



The RELAY)))

August
2026

The Official Publication of the Arrowhead Radio Amateur Club
A.R.A.C. Inc. P.O. Box 7164 Duluth MN 55807-7164 <http://www.thearac.org> Dues: Member \$20/Family \$25

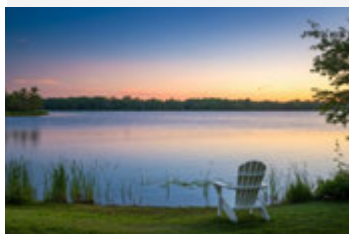
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Summer 2026



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Facebook!

SPACE STATION FREEDOM The History of Dreaming Our Future

Ronald Reagan was born in Tampico, Illinois, in 1911, the son of a shoe salesman and a mother who filled their modest home with books, faith, and optimism. As a boy he swam in the Rock River, played football, and worked summers as a lifeguard, developing the easy smile and steady presence that would later disarm critics and comfort a nation. After college he found work as a radio announcer, then as a Hollywood actor, before turning to politics. Elected governor of California, he governed with a blend of firm principle and personal charm. In 1980 he won the presidency in a landslide, serving two terms that restored American confidence in a brighter future.

Then, on a cold January evening in 1986, after the shuttle Challenger broke apart in the Florida sky, Reagan spoke to a shocked and grieving nation with quiet dignity:

"We will never forget them, nor the last time we saw them, this morning, as they prepared for their journey and waved goodbye and 'slipped the surly bonds of earth' to 'touch the face of God.'"

The following year, in President Reagan's State of the Union address, he directed NASA to build a permanently manned space station within a decade—Space Station Freedom. Americans were excited and intrigued by a new generation of cutting-edge space technology that promised to establish a viable, orbital space base for long-term exploration and research.

Reagan's philosophy of "peace through strength" proceeded to also guide a U.S. military buildup that ultimately helped open the door to dialogue with Mikhail Gorbachev of the Soviet Union. In Berlin, President Reagan famously stood before the Brandenburg Gate and declared, "Mr. Gorbachev, tear down this wall."

The wall fell, glasnost bloomed, and the Cold War began to thaw—creating the unexpected possibility that former adversaries might one day work together in orbit. NASA set to work on Freedom, but changing budgets and shifting geopolitics led, in the 1990s, to a historic new partnership with Russia being added to existing Freedom partners Europe, Japan, and Canada.



Artist's rendition by Tom Buzbee of the proposed Space Station Freedom design as of early 1991. Image: Tom Buzbee

Continued on Page 13



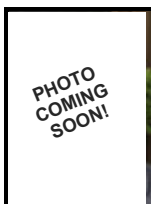
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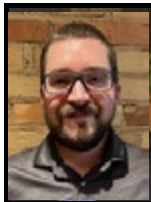
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Randy Wabik

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KD9VKI
Justin Cheever
jcheever13@gmail.com

2ND YEAR BOARD



KFØLFZ
Brian Beckman

1ST YEAR BOARD



AAØAC
Dave Davis
218-348-6649
aaøac@outlook.com

Board Meeting Minutes - July 7, 2026

Present:

Board Members

Gene Ellefsen – NØVRM, Jon Nelson – NØUOZ, Melinda Nelson – AFØET,
Randy Wabik – KRØB, Brian Beckman – KFØLFZ, Justin Cheever – KD9VKI

Board Advisors (Non-Board Members)

Doug Nelson – AAØAW, Grant Forsyth – KCØWUP

Guest:

Rochelle Nelson

Meeting called to order by President Gene – NØVRM at 18:32 (6:32 pm)

Minutes:

No Quorum for the month of June Board Meeting

Treasurer's Report:

Checking: \$976.90
Savings: \$6,059.83
Repeater: \$3,552.68
 Subtotal Cash \$10,589.41
Cash on hand: \$95.63
 Subtotal COH: \$95.63
Outstanding Checks:
 Assets Subtotal: \$10,685.04

Motion made by Jon Nelson – NØUOZ to accept Treasurer's report as is, seconded by Justin Cheever – KD9VKI. Motion passed.

Motion by Jon Nelson – NØUOZ to spend upto \$300.00 for the August Club Picnic, seconded by Brian Beckman – KFØLFZ. Motion approved.

Testing:

Need a copy of the FRN number, an ID, and a copy of your licenses. As always if you are ready to test or know someone who wants to test, please get ahold of Doug Nelson – AAØAW at AAØAW@arri.net.

Repeater:

Doug Nelson – AAØAW – In June we had to take the antennas off the Arlington Water Tower so they could re-paint the tower. The City came up with a contract for us to put our antenna back up with a fee of \$100.00 per year for the next five years. After the Five-Year contract is over they will automatically renew the contract.

Field Day –

Was a successful year. We made almost \$1,000 contacts with over \$4,000 points this year. Good job and thank you to everyone that came out and participated.

New Business:

Curnow Race
Voyager Race
Club Picnic
In-Line
Fall Fest
Looking for rates of storage units

Raising of Dues (\$25.00 for single and \$35.00 for family) Motion by Brian Beckman – KFØLFZ, seconded by Jon Nelson – NØUOZ to bring to the club – Motion passed.

Motion to adjourn by Jon Nelson – NØUOZ, seconded by Randy Wabik – KRØB, motion passed at 19:10 (7:10 PM).





ARAC Club Meeting Minutes

July 9, 2026

Present:

President: Gene Ellefsen – N0VRM
Vice President: Jon Nelson – N0UOZ
Secretary: Melinda Nelson – AF0ET
Second Year Board: Brain Beckman – KF0LFZ
HamFest/Education: Bob Schulz – KC0NFB
Special Events: Open/Gene Ellefsen – N0VRM (acting)
Parliamentarian: Grant Forsyth – KC0WUP
Testing: Doug Nelson – AA0AW

Absent:

First Year Board: Dave Davis – AA0AC
Repeater: Dave Pyrlík – K0DJP & Randy Wabik – KR0B
Treasurer/Membership: Randy Wabik – KR0B
Third Year Board: Justin Cheever – KD9VKI
Property/Picnic: Scott Ahlgren – N0VYU
Newsletter/Historian: Kim Waller – KE0NQS
Newsletter/Historian: Steve Waller – KE0NQT
Web Site: Thomas Dorr – KE0RHA
Chaplin:

Meeting called to order at 19:00 (7:00 PM) by President Gene Ellefsen – N0VRM. 39 (Thirty-nine) Members were in attendance

Minutes:

Minutes are posted on the website and in the newsletter. Motion to accept by Jon Nelson – N0UOZ seconded by Grant Forsyth – KC0WUP, motion Passed.

