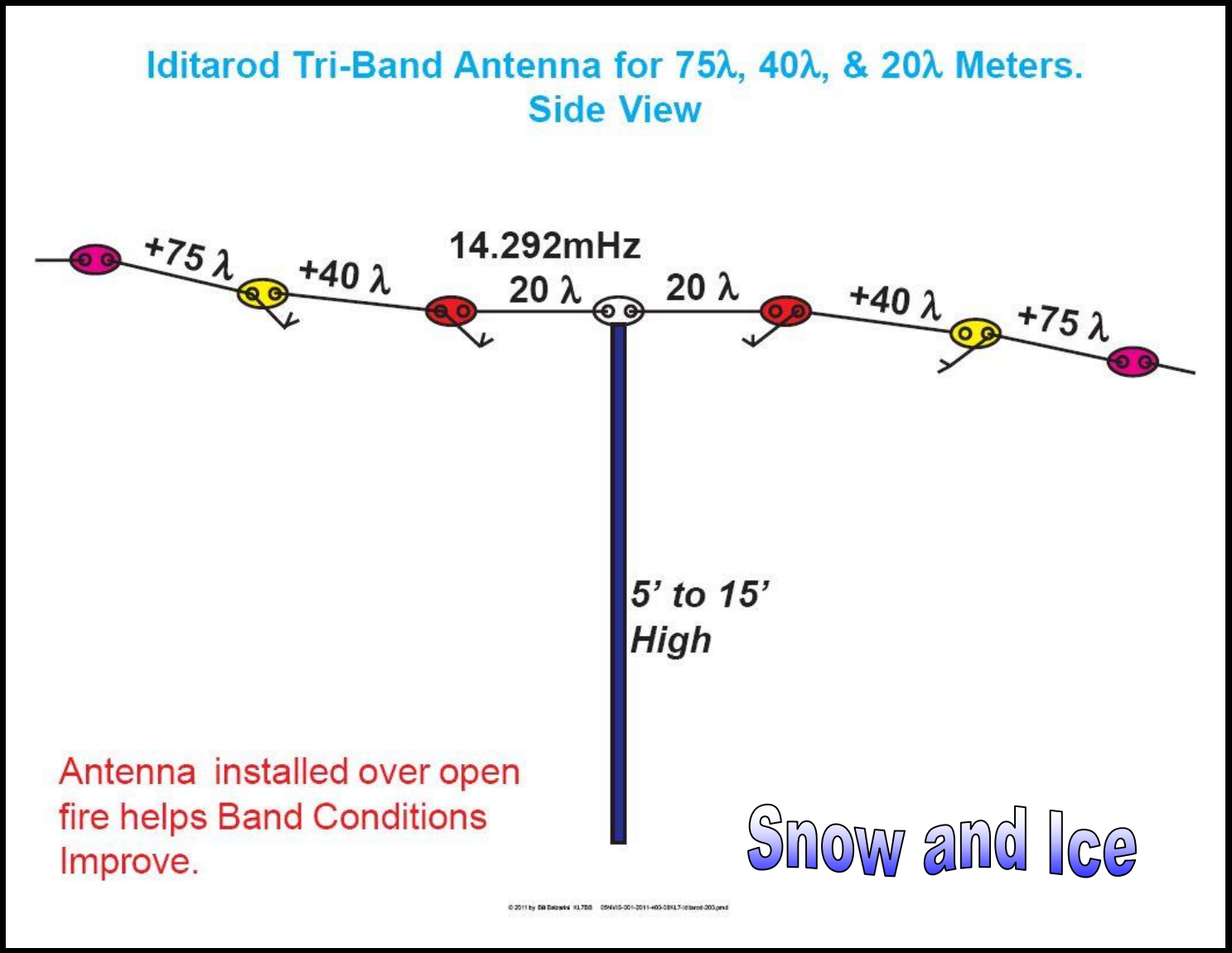
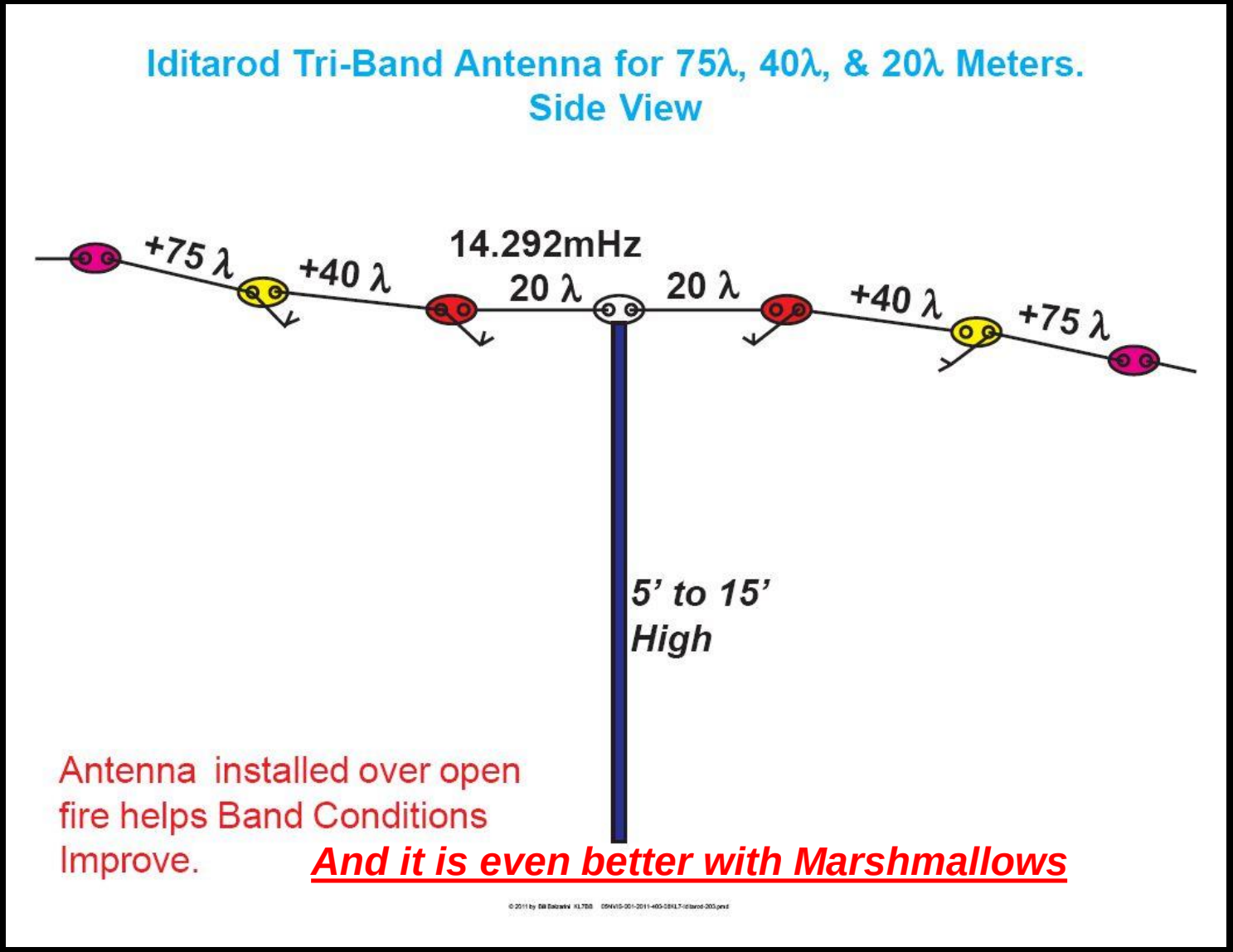


