



# In This Issue

November 2012

Volume 96 Number 11

**Harold Kramer, WJ1B**  
Publisher

**Steve Ford, WB8IMY**  
Editor

**Becky R. Schoenfeld, W1BXV**  
Managing Editor

**Joel R. Hallas, W1ZR**  
Technical Editor

**Larry D. Wolfgang, WR1B**  
Senior Assistant Technical Editor

**Steve Sant Andrea, AG1YK**  
Assistant Editor

**S. Khrystyne Keane, K1SFA**  
*Happenings*

**Bob Allison, WB1GCM**  
*Product Review Lab Testing*

**Sean Kutzko, KX9X**  
Radiosport

**John Troster, W6ISQ**  
**Paul L. Rinaldo, W4RI**  
**Mark J. Wilson, K1RO**  
**Al Brogdon, W1AB**  
**Bernie McClenny, W3UR**  
**John Dilks, K2TQN**  
**H. Ward Silver, N0AX**  
**Paul Wade, W1GHZ**  
**Jon Jones, N0JK**  
**Rick Palm, K1CE**  
Contributing Editors

**Michelle Bloom, WB1ENT**  
Production Supervisor

**Jodi Morin, KA1JPA**  
Assistant Production Supervisor

**Maty Weinberg, KB1EIB**  
Production Coordinator

**Sue Fagan, KB1OKW**  
Graphic Design Supervisor

**David Pingree, N1NAS**  
Senior Technical Illustrator

**Carol Michaud, KB1QAW**  
Technical Illustrator

**Nancy G. Hallas, W1NCY**  
**Elaine Lengyel**  
Proofreaders

**Debra Jahnke, K1DAJ**  
Business Services Manager  
*QST Advertising*

**Bob Inderbitzen, NQ1R**  
Marketing Manager

**Amy Hurtado, KB1NXO**  
Circulation Manager

**Diane Szlachetka, KB1OKV**  
Advertising Graphics Designer

## Technical

### Building Inexpensive HF Power Attenuators 32

Gary Geissinger, WA0SPM

Tune your antenna without exposing your rig to harmful reverse power.

### A Different Way to Assemble PL-259 Coax Plugs 34

Robert Bastone, WC3O

Even experienced hams can have difficulty soldering these workhorses to coax. Here's an easy — and effective — way to make sure it's done right.

### Polar Plot Projection of Your Yagi Response 36

Robert Johnson, W7LRD

You don't need fancy equipment to estimate your antenna's performance.

### PSK31 — A Different View 37

Thomas W. Brooks, KE1R

There's more than one way to visualize PSK31.

### Emission Designators Deciphered 41

Kai Siwiak, KE4PT

There are lots more emission designators than there used to be — and they're all different than the ones we learned years ago.

### A Club Project — Automatic Mobile Power Control 43

Jim Cook, W8WKE

This simple and inexpensive APRS group project is a great way to let new hams enjoy the thrill of the workshop.

### Have Fun Building the Simplest Transmitter 46

Martin Huyett, K0BXX

The author builds his dream one-tube transmitter from the 1950s.

### Extending that High Power Remote Auto Tuner to 160 Meters 50

Phil Salas, AD5X

Most remote auto tuners can't tune top band. This tuner range expander could be your ticket to 160 meters.

### Boat Anchor Buddy 53

Ralph E. Taggart, WB8DQT

How to make your vintage receiver and transmitter operate as a fully integrated transceiver.

### Product Review 57

Mark Wilson, K1RO

Array Solutions AIMuhf vector impedance analyzer; DZKit HT-7 40 meter AM handheld transceiver



## News and Features

### It Seems to Us 9

Supporting Those Who Support Us

### This Just In 12

Steve Ford, WB8IMY

Inside HQ; Media Hits; more.

### Reaching for the Stars with Radio 75

Kaci Heins, KF7RCV

A Teachers Institute graduate brings Amateur Radio and the ISS to her sixth grade classroom.

### Looking Ahead to 2014 78

Kay Craigie, N3KN

ARRL President Kay Craigie, N3KN, presents ideas from League members on how local clubs can celebrate the ARRL's Centennial.

### He's Listening Up! 80

Rick Lindquist, WW3DE

One of the secrets to working DX is to know how to work "split." But how do you do it?

### Distracted Driving and Amateur Radio — A Civil (Law) Perspective 81

John Swartz, WA9AQN

An attorney's view on operating behind the wheel.

### Frequency Measuring Test — November 2012 83

H. Ward Silver, N0AX

This bi-annual test will ensure your frequency's accuracy and stability.

### The Bill Leonard, W2SKE, Professional Media Award 84

Allen Pitts, W1AGP

This is your chance to honor a reporter who did an outstanding job on a story featuring Amateur Radio.

### Happenings 85

S. Khrystyne Keane, K1SFA

FCC releases Amateur Radio study; QST Managing Editor Joel Kleinman, N1BKE (SK); North Carolina Teen Named Hiram Percy Maxim Award winner; FCC News; more.

**Our Cover**

Earlier this year, the Space Spartans — a group of middle school students from Flagstaff, Arizona — participated in a high-altitude balloon launch. A repeater was attached to the balloon, allowing the students to talk to their families at school, 250 miles away. With the balloon reaching heights of more than 85,000 feet, it tethered the students to the stars, inspiring these young minds to contemplate their bright future. [Kaci Heinz, KF7RCV, photo]



**November 2012  
Volume 96 Number 11**

QST (ISSN:0033-4812) is published monthly as its official journal by the American Radio Relay League, Inc., 225 Main Street, Newington, CT 06111-1494, USA. Periodicals postage paid at Hartford, CT, USA and at additional mailing offices.