Treasurer's Report:

Checking: \$976.90
Savings: \$6,059.83
Repeater: \$3,552.68
Subtotal Cash \$10,589.41
Cash on hand: \$95.63
Subtotal COH: \$95.63
Outstanding Checks:
Assets Subtotal: \$10,685.04

Motion made by Grant Forsyth – KC0WUP, seconded by Jeff Nast – KC0MKS. Motion passed.

Club Picnic:

Motion from the board to spend up-to but not exceed \$300.00. Seconded by Rick Minotte – KB0YBA. Motion passed

Continued on Page 4



ARAC Club Meeting Minutes continued

Testing:

Please make sure that you have the updated syllabus. As always if you are looking to test or upgrade or know of anyone that is interested in testing, please contact Doug Nelson – AA0AW at AA0AW@arrl.net.

New Business:

There was talk at the board meeting about raising our membership dues. \$25.00 for a single member and \$35.00 for family. The board opened it to discussion with the club. After discussing it for a while the board agreed to table the and revisit it next month after the board meeting as the discussion led to raising dues \$40.00 for a single member and \$50.00 for family. The last time dues were raised was in 1998.

Silent Key: (Please keep their family in your thoughts)

New members/Returning members (Please welcome them when they get on the radio):

Guest: Nancy Kist – KE0VSC

Door Prize: was won by Aaron Osterwyk – AA0AF (Donated it back to the club)

Motion to adjourn by Jon Nelson – N0UOZ, seconded by John Cavanaugh – KC0AFE, motion passed at 17:34 (7:34 PM).

2026 Program:

July – Intro to Fox Hunting

August –

October –

November –

December – Christmas Party

If you are interested in seeing a program, or would like to host a program, please reach out to Jon Nelson at jonbeeyore@outlook.com or 715-817-1986.



CLUB REPEATER
WØGKP
146.94 (-)
CTCSS TONE



Prez Sez

Hi Everyone,

I hope you are all enjoying your summer!

With the particularly hot weather we have been needing to stay hydrated and as cool as possible. If you are out on the water, please use your personal flotation device—especially if you have children on board.

Stay Safe,

Gene NØVRM



LOOKING for an Amateur Radio License TESTING SESSION?

Schedule your own Testing Session TODAY!

Contact Doug Nelson-AA0AW at aa0aw@arrl.net or 218-391-5874

All Exam Candidates are REQUIRED to have an FCC Registration Number (FRN) before exam day, which will require your email address.

Not Currently Licensed? For New License Candidate FRN registration, go to: www.fcc.gov/new-users-guide-getting-started-universal-licensing-system-uls

Upgrading to General or Expert Class & not sure you have an FRN number?
go to

<https://wireless2.fcc.gov/UlsApp/UlsSearch/searchLicense.jsp>

UPGRADE CANDIDATES:

Please bring a copy of your current license to the exam session.

CW Abbreviations

AR End of Message	AS Pse QRX	BK Back to You	SK End of Contact
TU Thank You	PSE Please	K Invite to Transmit	
QST Calling all Amateurs	QRL Are You Busy?	QRU Have anything for me	
QRV Are You Ready?	QRX Standby	QRS Transit Slower	

A ●—	M —●—	Y —●—●—
B —●—●—	N —●—	Z —●—●—
C —●—●—	O —●—●—	1 ●—●—●—
D —●—●—	P —●—●—	2 ●—●—●—
E ●—	Q —●—●—	3 ●—●—●—
F ●—●—	R —●—●—	4 ●—●—●—
G —●—●—	S —●—	5 ●—●—●—
H —●—●—	T —●—	6 —●—●—
I —●—	U —●—	7 —●—●—
J —●—●—	V —●—●—	8 —●—●—
K —●—●—	W —●—●—	9 —●—●—
L —●—●—	X —●—●—	0 —●—●—



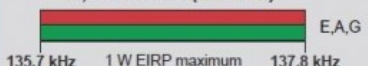
US Amateur Radio Bands

US AMATEUR POWER LIMITS

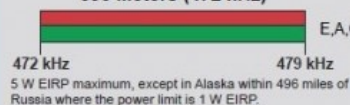
FCC 97.313 An amateur station must use the minimum transmitter power necessary to carry out the desired communications. (b) No station may transmit with a transmitter power exceeding 1.5 kW PEP.

On March 28, 2017, the Federal Communications Commission adopted rules that will allow Amateur Radio access to 472-479 kHz (630 meters) and to 135.7-137.8 kHz (2,200 meters). However, amateurs cannot use these frequencies until 30 days after the Report and Order is published in the Federal Register and the final procedures for registering stations with the Utilities Telecom Council (UTC) have been approved and announced. At the time this chart was created, the Report and Order had not been published and the UTC online registration site is not yet available. Follow ARRL news for further information. New charts will be published at www.arrl.org/graphical-frequency-allocations when the bands are fully available for use.