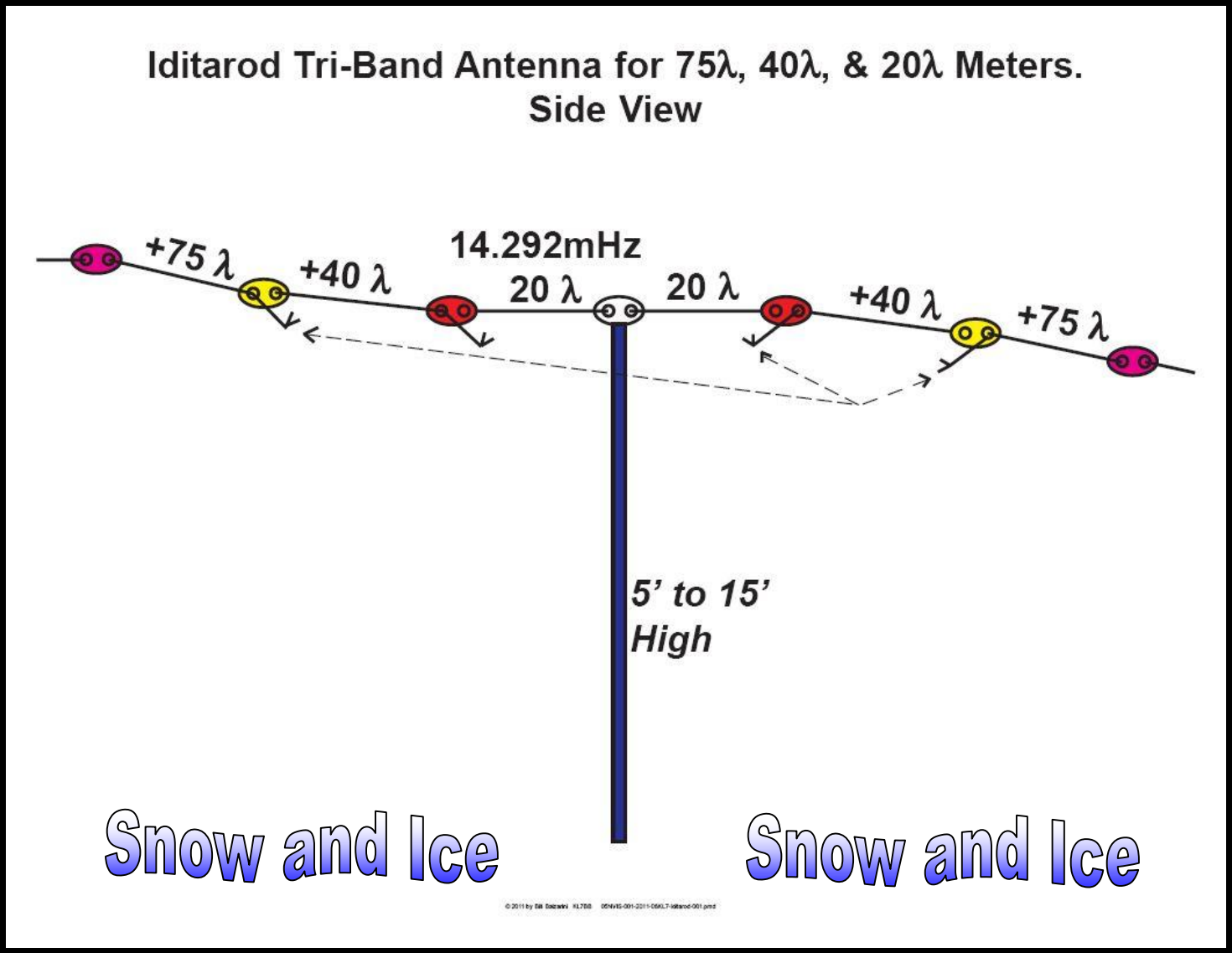
NVIS Antennas



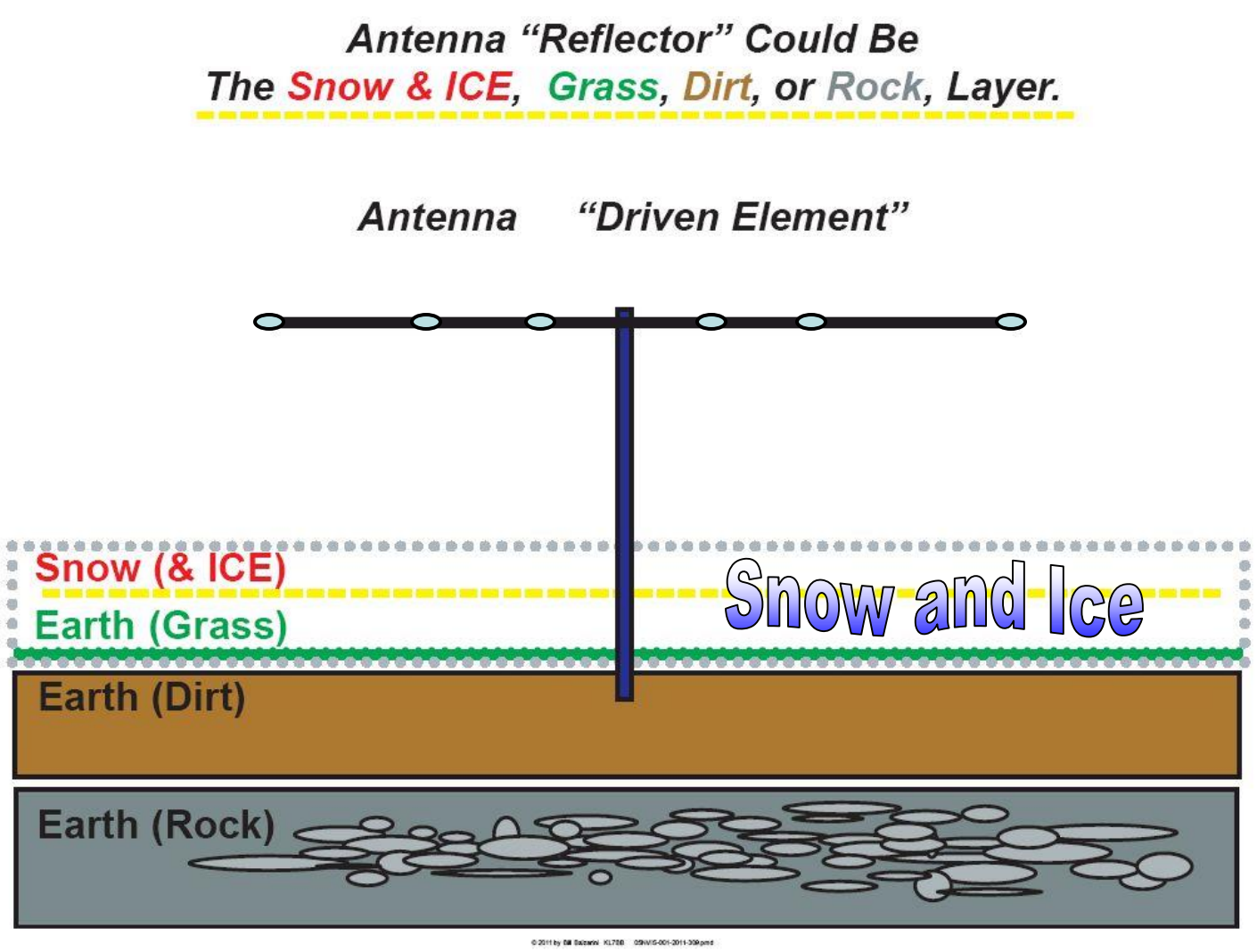
Visualize the Marshmallow

Now Visualize the Chocolate

NVIS Antennas

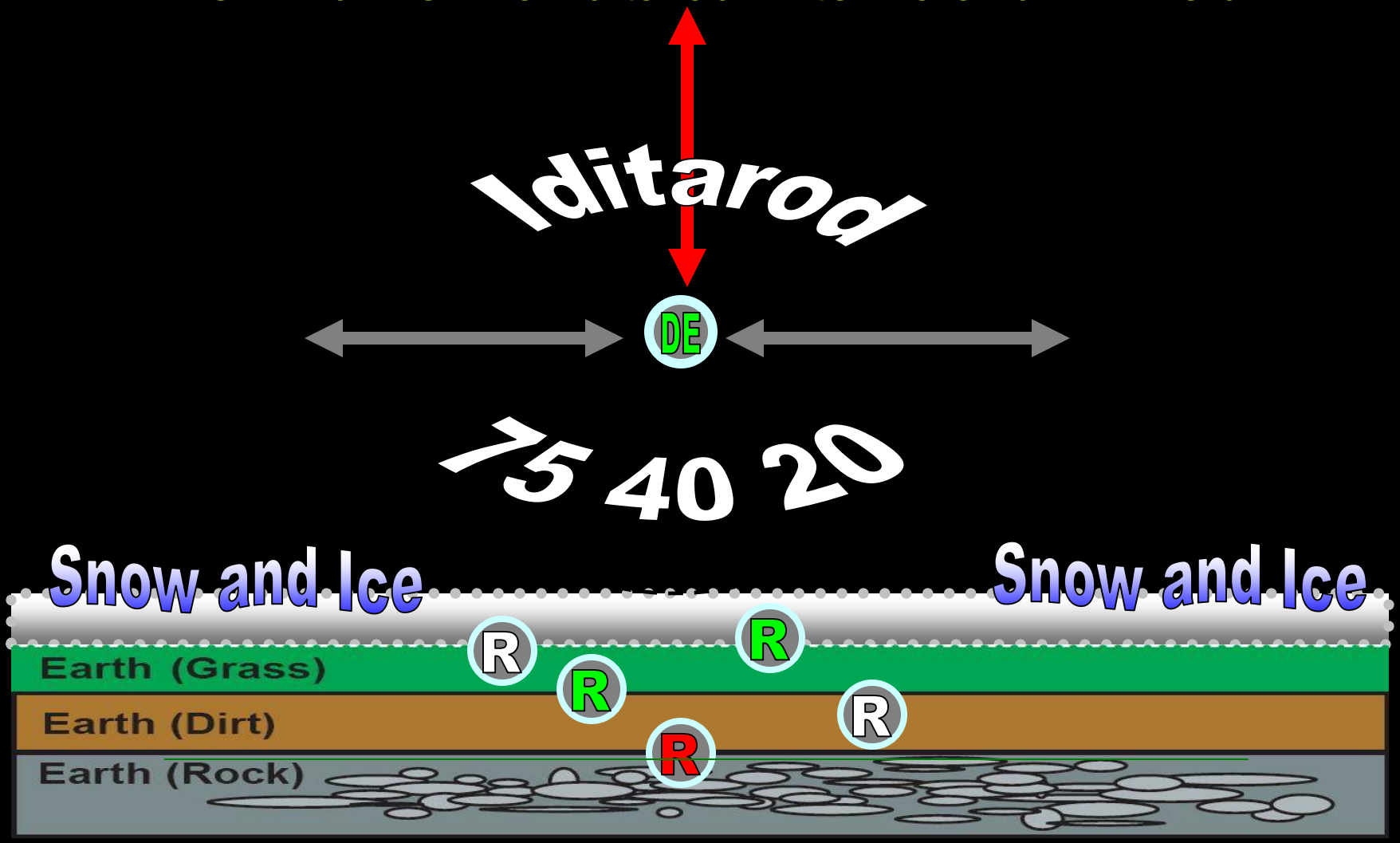


NVIS Antennas



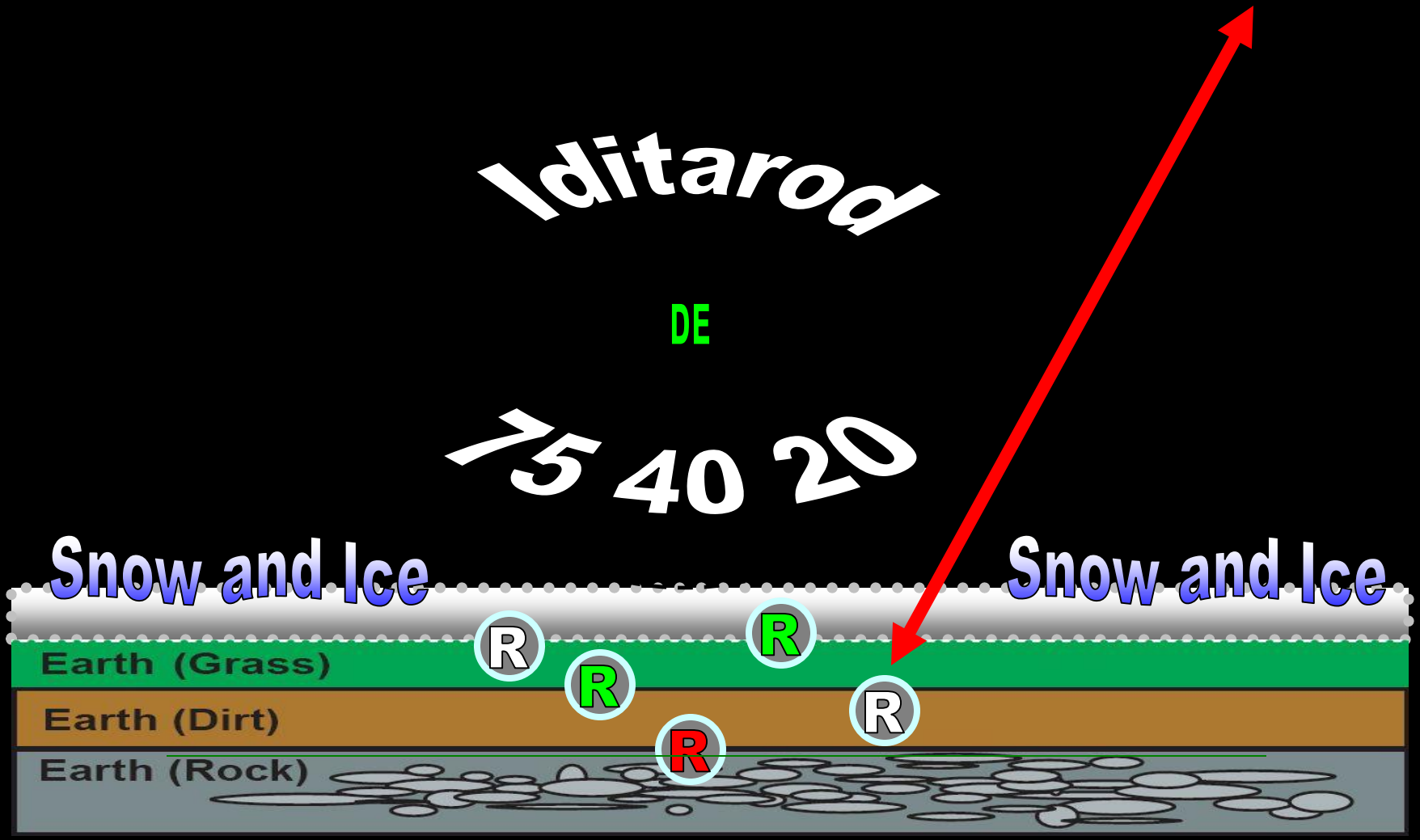
Visualize the RF Field ?