POSTMASTER: Send address changes to: QST, 225 Main St, Newington, CT 06111-1494, USA. Canada Post: Publications Mail Agreement #40612608. Canada Returns to be sent to Bleuchip International, PO Box 25542, London, ON N6C 6B2.

**US & Possessions:** Membership in the ARRL, including a one year subscription to QST, is available to individuals at \$39. Licensed radio amateurs age 21 and under and the eldest licensee in the household may qualify for the rate of \$20. Life Membership, including a subscription to QST is available at \$975.\* Membership includes \$15 per year for subscription to QST. Membership and QST cannot be separated. Libraries and institutions, \$39 per year. Single copies \$4.99.

**International**

To compensate for additional postage for mailing outside the US, the following rates apply:

**Canada:** Membership in the ARRL, including a one year subscription to QST, \$49, payable in US funds. Life Membership, including a subscription to QST is available at \$1225.\* Libraries and institutions, \$49 per year.

**All Other Countries:** Membership in the ARRL, including a one year subscription to QST, \$62, payable in US funds. Life Membership, including a subscription to QST is available at \$1550.\* Libraries and institutions, \$62 per year.

Membership without QST is available to the immediate family of a member living at the same address, and to anyone who is legally blind, for \$8 per year.

Foreign remittances should be by international postal or express money order or bank draft negotiable in the US and for an equivalent amount in US funds.

Copyright © 2012 by the American Radio Relay League Inc. Title registered at the US Patent Office. International copyright secured. All rights reserved. Quedan reservados todos los derechos. Printed in the USA.

QST®, DXCC®, VUCC®, DX Century Club®, ARES®, Amateur Radio Emergency Service® and ARRL, the national association for Amateur Radio® are registered trademarks of the American Radio Relay League, Inc.

The ARRL and QST in no way warrant the products described or reviewed herein.

QST is available to blind and physically handicapped individuals on audio cassette from the Library of Congress, National Library Service for the Blind and Physically Handicapped. Call 1-800-424-8567.

Indexed by Applied Science and Technology Index, Library of Congress Catalog Card No: 21-9421.

\*Payment arrangements available. Please write for details.

In order to ensure prompt delivery, we ask that you periodically check the address information on your mailing label. If you find any inaccuracies, please contact the Circulation Department at [circulation@arrl.org](mailto:circulation@arrl.org) or 860-594-0200 immediately. Thank you for your assistance.

Reprints and permissions: [permission@arrl.org](mailto:permission@arrl.org)

See page 14 for detailed contact information.

Telephone: 860-594-0200  
Fax: 860-594-0259

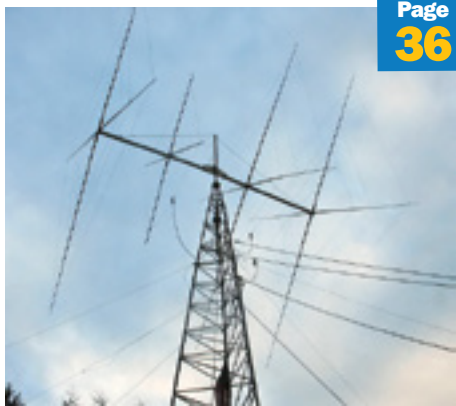
**Radiosport**

**Contest Corral 91**

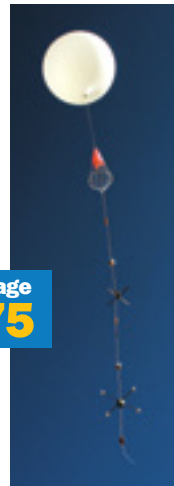
H. Ward Silver, N0AX

**2012 ARRL 10 Meter Contest Announcement 92**

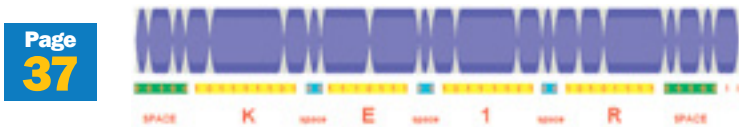
**2012 ARRL 160 Meter Contest Announcement 92**



Page  
**36**



Page  
**75**



Page  
**37**

**Columns**

**At the Foundation ..... 102**  
**Correspondence ..... 24**  
**Technical Correspondence ..... 64**  
**The Doctor is In ..... 67**  
**Eclectic Technology..... 72**  
**Hands-On Radio ..... 70**  
**Hints & Kinks ..... 73**  
**How's DX? ..... 93**  
**Inside HQ..... 13**  
**Public Service..... 89**  
**Short Takes ..... 69**  
**Up Front ..... 20**  
**Vintage Radio..... 99**  
**The World Above 50 MHz ..... 95**  
**75, 50 and 25 Years Ago..... 103**

**Departments**

**Convention and Hamfest Calendar ..... 101**  
**Feedback..... 45**  
**Field Organization Reports..... 103**  
**Guide to ARRL Member Services..... 14**  
**Ham Ads..... 154**  
**Index of Advertisers..... 156**  
**New Books ..... 49, 105**  
**New Products ..... 33, 35, 49, 52**  
**Next Issue of QEX ..... 52**  
**QuickStats..... 136**  
**Silent Keys ..... 104**  
**Special Events..... 98**  
**Strays ..... 42, 84**

**Digital Edition**

ARRL members can access the digital edition via a link at [www.arrl.org/qst](http://www.arrl.org/qst)

**Interested in Writing for QST?**

[www.arrl.org/qst-author-guide](http://www.arrl.org/qst-author-guide)  
e-mail: [qst@arrl.org](mailto:qst@arrl.org)