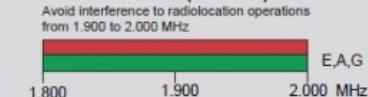
2,200 Meters (135 kHz)



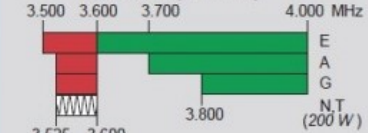
630 Meters (472 kHz)



160 Meters (1.8 MHz)



80 Meters (3.5 MHz)

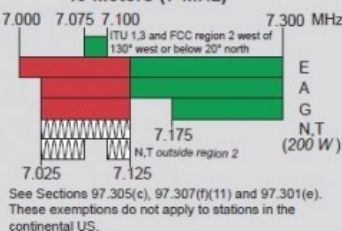


60 Meters (5.3 MHz)

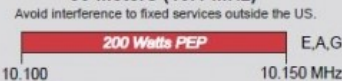


General, Advanced, and Amateur Extra licensees may operate on these five channels on a secondary basis with a maximum effective radiated power (ERP) of 100 W PEP relative to a half-wave dipole. Permitted operating modes include upper sideband voice (USB), CW, RTTY, PSK31 and other digital modes such as PACTOR III. Only one signal at a time is permitted on any channel.

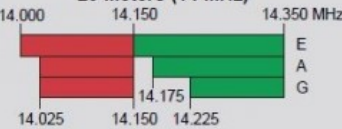
40 Meters (7 MHz)



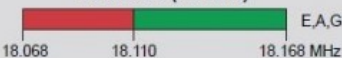
30 Meters (10.1 MHz)



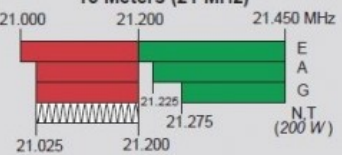
20 Meters (14 MHz)



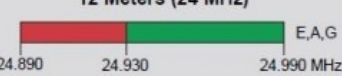
17 Meters (18 MHz)



15 Meters (21 MHz)



12 Meters (24 MHz)



Effective Date for
2,200 and 630 Meters
to be announced



ARRL The national association for
AMATEUR RADIO®

KEY

Note:
CW operation is permitted throughout all amateur bands.

MCW is authorized above 50.1 MHz, except for 144.0-144.1 and 219-220 MHz.
Test transmissions are authorized above 51 MHz, except for 219-220 MHz

- = RTTY and data
- = phone and image
- = CW only
- = SSB phone
- = USB phone, CW, RTTY, and data
- = Fixed digital message forwarding systems only

E = Amateur Extra
A = Advanced
G = General
T = Technician
N = Novice

See **ARRLWeb** at www.arrl.org for detailed band plans.

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email: news@arrl.org

Exams: 860-594-0300 email: vec@arrl.org

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NETS

Have a favorite HF/6m/2m/1.25m/70cm net that you check into or listen in on? Also, please send corrections and we will add it to the list below - Kim KEØNQS at my email KEØNQS.mn@gmail.com.

- **Northland Weather Group Net:** Mondays 2000 on the ARAC repeater (146.940 MHz with a tone of 103.5 and standard offset).
- **Minnesota D-Star Net:** Sundays at 19:30 on Reflector 53A
- **Minnesota Section Net** 1200 and 1730 on 3.860 [Net Manager: NØYR] http://www.mn-section.org/dept_stm.html
- The non-non-net: Evenings 2000 144.200 USB except for Sunday evenings.
- Badger WX Net: 0500-0715 on 3.985. Give 24 hour high/low/current temperature, precipitation and snowfall.
- **PICONET:** 3.925 from 0900-1100 CT Mon-Sat and 1600-1700 CT Mon-Fri. Info at: <http://www.piconet3925.com>
- Michigan Upper Peninsula Net: 1600 (CST) on 3.921 MHz Sun-Sat and 1200 Sun. Info: <http://www.michupnet.com>
- Great Lakes Marine/Maritime Mobile Net: Morning 07:30 - 3.932; 08:15 - 7.261 MHz and evening 18:30 - 3.1730927; 19:15 - 7.268 MHz. Weekend extra net: 10:00 - 7.261/7.268 MHz. All CST, LSB and +/- QRM. See: <http://www.sailblogs.com/member/glmmnet/>
- MIDCARS: 07:30-13:00 - 7.258 MHz. See: <http://www.midcars.net>
- Iowa snowbird net on 14.257MHz, M-W-F at 10:00 am Local Time. This is an open net.
- Spider Web Net (Marco Island FL) on 14.347 every morning at 0730 CST/CDT: <http://www.spiderwebnet.net>
- Maritime Mobile Service Network: Daily at 1100—2100 Central on 14.300. <http://mmsn.org> and <http://www.14300.net>
- RV Radio Network: Every day at 1900 Central on 7.265 MHz. Web site: <http://www.rvradionetwork.com>
- Upper Midwest Ten Meter Net: Every Thursday Evening @ 8 PM – 28.480 MHz USB
- Wisconsin Sideband Net: Daily @ 5:15 PM – 3985 [or 3982.5] KHz LSB
- Hobby Helpers Net - Tuesday @ 8 PM – 28.330 MHz USB (Isanti MN) LSB [Net Manager: WOØA].
- Northstar Trader Net: 3.908 +/- at 0830 CST Sundays
- WARFA: 3.908 +/- Sun/Tue/Thu nights at 2200 CST, <http://warfa.org/>
- Youth Net: 14.320-14330 Sundays 1800-1900 UTC, Net Control: AC8PI
- YACHT: Saturdays 1900 CST on EchoLink #481872, <http://yachthams.webstarts.com>
- Northwestern Ontario ARES Net: Evenings at 20:15 (Central) on +/- 3.750Mhz
- The Iron Range Net: Saturdays at 0800 Central time on or near 3.919 Mhz. Look them up on Facebook!
- FORX Net: Mondays at 1900 Central at 3.941 Mhz +/- QRM. WAØJXT — Grand Forks, North Dakota
- HF CW: Fridays 08:00 CST, 7.112 MHz. Informal slow speed CW Net. W8IRT NCS. Email: w8irt@aol.com
- Minnesota ARES Digital Net: Thursdays at 2000 CST, 3.5835 MHz USB +/- QRM, Mode: Olivia 8/500.
- SARA Digital Net: Sundays at 1900 Local, 3.582.150 MHz USB +/- QRM, Mode: BPSK31/BPSK63
- Spider Web Net (Marco Island FL): 14.347 every morning at 0730 CST/CDT: <http://www.spiderwebnet.net>
- Broadcaster Net: 7.231 or 3.855 M/W/F @ 1500 UTC. 14.255 M-F @ 2130 UTC. <http://www.cbsretirees.com/ham.htm>
- Old Military Radio Net: 7.268 +/- nightly at 0200z. Other times/Frequencies too. See: <http://www.mrca.ar88.net/>
- Rag Chew Crew/Tailgaters/Freewheelers Nets: 3.916 +/- nightly at 1900 CST, <http://www.tailgatersnet.com>
- North South Net: 7.214.6 +/- at 0700 CST, Monday-Saturday