Wire “End View” of Iditarod Antenna and RF Field

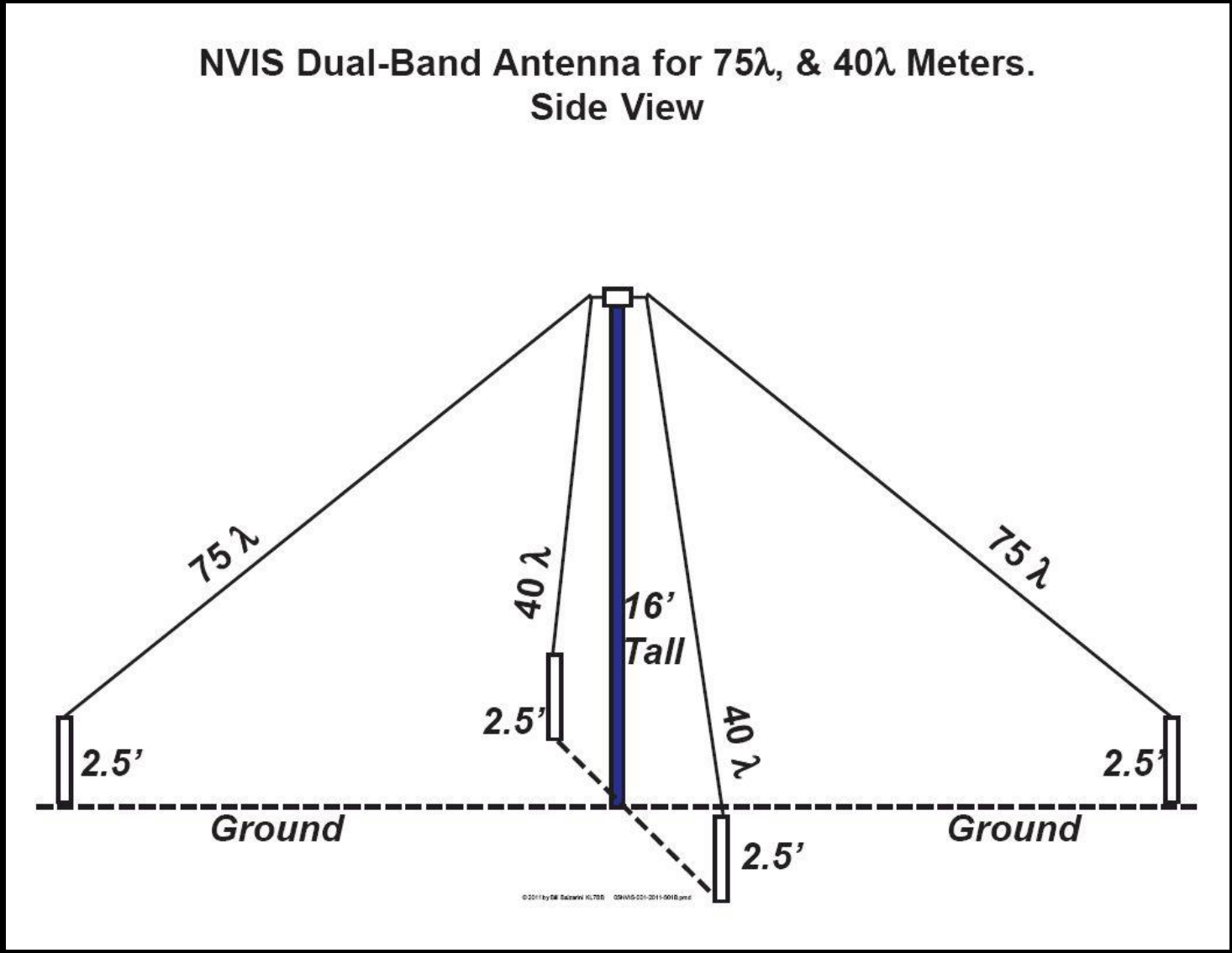


Visualize the RF Field ?

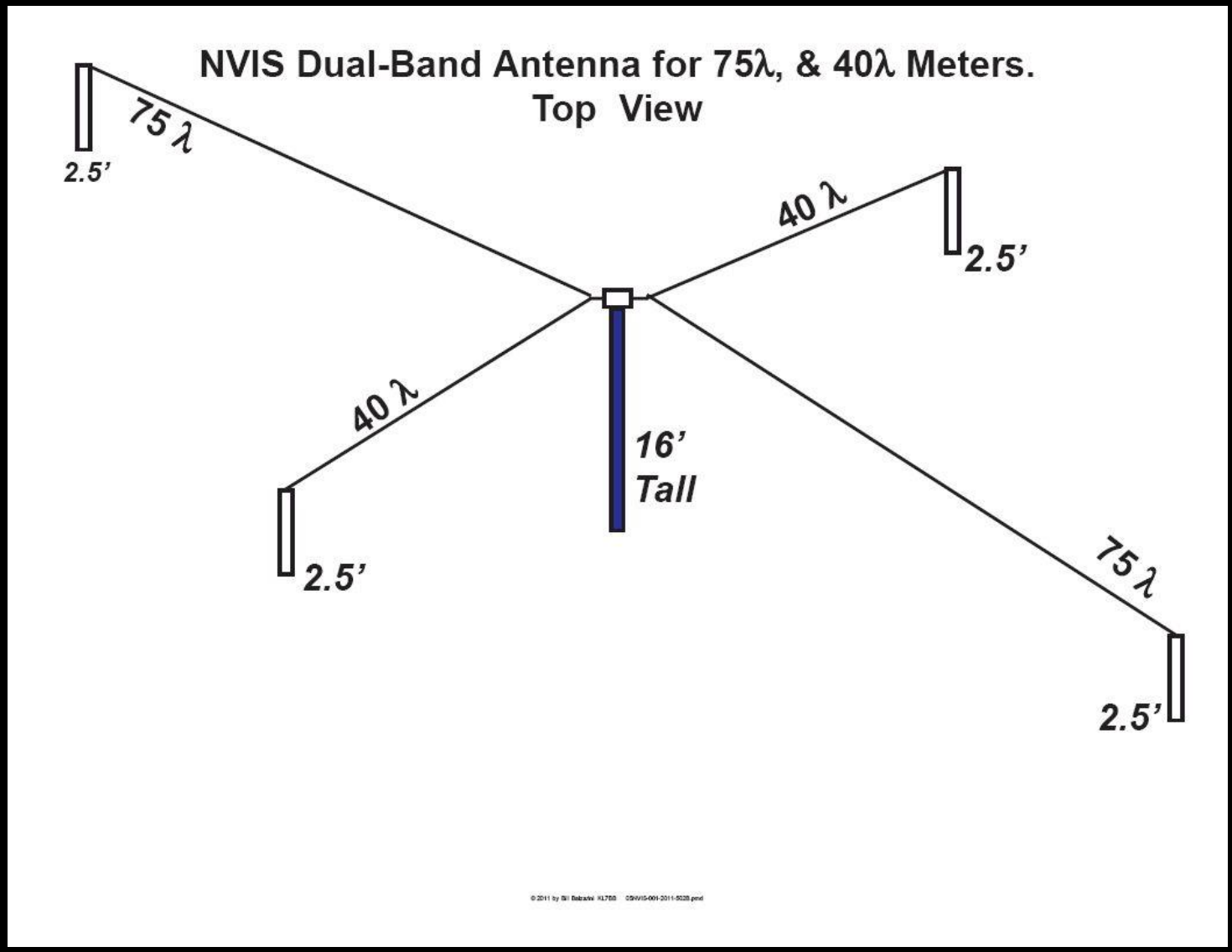
Wire “End View” of Iditarod Antenna Ground “ imaginary”



NVIS Antennas



NVIS Antennas



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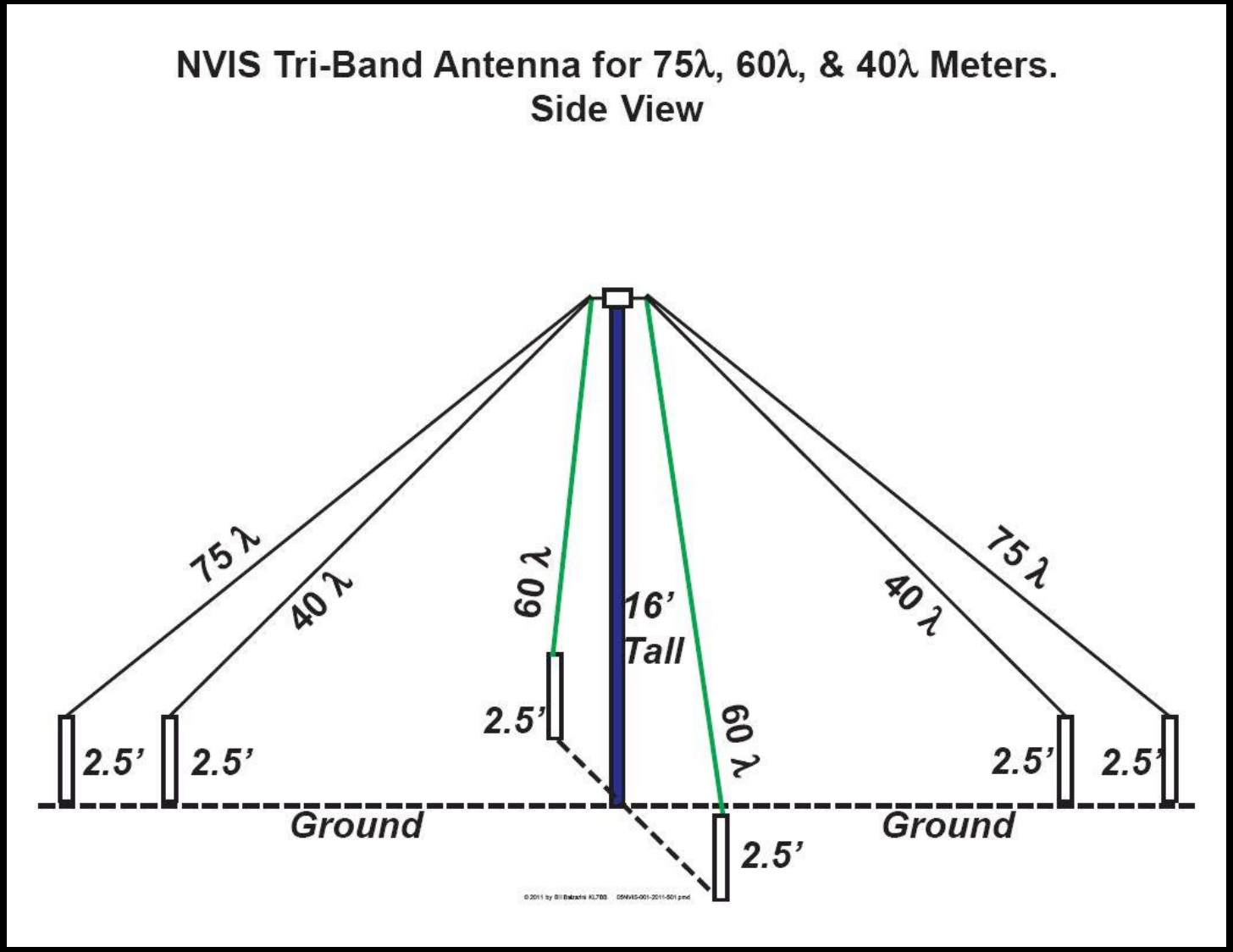