DULUTH AREA REPEATERS

ARAC System WØGKP

Frequency	Offset	Tone	Location
146.940	minus	103.5	Duluth
146.940	minus	107.2	Lakeside (recv)
146.940	minus	151.4	Two Harbors (recv)
146.940	minus	100.0	Gary-New Duluth (recv)
146.940	minus	110.9	Cloquet (recv) Not Operating
147.000	minus	103.5	Mahtowa
444.100	plus	103.5	Duluth UHF Link

N9MMU/N9QWH System (WI)

145.310	minus	110.9	Duluth
145.490	minus	110.9	Solon Springs
147.255	plus	110.9	Hayward
145.110	minus	110.9	Rice Lake
147.345	minus	136.5	Holcombe
145.230	minus	110.9	Eau Claire

WECOMM – WI Statewide Linked System WE9COM

147.075	plus	110.9	Meteor Hill (closest repeater to Duluth)
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LSAC System – some may work/some may still be linked

147.330	plus	151.4	Proctor	Not Operating
147.270	plus	114.8	Two Harbors	
147.270	plus	103.5	Wales	Not Operating
147.090	plus	114.8	Silver Bay	
147.300	plus	114.8	Isabella	Not Operating
145.150	minus	103.5	Washburn, WI	
146.700	minus	103.5	Bayfield, WI	Not Operating
443.850	+5.00	none	Bayfield, WI	
147.165	plus	110.9	Hurley, WI	Not Operating
146.640	minus	151.4	Ely	
443.500	+5.00	141.3	Gilbert	Not Operating
147.060	plus	103.5	Virginia	
147.360	plus	162.2	Cook	Not Operating
147.165	plus	114.8	Coleraine	
443.925	+5.00	110.9	Brainerd	Not Operating
443.200	+5.00	114.8	Tamarack	
147.360	plus	203.5	Aitkin	Not Operating
146.865	minus	146.2	Giese	
443.325	+5.00	146.2	Isanti	

Rev. KCØWDQ as of 12/01/24 For ARAC Newsletter

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DULUTH AREA REPEATERS, continued

NARC System NAØRC

147.135	plus	103.5	Knife River
147.135	plus	114.8	Duluth (rcv)

Stand Alone Repeaters

145.210	minus	110.9	Clam Lake, WI
146.880	minus	123.0	Grand Rapids, MN
146.910	minus	146.2	Duxbury, MN
146.955	minus	146.2	Askov, MN
147.105	plus	110.9	Chaffey, WI
444.850	+5.00	141.3	Cloquet, MN

Fusion

Fusion (Analog has tone and C4FM digital with no tone)

147.150	plus	151.4	NTØB Gilbert. MN Fusion Repeater
145.170	minus	110.9	WA9KLM Superior, WI – Douglas County RACES/ARES Fusion Repeater (Digital only) Fusion Room 28373

145.250	minus	103.5	KBØYHX Cloquet, MN – Carlton County RACES/ARES Fusion Repeater
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444.300	+5.00	103.5	NØEO Duluth, MN – Spirit Valley Amateurs Fusion Repeater WIRES-X NØEO (Analog only) Fusion Room 40494
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444.400	+5.00	103.5	NAØRC Knife River, MN – Wires X Connected to NØEO Room 40494
444.500	+5.00	103.5	NØLCR Two Harbors, MN – Wires X Connected to NØEO Room 40494
444.600	+5.00	103.5	NØLCR Silver Bay, MN – Wires X Connected to NØEO Room 40494
444.800	+5.00	103.5	NØLCR Grand Marais, MN – Wires X Connected to NØEO Room 40494
440.400	+5.00	110.9	WØLSA Maple, WI – Wires X Connected to NØEO Room 40494

D-Star

147.375	plus	NØEO D Star
442.200	plus	NØEO D Star

Rev. KCØWDQ as of 12/01/24 For ARAC Newsletter

Elmers

El-mer / el-mər/ [el-mer]

1. a male given name: from Old English words meaning "noble" and "famous."
2. an adhesive used to bond like or unlike materials
3. An experienced ham radio operator who mentors new and prospective hams.

Name	Call Sign	Expertise
Jeff Nast	KCØMKS	APRS, EchoLink, WinLink, Fusion, Contesting
Bob Schulz	KCØNFB	Contesting
Jim Anderson	NØJWA	QsoNet
Doug Nelson	AAØAW	HF, VHF/UHF, Contesting, Packet, APRS, Morse Code, VE testing, Echolink, Allstar, EmCom...