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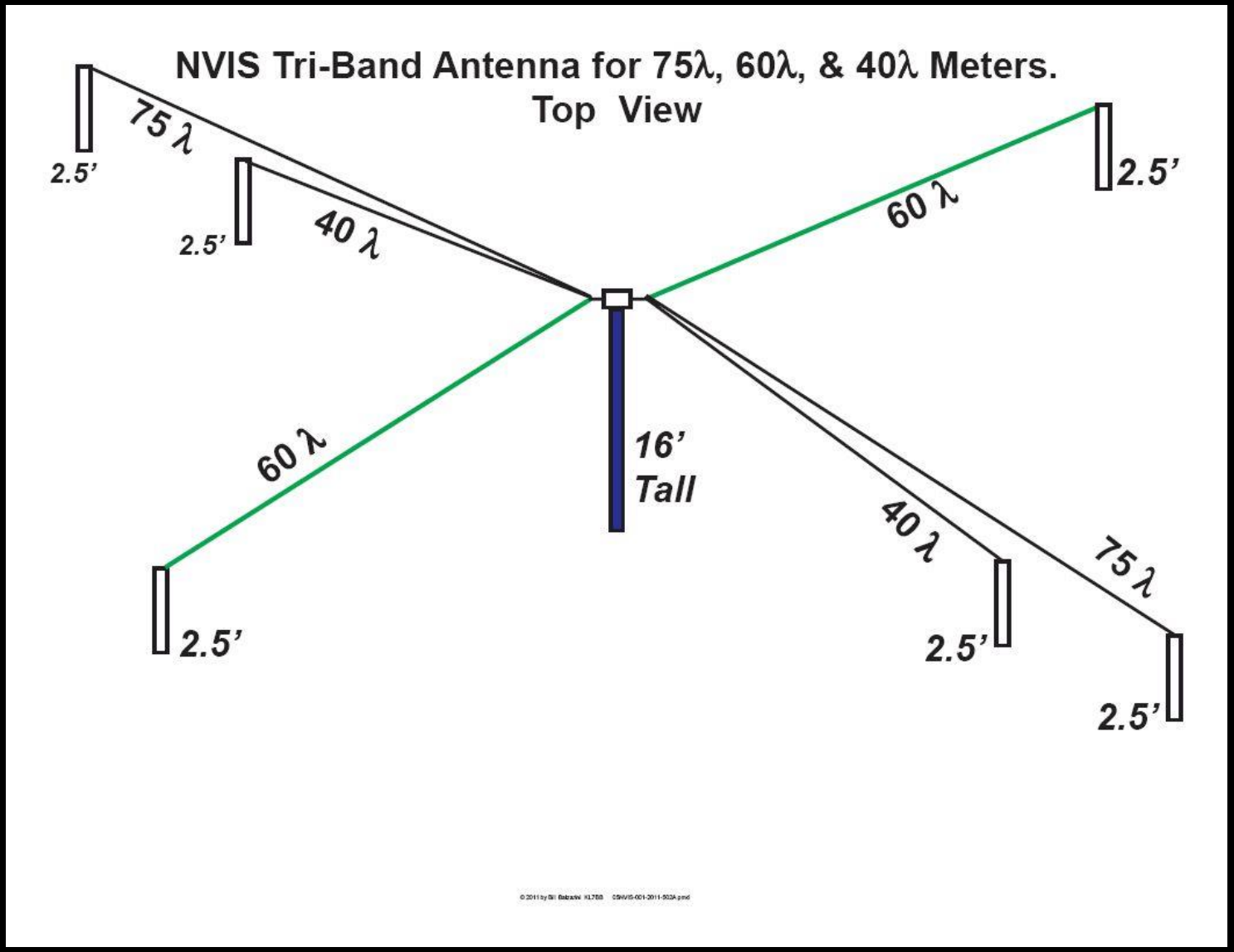

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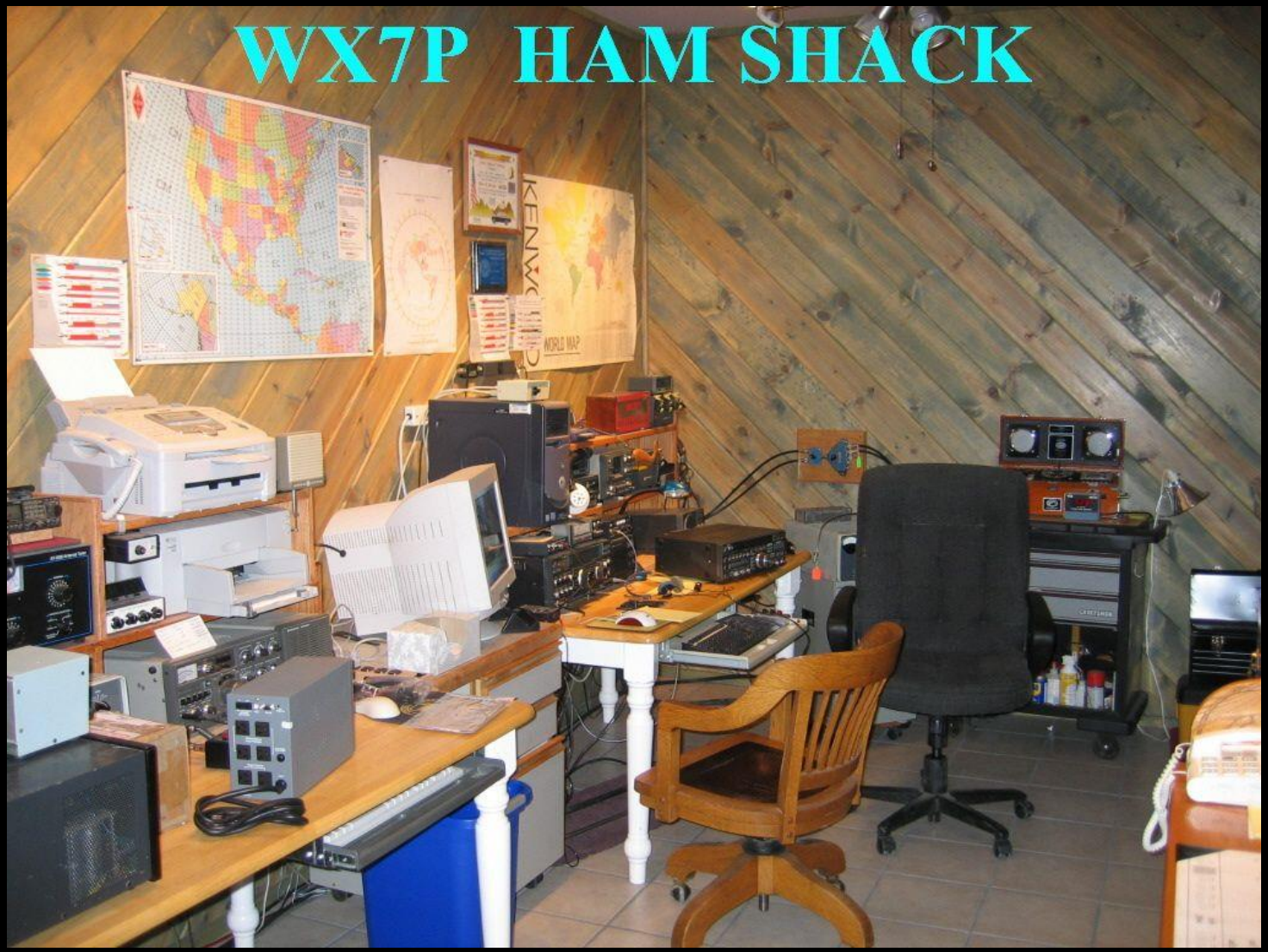

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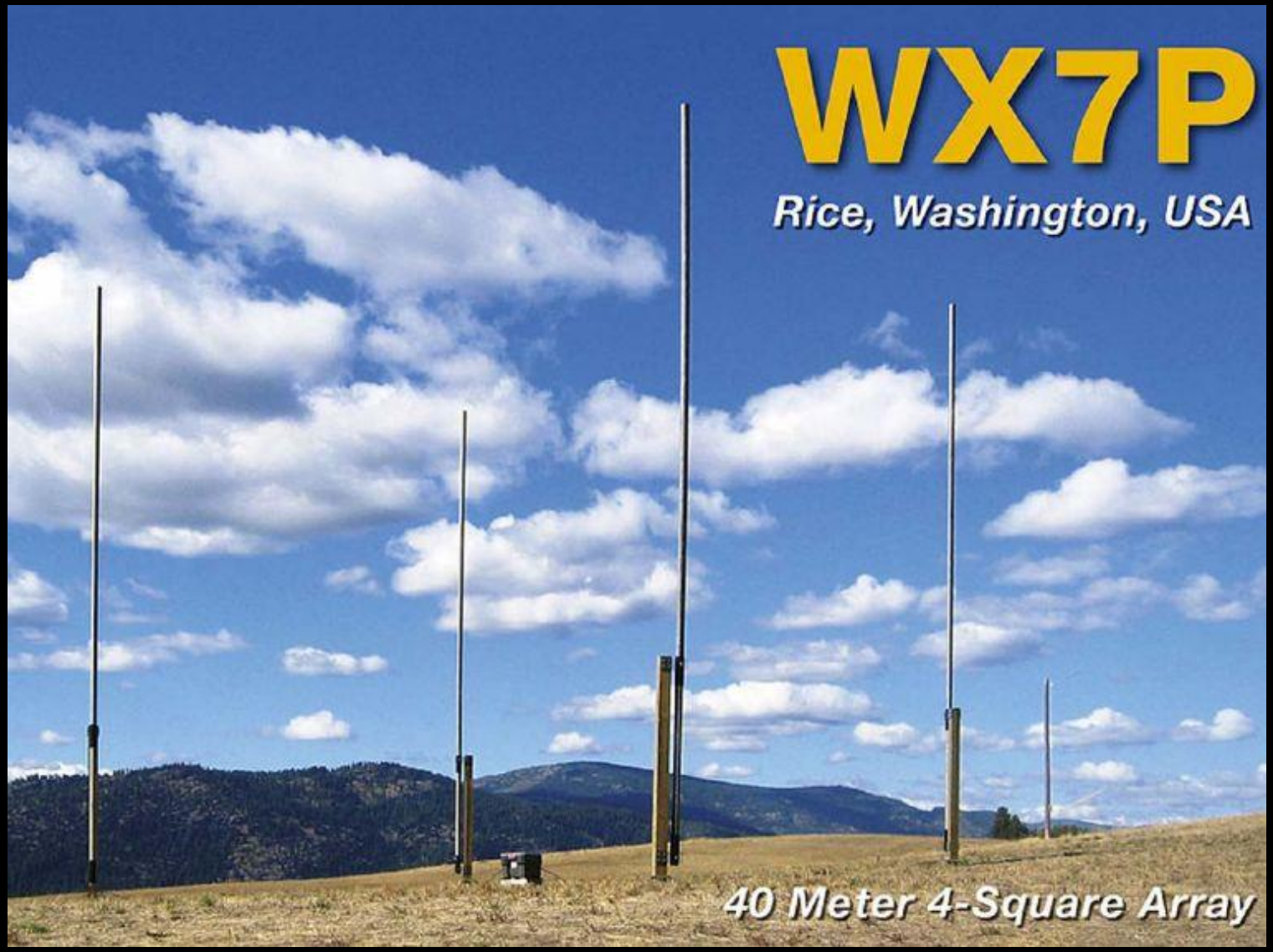