Membership Email Directory

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kc0mko@centurylink.net
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Co-Editors,
Kim & Steve Waller
KEØNQS & KEØNQT



SUNDAY NIGHT NETS
 1930 - CW - 28.125 MHz USB-CW
 2000 - USB 28.450 MHz
 2100 - Southern St. Louis County
 Emergency Services Net
MONDAY NIGHT NETS
 2000 - Northland WX Net - ARAC Repeater

AUGUST

CLUB EVENTS

TUESDAY NIGHT NETS
 2000 - Douglas Cty 145.490 MHz
 2030 - Central Carlton County
WEDNESDAY NIGHT NETS
 1900 - Lake County - LSAC1
 2nd & 4th Wednesdays
 2100 - BWAR

	Mon	Tue	Wed	Thu	Fri	Sat
						1 ARAC Picnic Chambers Grove
2 CW 1930 AA0AW USB 2000 KB9WLB ES 2100 KF0LFZ	3 WX 2000 KC0MKS	4 ARAC BOARD MEETING Sammy's Pizza 6:30 pm DC Net 2000 CC Net 2030	5 2100 - BWAR	6	7 Friday Night 6 meter Gag-Chew 50.125 USB 7 PM	8
9 CW 1930 N0PDG USB 2000 K9KDK ES 2100 W0NWO	10 Douglas County ARES/RACES Mtg 1900 DC E WX 2000 KC0MKS	11 DC Net 2000 CC Net 2030	12 Lake County ARES/RACES Meeting 1900 CC EOC Lake County LSAC1 1900 2100 - BWAR	13 ARAC Club Meeting Coppertop Church 7 PM	14 Friday Night 6 meter Gag-Chew 50.125 USB 7 PM	15
16 CW 1930 AA0AW USB 2000 KR0B ES 2100 N0VRM	17 WX 2000 KC0MKS	18 DC Net 2000 CC Net 2030	19 2100 - BWAR	20	21 Friday Night 6 meter Gag-Chew 50.125 USB 7 PM	22
23 CW 1930 N0PDG USB 2000 N0VRM ES 2100	24 WX 2000 KC0MKS	25 DC Net 2000 CC Net 2030	26 Lake County LSAC1 1900 2100 - BWAR	27 Carlton County ARES/RACES Meeting 1900 CC EOC	28 Friday Night 6 meter Gag-Chew 50.125 USB 7 PM	29
30 CW 1930 AA0AW USB 2000 AA0AW ES 2100 AA0AW	31 WX 2000 KC0MKS					

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Email Doug AAØAW at
aa0aw@arrl.net

Next Club Meeting:
August 13, 2026 - 7 pm
Coppertop Church

ARAC Committee Chairs



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AAØAW - NØKXT - KCØNFB

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Waller

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Hamfest Chair:

Bob Schulz KCØNFB

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Scott Ahlgren NØVYU

Testing:

Doug Nelson AAØAW

Field Day:

Picnic Chair:

Scott Ahlgren, NØVYU

Repeater Chairs:

Randy Haglin NØBZZ
Randy Wabik KAØJZV

Contest Calendar at www.contestcalendar.com

National Contest Journal at www.ncjweb.com

QSO Party Note: State/Province/National QSO Parties are abbreviated with the 2 or 3 letter abbreviation for the state/province/national designation followed by QP for QSO Party:

Examples: Minnesota QSO Party is MNQP

British Columbia QSO Party = BCQP

QRZ web site at www.qrz.com

VHF Propagation site at www.aprs.mountainlake.k12.mn.us

Reminder: The Contest Corral monthly listing of contests can be found in each issue of QST. ARRL sponsored contests can be found in Contest Corral, highlighted, or on the ARRL's web site at arrl.org.

Space Station Dreams continued from page 1

The Soviet Union had collapsed and in 1993, the U.S. (under the Clinton administration) and Russia agreed to combine efforts, utilizing Russia's hardware and expertise, building on the Shuttle-Mir program of the 1990s. Project Freedom was reborn as the International Space Station.

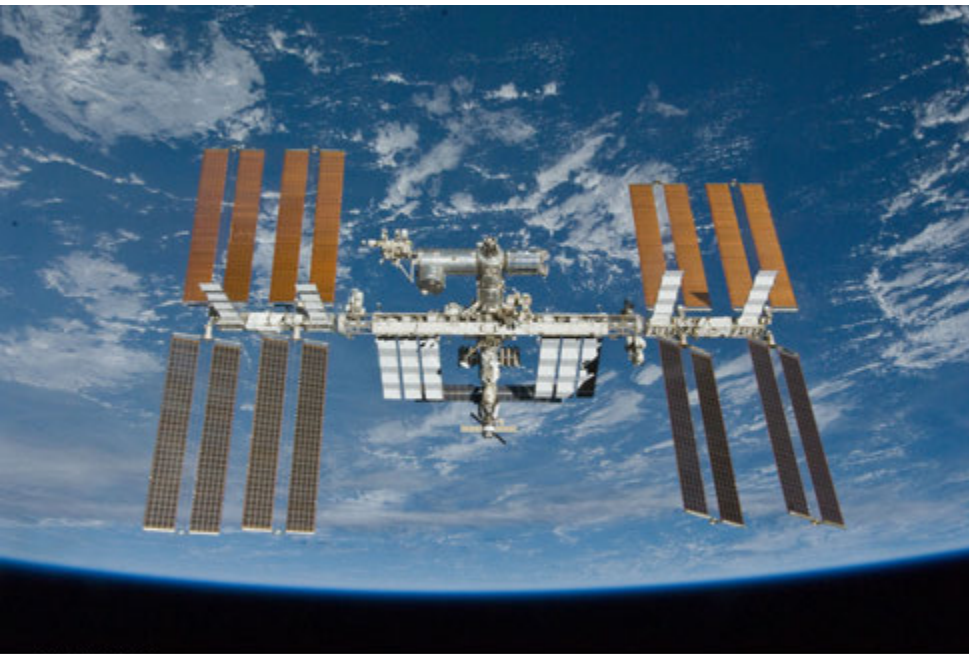
Assembly began with the Russian-built (U.S.-funded) Zarya functional cargo block, launched November 20, 1998, on a Proton rocket. The U.S. Unity node followed in December 1998 via Space Shuttle Endeavour (STS-88). Continuous human presence started November 2, 2000, with Expedition 1 (NASA's William Shepherd and Roscosmos cosmonauts Yuri Gidzenko and Sergei Krikalev). Major construction wrapped around 2011 after dozens of launches (Space Shuttle, Proton, Soyuz, and later commercial vehicles), though modules continued to be added (e.g., Russia's Nauka in 2021).

The station is roughly the size of a football field (with solar arrays), weighs around 420–450 metric tonnes (about 463–496 American tons), and has hosted research, technology demonstrations, and more than 290 visitors from 26 countries.

The Coalition Behind ISS

The ISS operates under the 1998 Space Station Intergovernmental Agreement (IGA), a treaty signed by 15 governments: the United States, Russia, Japan, Canada, and 11 ESA member states (Belgium, Denmark, France, Germany, Italy, Netherlands, Norway, Spain, Sweden, Switzerland, and the United Kingdom—though the UK contributed less operationally). Five space agencies form the core partnership:

- NASA (United States) – leads the U.S. Orbital Segment and overall integration.
- Roscosmos (Russia) – manages the Russian Orbital Segment.
- ESA (Europe).
- JAXA (Japan).
- CSA (Canada) – notably provided the Canadarm2 robotic system.



International Space Station as seen from Dragon space capsule. Image: NASA/SpaceX

Each partner owns and is primarily responsible for the hardware it contributed, plus related operations, research facilities, and support. The station is a true cooperative program rather than a single-nation asset; modules and systems remain under the providing partner's ownership.

Over the thirteen-year assembly time period, the international space station grew module by module, truss by truss, solar array by solar array. The United States Space Shuttle Program became the indispensable workhorse of the ISS, ferrying massive components, laboratories, and crews until the final flight of Atlantis in July 2011 closed three decades of shuttle operations. Even after the shuttles retired, the ISS continued to expand and improve, sustained by commercial cargo and, later, commercial crew vehicles.

Into that story stepped another man who dreamed of the stars as a boy. **Elon Musk** was born in Pretoria, South Africa, in 1971. His parents divorced when he was young; school brought relentless bullying that once left him hospitalized. He escaped into books—science fiction by Asimov and Heinlein, encyclopedias, and computer manuals—teaching himself to program and imagining a future in which humanity was not confined to one planet, but was truly interplanetary. At seventeen he left for Canada, then moved to the United States in the mid-1990s, becoming a citizen in 2002. Musk co-founded or founded an impressive list of American companies including:

- Zip2: originally Global Link Information Network, 1995
- X.com: merged with Confinity in 2000 and renamed PayPal, 2001
- SpaceX: Space Exploration Technologies Corp., 2002
- Tesla, Inc.: originally Tesla Motors, 2004
- SolarCity: 2006 (later acquired by Tesla in 2016 and integrated into Tesla Energy)
- OpenAI: 2015
- Neuralink: 2016
- The Boring Company: 2016 (initially a subsidiary of SpaceX and spun out as an independent entity 2017–2018)
- xAI: 2023 (creator of the Grok Artificial Intelligence models)

Continued on Page 14

Space Station Dreams continued from page 13

In September 2024, Musk was reflecting on Ronald Reagan as a pivotal inspirational figure in American history. He said that the former president was simply “awesome” and that Reagan “made you feel great about the future.” Musk himself had carried that same sense of America’s unlimited possibilities forward, channeling it into the development of the Dragon spacecraft so that American access to the International Space Station would not end when the Space Shuttle program sunsetted in 2011.

SpaceX’s Dragon capsules began serving the ISS in 2012 as unmanned cargo ships, delivering supplies and returning scientific samples. A later, crewed version of Dragon carried astronauts to the station and, on more than one occasion, stood ready as a lifeboat—most notably when it safely brought home crews whose other return vehicles had been grounded.

Today those same Dragons continue the work Reagan first envisioned. Life aboard the ISS unfolds in six-month increments. Astronauts conduct hundreds of experiments, maintain the aging but resilient complex, and, in quiet moments, speak with schoolchildren and amateur radio operators on Earth through the ARISS program—tiny voices linking the orbiting laboratory to classrooms and living rooms below.



SpaceX Dragon Crewed Space Capsule **Endeavour**, so named in honor of the Space Shuttle Endeavour image: NASA

Expedition 75 Commander **Jessica Meir** poses inside the Kibo laboratory module. Meir will lead the Expedition 75 crew until the end of summer 2026. Image: NASA



ISS Top Ten Results

Here is a selection of 10 of the most interesting and impactful results from research and observations on the International Space Station over the past 25 years (roughly 2000–2026). These highlight discoveries that advanced both space exploration and life on Earth:

1. **Long-duration effects on the human body.** Decades of continuous crew data revealed how microgravity causes rapid bone density loss, muscle atrophy, fluid shifts toward the head, immune system changes, and vision problems (Spaceflight-Associated Neuro-ocular Syndrome). These findings are now guiding countermeasures for Moon and Mars missions.
2. **Protein crystals grown in space lead to better medicines.** Microgravity produces larger, more perfect protein crystals than on Earth. This has informed the design of improved drugs, including contributions to treatments for cancer and research into Duchenne muscular dystrophy.
3. **First DNA sequencing in space (2016).** Astronaut Kate Rubins successfully sequenced DNA aboard the ISS using a handheld device. This proved that genetic analysis can be done in orbit, opening the door to real-time monitoring of crew health and potential detection of microbes or life elsewhere.
4. **Growing and eating fresh food in space.** Through systems like Veggie and the Advanced Plant Habitat, astronauts have successfully grown and eaten multiple crops (lettuce, kale, mustard greens, chili peppers, and more). This is a critical step toward sustainable food production for deep-space missions.
5. **3D bioprinting of human tissues.** Researchers have printed living human tissues—including heart tissue and structures for nerve repair—in microgravity. Without gravity pulling materials downward, tissues can form more complex, scaffold-free shapes, advancing regenerative medicine on Earth.