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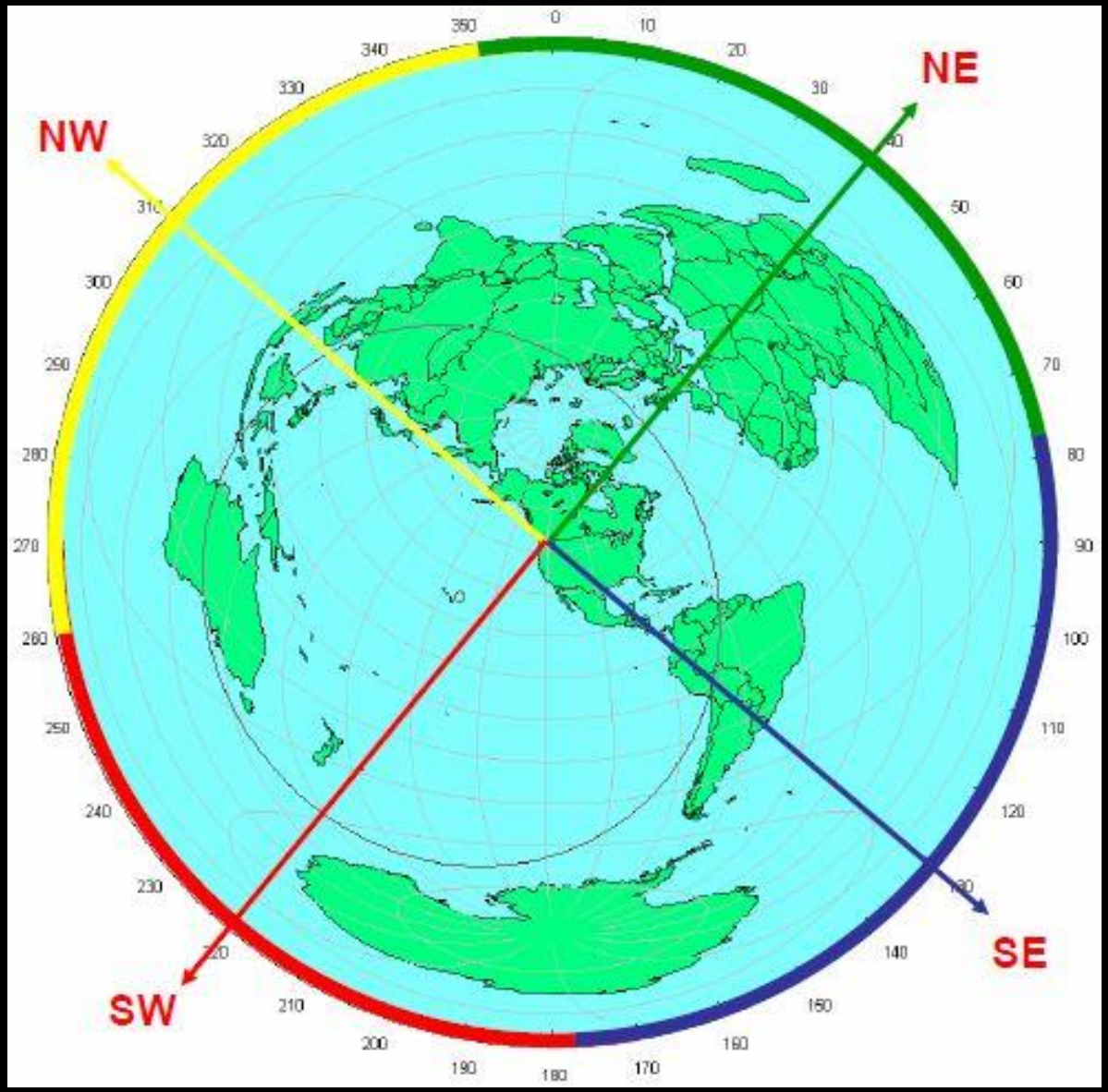

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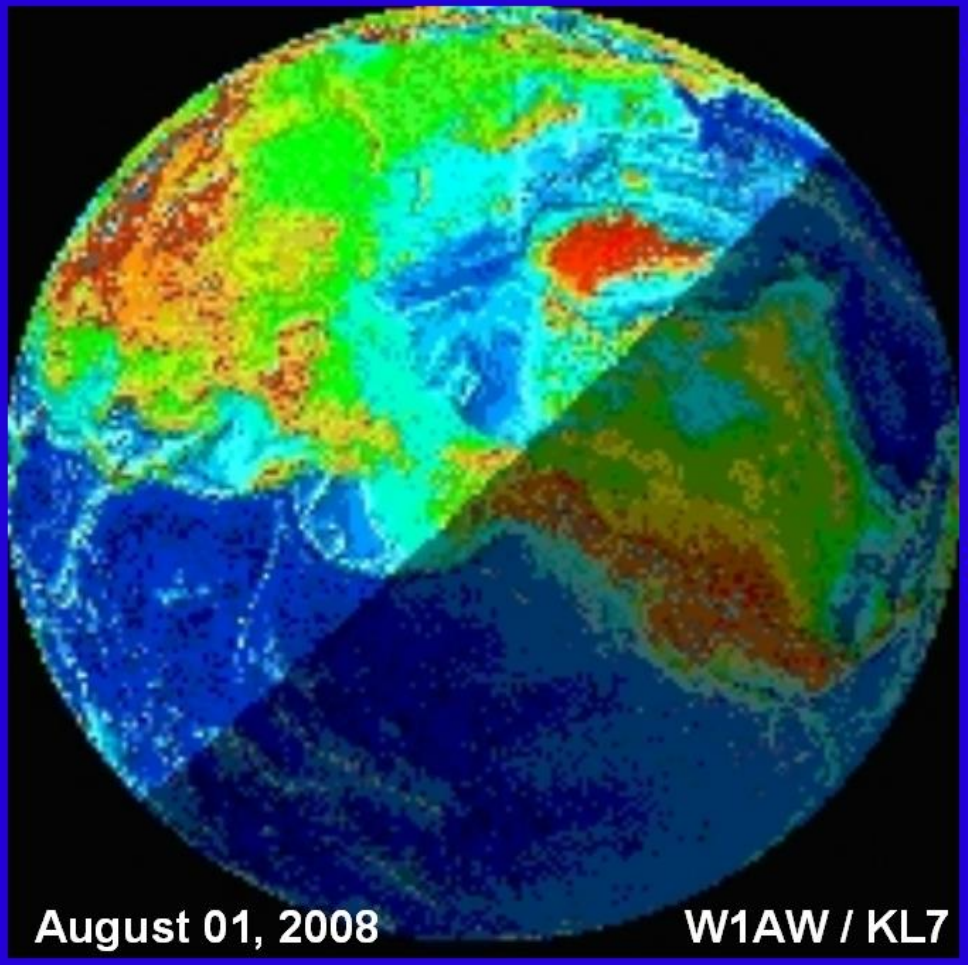

07:00 UTC

23:00 AKDT

00:00 PDT

03:00 EDT

21:00 Local
Arctic Circle
Sun Time @
66° 33' N
150° 50' W

BP - 56

NVIS Antennas

7-26-2008 IOTA Contest

05:50Z	DL8FL
05:56Z	RX9WN
05:57Z	RA1OD
05:58Z	IK2QPR
06:01Z	OH1TIN
06:02Z	HA0DU
06:03Z	OA8A
06:06Z	OE8HAQ
06:07Z	SP9LJD
06:09Z	I5YSZ
06:13Z	ES7FQ
06:15Z	HB9AFI
06:16Z	DL8UP
06:20Z	RN3AHL
06:25Z	OE8HIK
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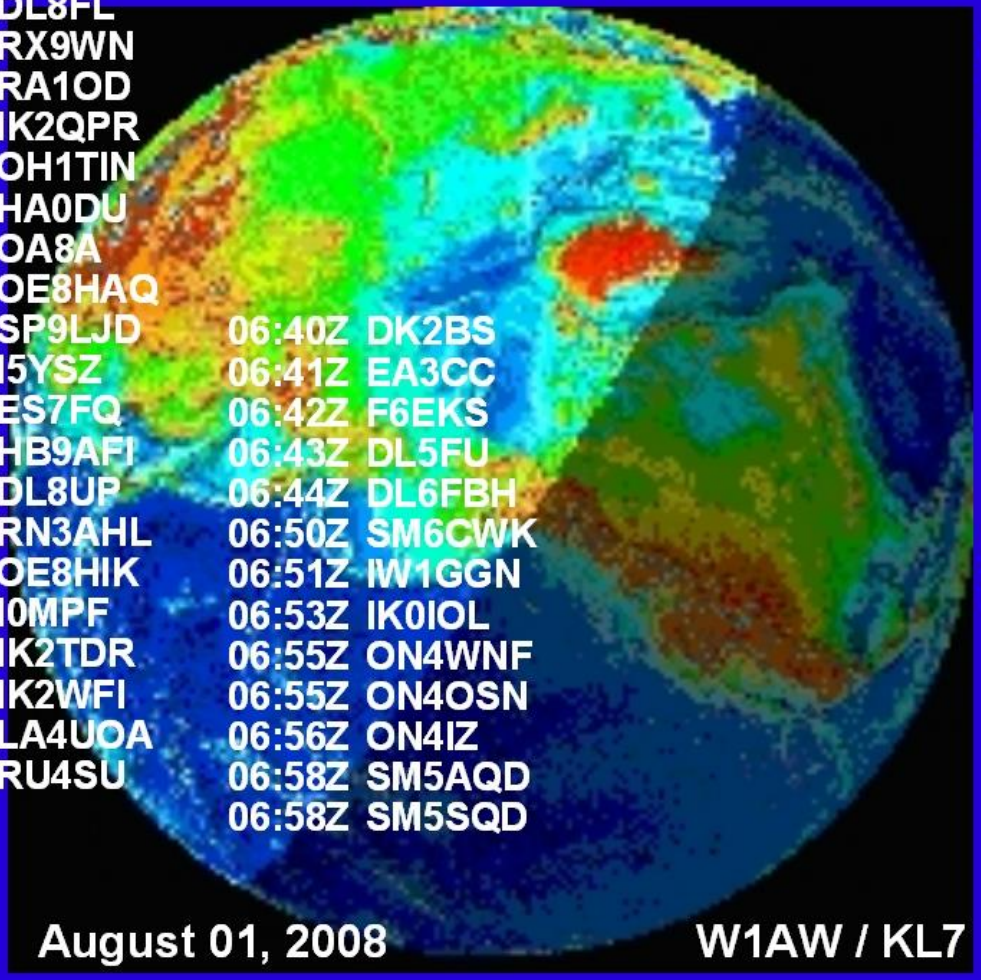
06:29Z	IK2TDR
06:32Z	IK2WFI
06:36Z	LA4UOA
06:38Z	RU4SU