Continued on Page 15

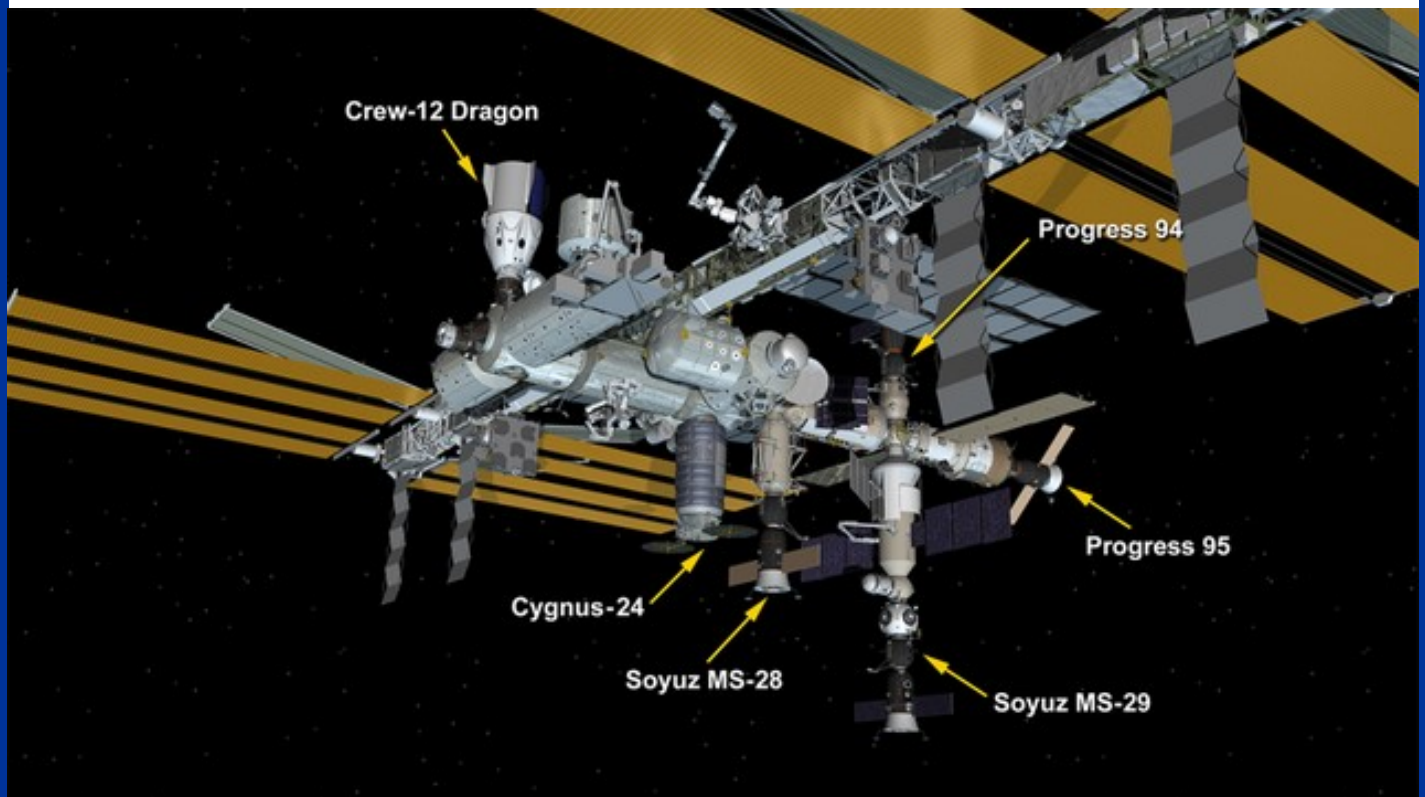
Space Station Dreams continued from page 14

6. **Superior optical fibers manufactured in orbit.** Companies have produced kilometers of high-quality ZBLAN optical fiber in microgravity. These fibers have fewer defects than those made on Earth and could improve telecommunications and medical devices.
7. **Cosmic-ray and particle physics breakthroughs.** The Alpha Magnetic Spectrometer (AMS-02) has recorded hundreds of billions of cosmic-ray events. Results have refined our understanding of cosmic rays, antimatter, and possible dark-matter signatures.
8. **Near-closed-loop life support systems.** The ISS has demonstrated water recovery rates approaching 98% through advanced recycling systems. This technology is essential for long missions where resupply from Earth is impossible.
9. **New insights into combustion and fluid behavior.** Experiments showed that flames form differently (often as spheres) and that bubbles grow much larger and faster in microgravity. These findings improve fire safety in spacecraft and influence industrial processes on Earth.
10. **Earth and atmospheric science from orbit.** Continuous observation has provided unique data on global climate patterns, severe storms, lightning (including upper-atmosphere “sprites”), natural disasters, and atmospheric chemistry—supporting both science and practical applications such as disaster response.

These results come from more than 4,000 experiments conducted by researchers from over 100 countries and have produced thousands of scientific publications. Many continue to yield new insights as data is analyzed.

A Little Girl's Dream of Walking Among the Stars in Space

As a first-grader in rural Maine a little girl named **Jessica Meir** drew a picture of herself in a spacesuit standing on the Moon. Determined to live her dream, that childhood sketch became a life of marine biology, NASA research support, and selection as an astronaut in 2013. Her first space flight as an astronaut was in 2019, which included historic spacewalks as the first all-woman team with Christina Koch. **Jessica Meir** is now Commander of the very station Reagan dreamed into being. As of this writing, **Expedition 75**, which began in late July 2026, is focused on advancing in-space manufacturing techniques, testing augmented reality and artificial intelligence tools for crew health monitoring, and continuing bioprinting of human tissue. The crew is also conducting a series of [Continued on Page 16](#)



July 14, 2026: International Space Station Configuration. Six spaceships are attached to the space station including the SpaceX Crew-12 Dragon, Northrop Grumman's Cygnus XL, the Soyuz MS-28 and MS-29 crew spacecraft, and the Progress 94 and 95 resupply ships. Image: NASA

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spacewalks to install and prepare new solar arrays, replace a communications antenna, and perform critical maintenance while carrying out ongoing scientific research and station upkeep.