06:40Z	DK2BS
06:41Z	EA3CC
06:42Z	F6EKS
06:43Z	DL5FU
06:44Z	DL6FBH
06:50Z	SM6CWK
06:51Z	IW1GGN
06:53Z	IK0IOL
06:55Z	ON4WNF
06:55Z	ON4OSN
06:56Z	ON4IZ
06:58Z	SM5AQD
06:58Z	SM5SQD

06:00 UTC

22:00 AKDT

23:00 PDT

02:00 EDT

20:00 Local Arctic Circle Sun Time @ 66° 33' N 150° 50' W

BP - 56

NVIS Antennas

7-26-2008 IOTA Contest

07:00Z	M0AWX
07:11Z	IK04ALM
07:12Z	OH1MT
07:14Z	ON5GA
07:17Z	SP5ADX
07:19Z	DL1YD
07:22Z	RZ3DSD
07:23Z	PA0/ON8UK
07:25Z	SP6GF
07:29Z	PA7RA
07:30Z	YL3FT
07:33Z	LA1FH
07:37Z	I1HYW
07:39Z	SM5LNE
07:43Z	LA2XPA
07:45Z	SP8IMG
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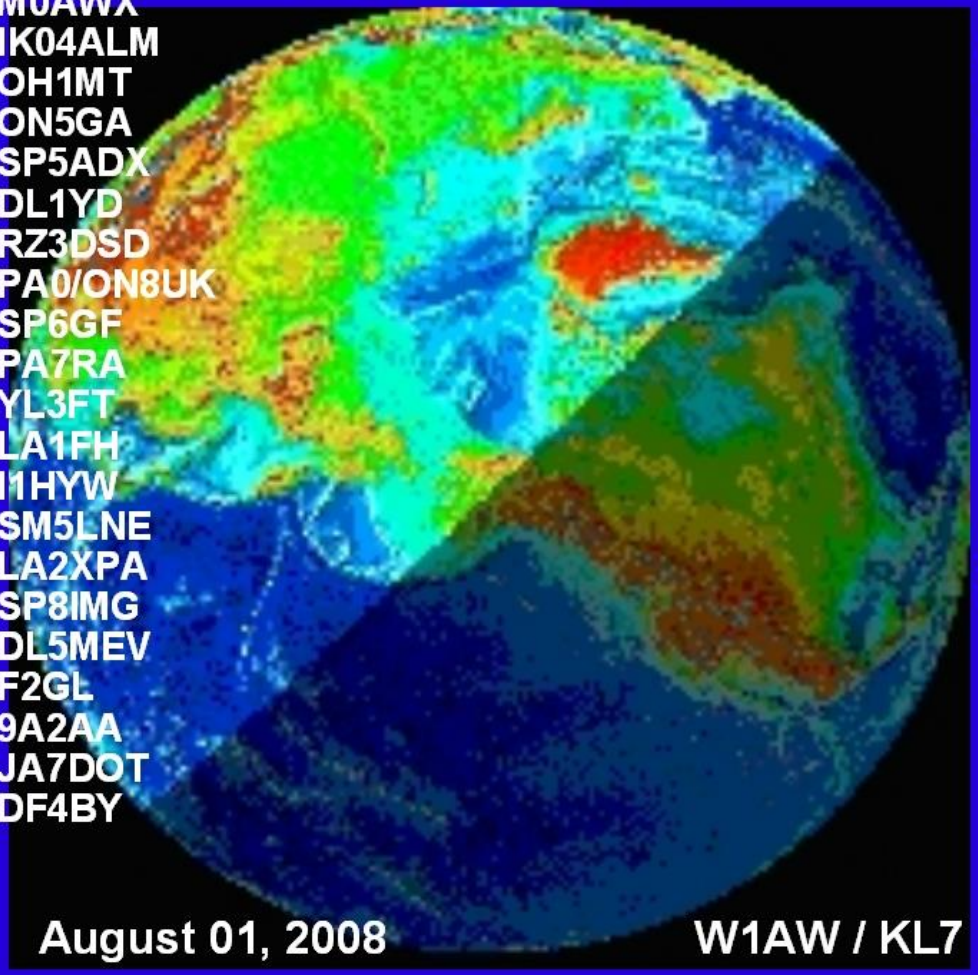
07:50Z	F2GL
07:51Z	9A2AA
08:05Z	JA7DOT
08:06Z	DF4BY



07:00 UTC

23:00 AKDT

00:00 PDT

03:00 EDT

21:00 Local
Arctic Circle
Sun Time @
66° 33' N
150° 50' W

BP - 56

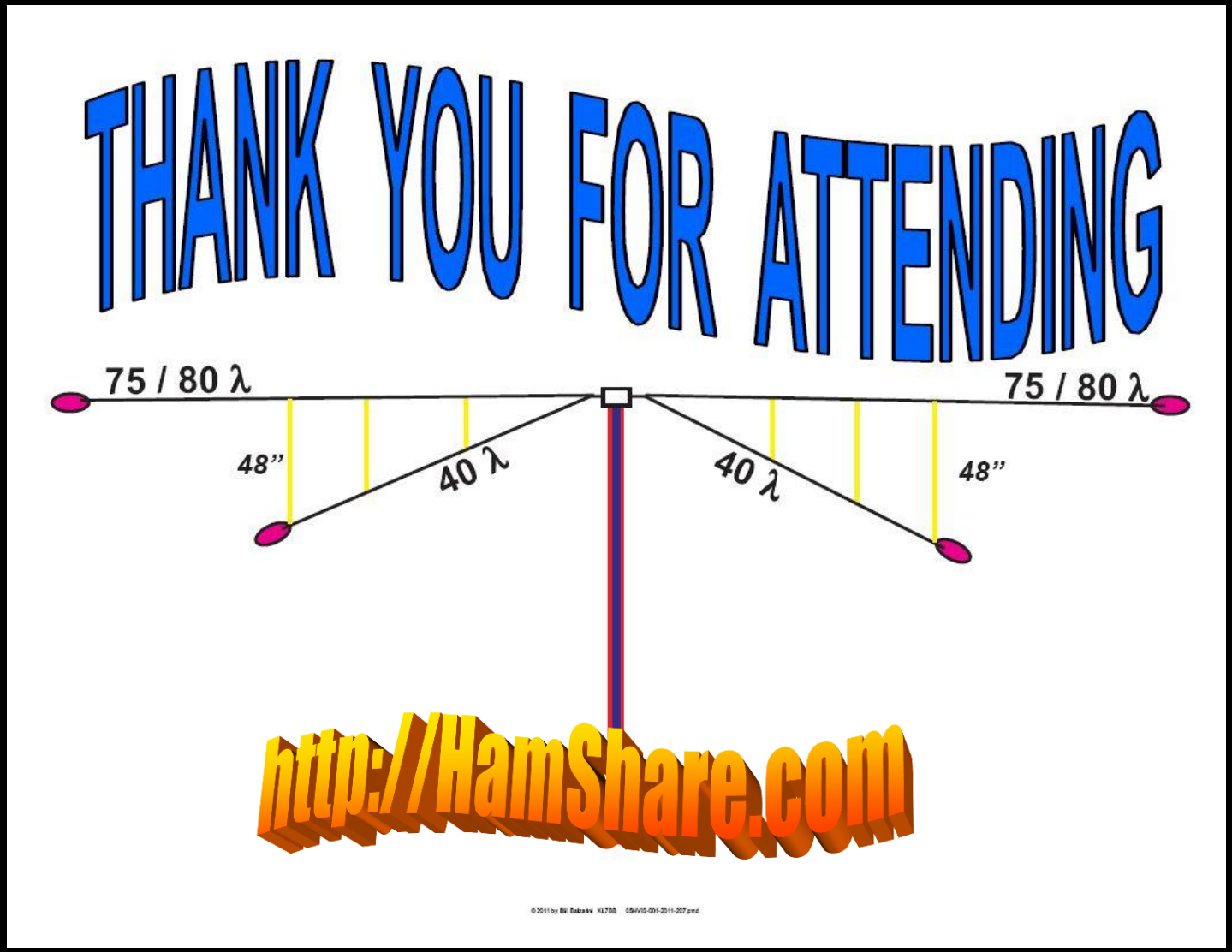
NVIS Antennas

The 4-Square does work!

...73's

NVIS Antennas

NVIS Antennas



NVIS Antennas

NVIS Antennas

"Network Vertical Internet Stack"
The Blue Cloud

&

The Ionospheric Internet

Repeater Sites

146.84 MHz DV + SDD

443.85 MHz DV + SDD

1290.1 MHz DV + SDD

1249.25 MHz Digital Data

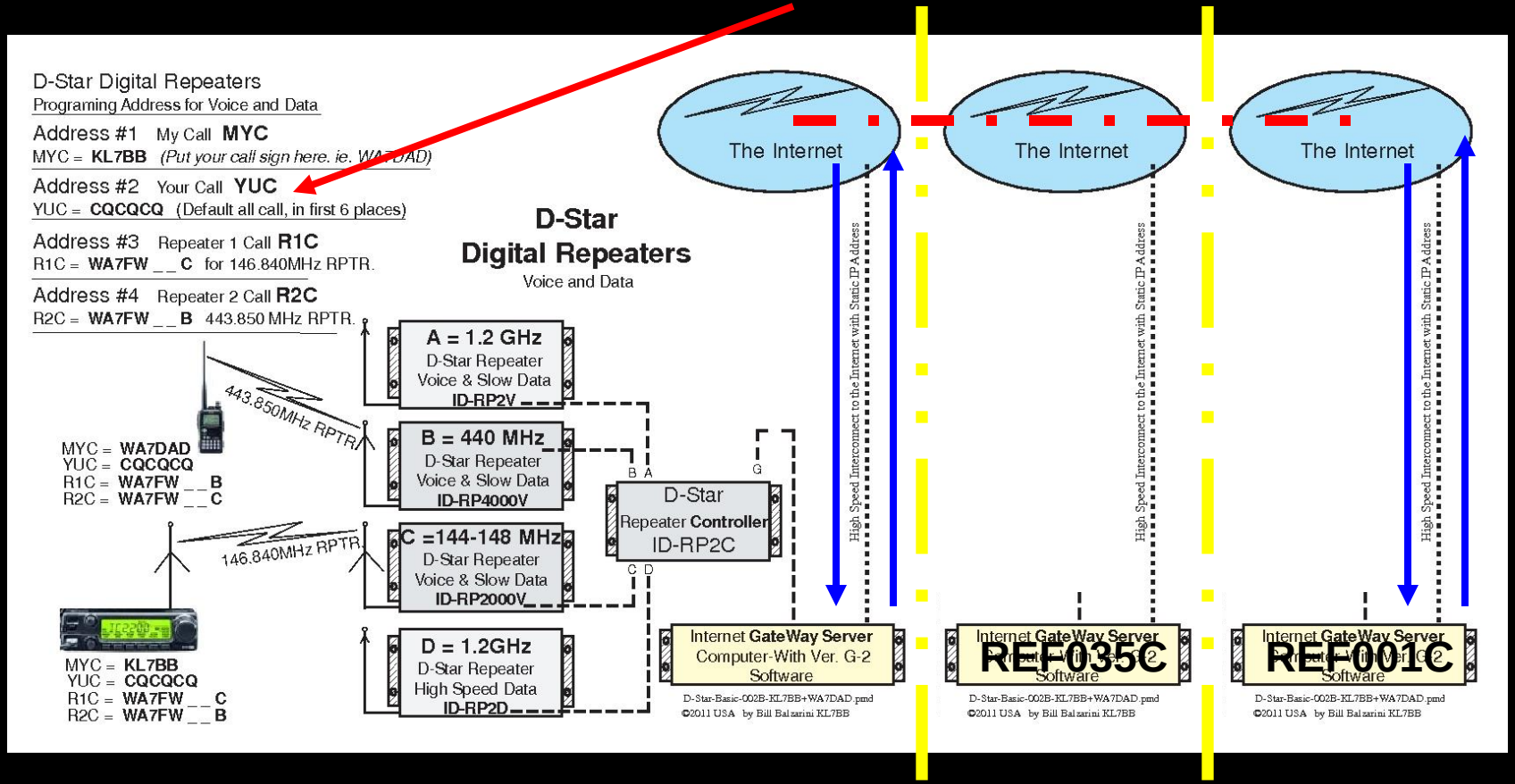
Simplex Direct (Talk-Around)

Reflector 035C and 035A, 035B

NVIS Antennas

"Network Vertical Internet Stack"

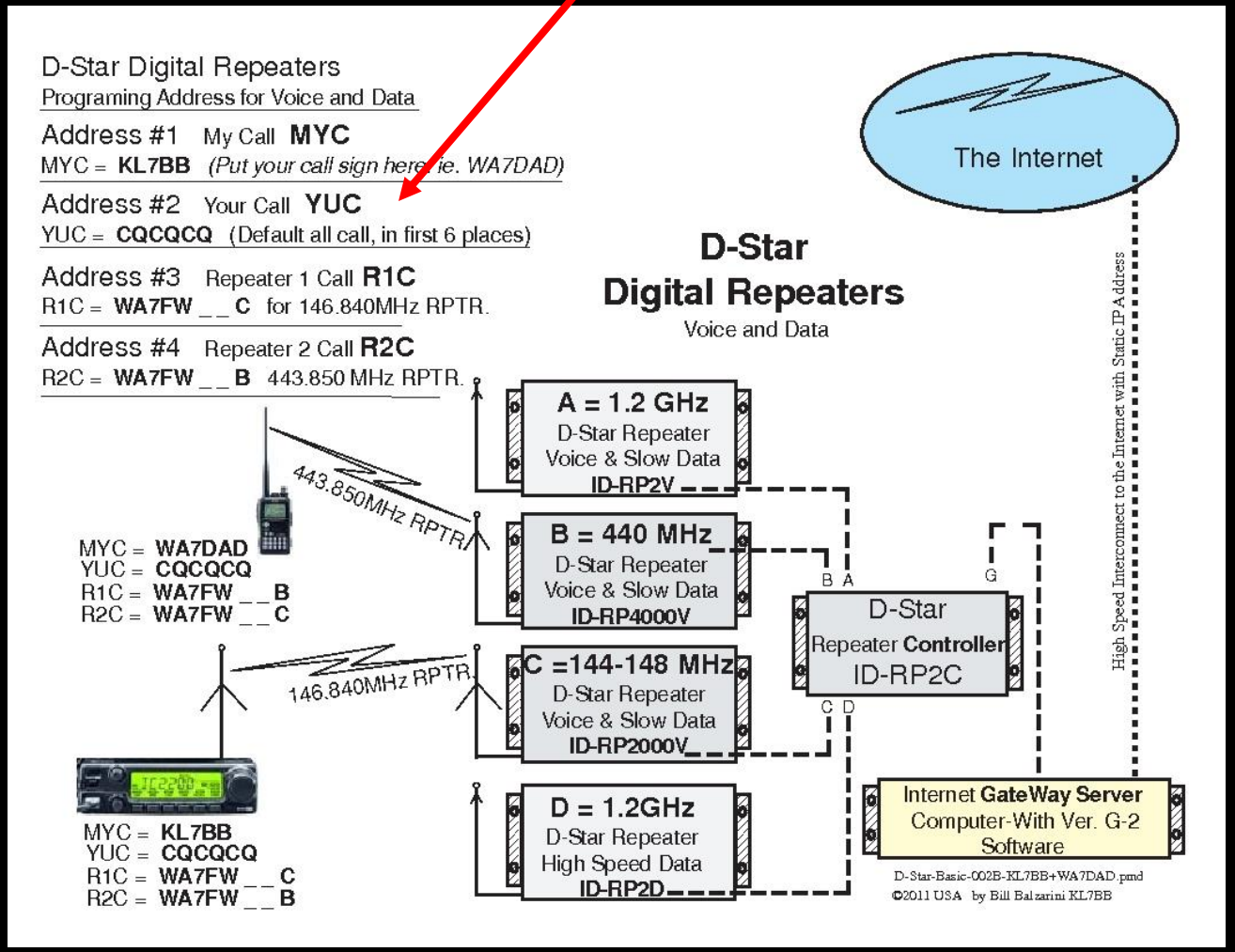
if you know the linking REFLECTOR language.



NVIS Antennas

"Network Vertical Internet Stack"

if you know the linking language.



NVIS Antennas

"Network Vertical Internet Stack"

if you know the linking language.

NVIS Antennas

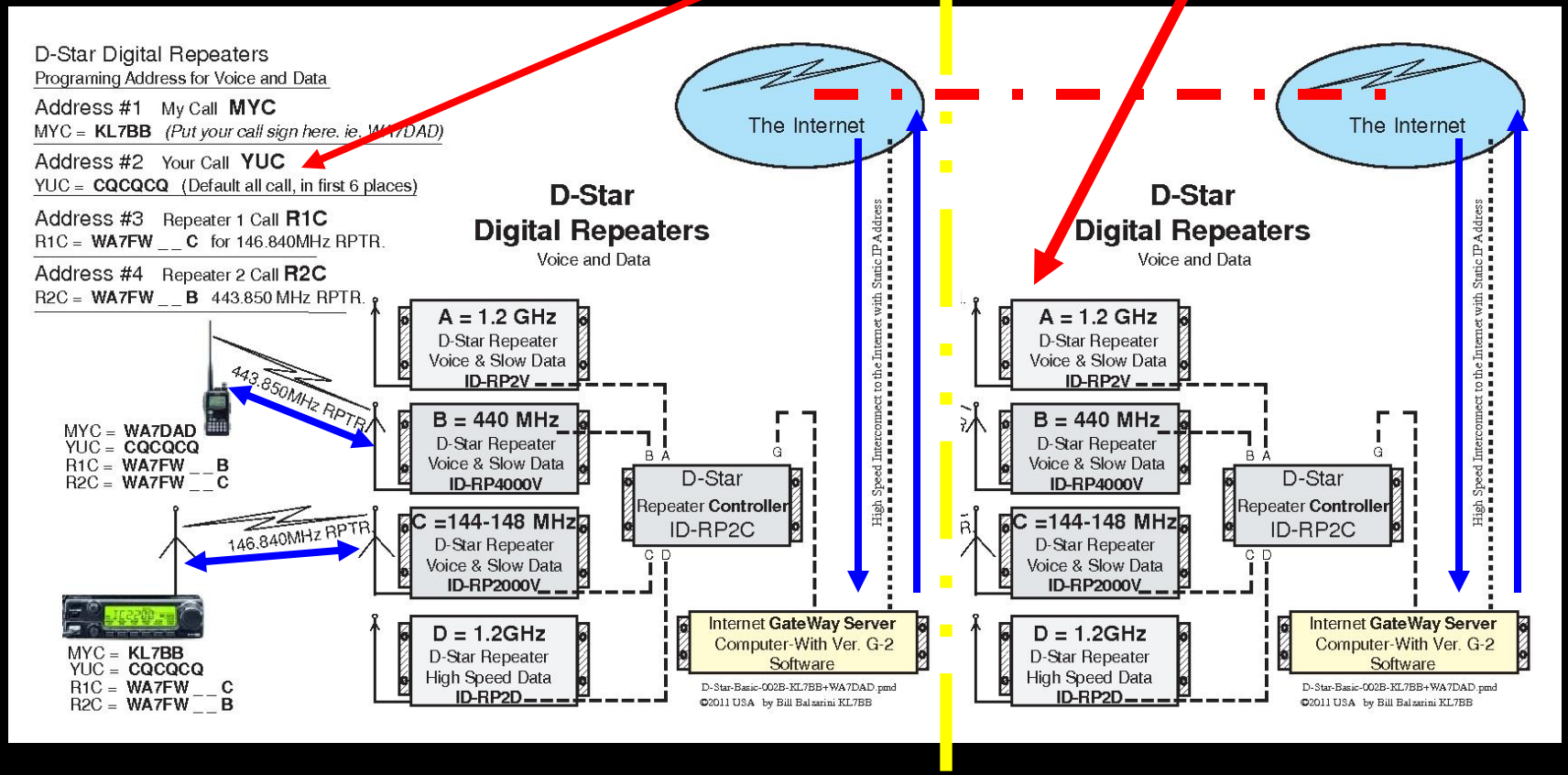
"Network Vertical Internet Stack"

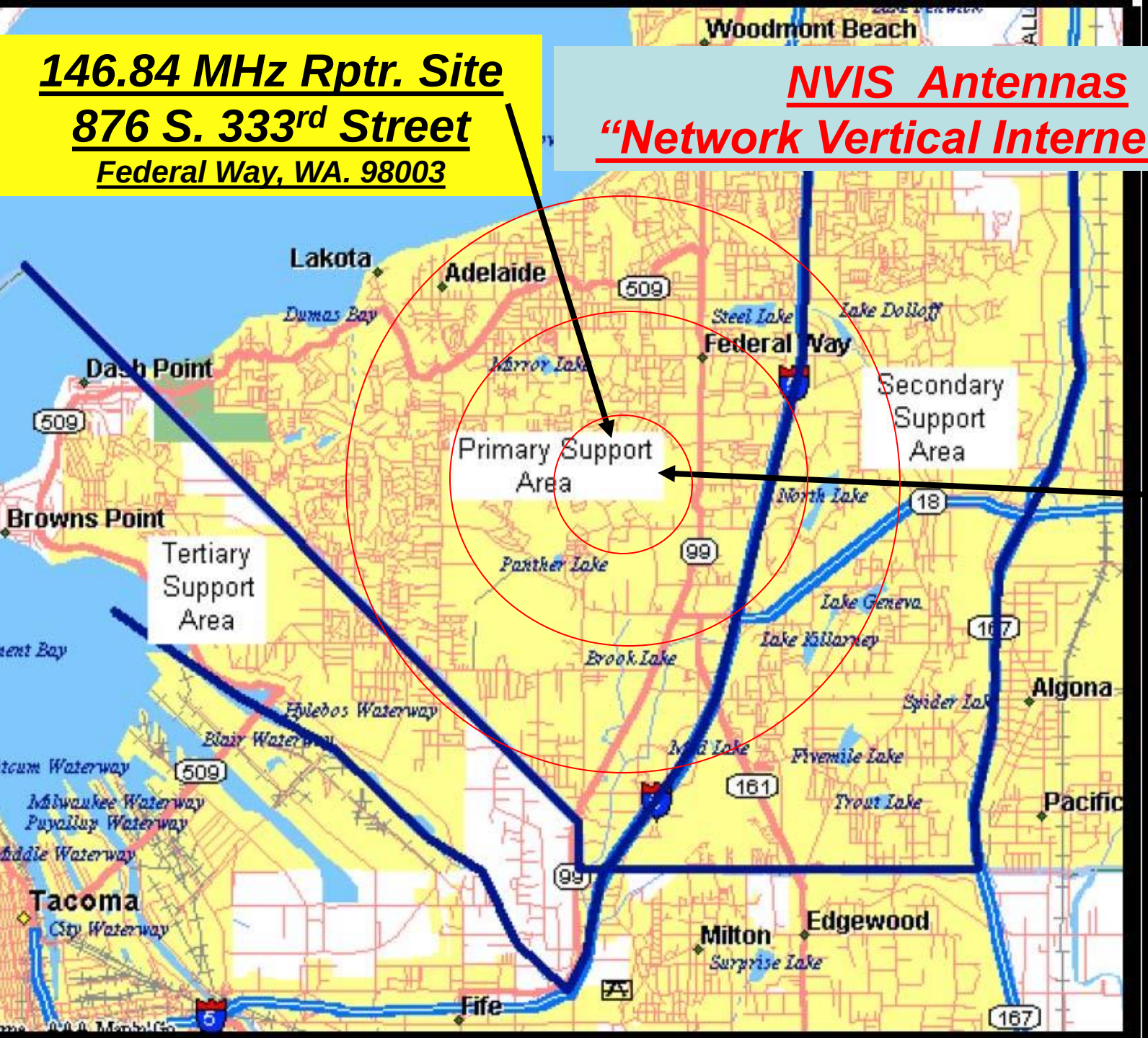
if you know the linking language.

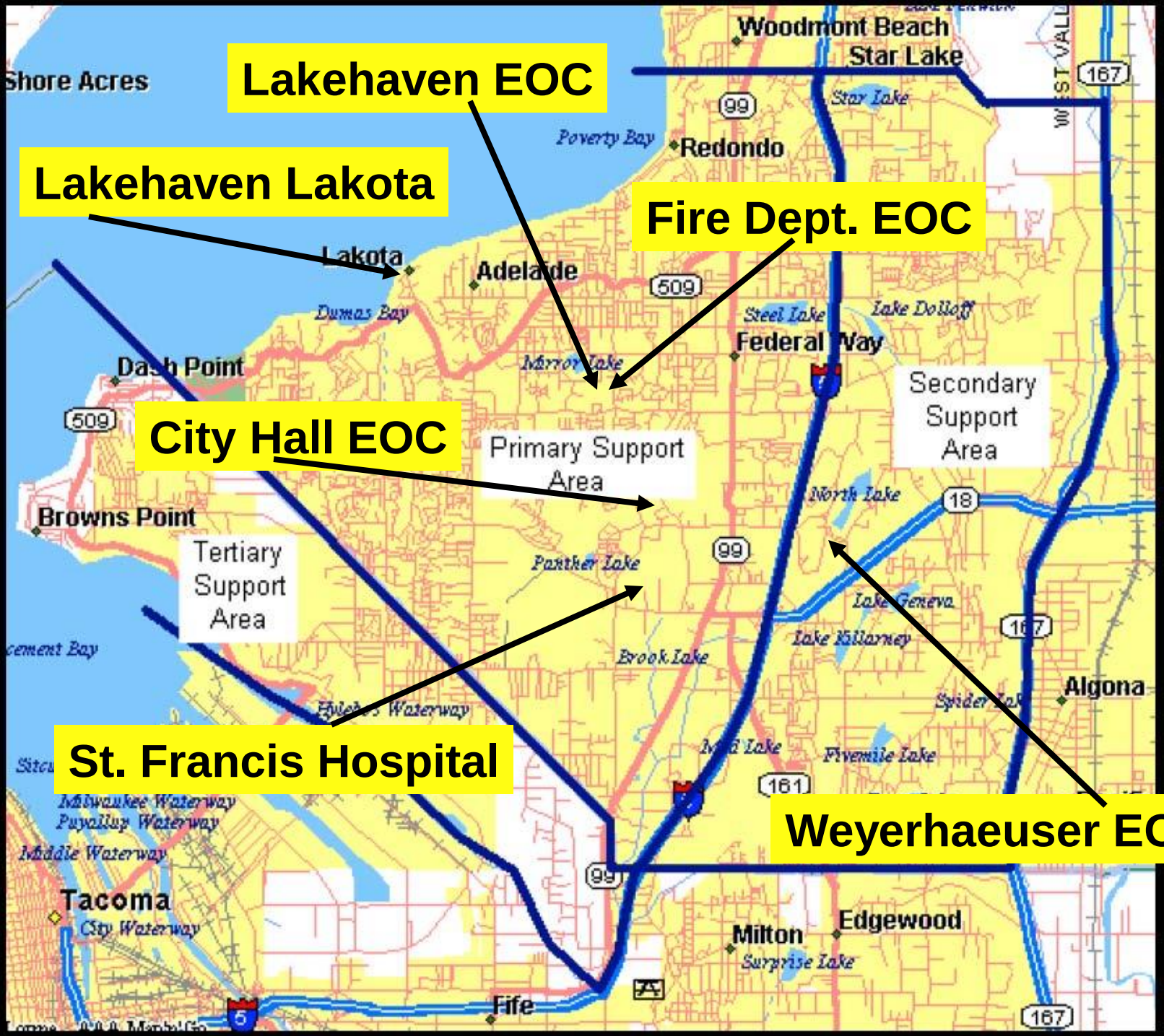
NVIS Antennas

"Network Vertical Internet Stack"

if you know the linking language.




146.84 MHz Rptr. Site
876 S. 333rd Street
Federal Way, WA. 98003
NVIS Antennas
"Network Vertical Internet Stack"
Primary Support Area
Secondary Support Area
Tertiary Support Area
Woodmont Beach
Lakota
Adelaide
Dash Point
Browns Point
Federal Way
Steel Lake
Lake Dolloff
Mirror Lake
North Lake
Panther Lake
Lake Geneva
Lake Killarney
Brook Lake
Spider Lake
Fivemile Lake
Trout Lake
Algona
Pacific
Hylebos Waterway
Blair Waterway
Milwaukee Waterway
Puyallup Waterway
City Waterway
Tacoma
Milton
Edgewood
Surprise Lake
Fife
509
99
18
167
161
5
146.84
443.85
1290.1
1249.25
MHz
DV & DD
Rptr. Site
876 S.
333rd
Street
Federal Way,
WA. 98003


Lakehaven EOC
Lakehaven Lakota
Fire Dept. EOC
City Hall EOC
St. Francis Hospital
Weyerhaeuser EOC
Primary Support Area
Secondary Support Area
Tertiary Support Area
Shore Acres
Woodmont Beach
Star Lake
Redondo
Poverty Bay
Lakota
Adelaide
Dumas Bay
Steel Lake
Lake Dolloff
Federal Way
Mirror Lake
Dash Point
Browns Point
North Lake
Panther Lake
Lake Geneva
Lake Killarney
Brook Lake
Algona
Fivemile Lake
Milwaukee Waterway
Puyallup Waterway
Middle Waterway
City Waterway
Tacoma
Milton
Edgewood
Surprise Lake
Fife
99
509
167
18
161
5

NVIS Antennas
"Network Vertical Internet Stack"
Involvement

- City Hall and the Greater Federal Way EOC
- South King Fire & Rescue. (Station 62)
- Lakehaven Utility Dist. (62)(Y2K 146.76MHz)
- 146.76MHz, 147.04MHz, 442.950MHz Rptrs.
- 146.84MHz, 443.85MHz, 1290.1MHz Rptrs.
- Amateur Radio nets fully operational 147.04
- 5th Saturday Drills EOC to EOC

Nisqually Earthquake 2001 Perfect for NVIS Antennas

- February 2001
- Amateur Radio Net became operational.
- Amateur Radio provided communications to Police, Fire, Gov, Utilities. (by relaying messages)
- Live Field reports on city conditions.
- Reports on surrounding areas.

Are Your NVIS Antennas & "Network Vertical Internet Stack" Ready?

Thank you for your continuing support of amateur radio in *YOUR* Community!

http://HamShare.com

The American Radio Relay League
RADIOGRAM
Via Amateur Radio

Number	Precedence	HX	Station of Origin	Check	Place of Origin	Time Filed	Date

TO:

This Radio Message was Received at:

Amateur Station_____ Date_____
Name_____
Street Address_____
City, State, Zip_____

Telephone Number:

From	Date	Time	To	Date	Time
REC'D			SENT		

A licensed Amateur Radio Operator, whose address is shown above, handled this message free of charge. As such messages are handled solely for the pleasure of operating, a "Ham" Operator can accept no compensation. A return message may be filed with the "Ham" delivering this message to you. Further information on Amateur Radio may be obtained from ARRL Headquarters, 225, Main Street, Newington, CT 06111.

The American Radio Relay League, Inc. is the National membership society of licensed radio amateurs and the publisher of *QST* Magazine. One of its functions is promotion of public service communication among Amateur Operators. To that end, The League has organized the National Traffic System for daily nationwide message handling.

http://HamShare.com

NVIS Antennas

by

Bill Balzarini
KL7BB