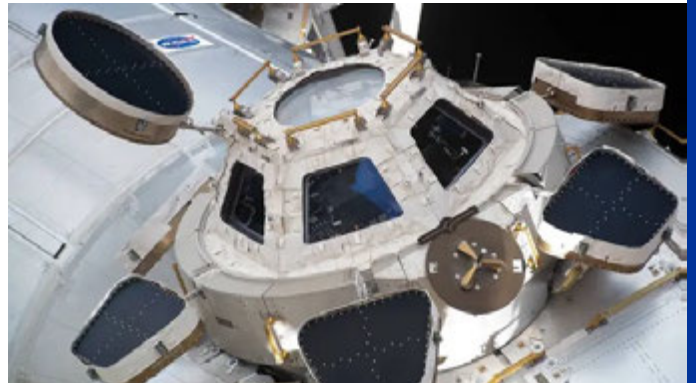
ISS: The Decommissioning

Looking ahead, the ISS is planned to operate through the early 2030s before a controlled deorbit.

Originally designed and tested for about 15 years of operations, the ISS has far exceeded that, with 25+ years of continuous occupancy. Modules and systems are showing wear.

Key issues include:

- ♦ Air leaks and cracks in the Russian Zvezda service module's transfer tunnel (PrK), ongoing since around 2019 and worsening. Sealant patches have been applied repeatedly. In early June 2026, elevated leak rates prompted five of seven crew members to shelter in a docked SpaceX Crew Dragon as a precaution while repairs were considered (a proposed Russian drilling/repair approach was rejected by NASA). Structural integrity remains a top safety concern, with potential for more serious failure.
- ♦ Aging hardware more broadly: Canadarm2 joint issues requiring spacewalk repairs, limited spares and supply-chain challenges for Extravehicular Mobility Units (spacesuits), and general systems degradation.
- ♦ NASA's Aerospace Safety Advisory Panel has described risk margins for day-to-day operations as reduced to "alarming levels," warning against budget cuts that could further erode contingency. Maintenance costs and complexity are rising as the station operates well beyond its design life.



The International Space Station's "window to the world" is pictured from the Nauka Multipurpose Laboratory Module. Image: NASA

NASA and partners continue close monitoring and repairs, and the station remains operational, but these problems underscore the push toward retirement.

Sunset Dates and Decommissioning Phases

The original operational target was around 2024–2028 in various earlier plans. It was extended (most recently via U.S. policy and partner concurrence) to 2030. In July 2026, Russia and the U.S. reaffirmed joint operations through 2030, with a coordinated wind-down. A baseline plan was reached, with the elasticity of pushing out the schedule an additional one or two years.

Current Baseline Plan at Press Time

- ♦ Early/mid-2028: Begin gradual orbit lowering via atmospheric drag plus thruster firings (including Russian Progress vehicles).
- ♦ Mid-2029: Last cargo vehicles depart; final crew leaves after securing historical/scientific items.
- ♦ Late 2030 or early 2031: Controlled deorbit.

NASA contracted SpaceX (~\$843 million) for a specialized **U.S. Deorbit Vehicle** (USDV, a reinforced cargo Dragon variant). It docks about 1.5 years prior, performs checkouts, and executes the final re-entry burn so debris falls into a remote Pacific area (Point Nemo). Total deorbit costs are projected to be \$1–1.5 billion including related elements.

There is some debate about possible further extension to 2032 (reflected in some 2026 congressional authorization language) to avoid any gap in U.S./partner presence in LEO while commercial successors mature. LEO is Low Earth Orbit, the region of space roughly 100 to 1,200 miles (160 to 2,000 kilometers) above Earth's surface. The International Space Station orbits in LEO at an altitude of about 250 miles (400 kilometers).

NASA assessments indicate that ISS could **potentially** operate into the late 2030s if truly necessary, but risks and costs would continue to climb, so this is unlikely. Some Russian elements (e.g., Zarya) have been discussed for life extension to ~2032 independently, but the overall station continues to follow the joint deorbit plan.

NASA is already turning its gaze to plans for a Moon Base—phased construction of habitats, power systems, and mobility infrastructure that could support sustained human presence by the early 2030s—just a few years away. The U.S. Space Force is preparing to secure and support that cislunar domain, ensuring American interests travel with the explorers.

Lunar Surface Base: Current Plans

In March 2026, during an event called "Ignition," NASA announced a major shift in its lunar strategy. The agency re-directed its Lunar Gateway resources (a space base originally intended to orbit the Earth's moon) toward building a

Continued on Page 17

Space Station Dreams continued from page 16

surface Moon Base near the lunar South Pole instead. The South Pole was chosen because it offers access to permanently shadowed craters (which may contain water/ice), favorable lighting conditions on nearby ridges, and high scientific value.



Concept for Base at the Lunar South Pole

Artist's rendering depicting lunar surface infrastructure supporting future Moon Base operations, including habitats, power systems, cargo landers, rovers, and astronauts working near the lunar South Pole. Image: NASA

NASA is following a deliberate, phased approach:

Phase 1 – Experiment and Learn (Now through ~2029)

- ◆ Focus: Robotic missions, technology demonstrations, and site preparation.
- ◆ Up to 25 missions and roughly 21 landings.
- ◆ Delivery of rovers (both autonomous and later crewed versions), drones (called MoonFall), communications satellites, and science payloads.
- ◆ First missions (Moon Base I, II, and III) are already contracted and targeted for late 2026, involving companies such as Blue Origin, Astrobotic, Intuitive Machines, and Firefly Aerospace.
- ◆ Goal: Achieve reliable access to the lunar surface and reduce risk for later human operations.

Phase 2 – Early Habitation (2029–2032)

- ◆ Begin assembling semi-permanent infrastructure.
- ◆ Deploy expanded solar power systems and the first nuclear (fission) surface power units.
- ◆ Introduce early habitation modules, improved mobility systems, and logistics capabilities.
- ◆ Start semi-annual crewed missions.
- ◆ Significantly increase cargo delivery to the surface.

Phase 3 – Sustained Presence (2032 and beyond)

- ◆ Establish continuous or near-continuous human presence with regular crew rotations (similar to how the ISS is staffed).
- ◆ Build more permanent habitats, surface roads, reliable power systems, and higher-capacity logistics.
- ◆ Support long-duration stays, scientific research, technology development, and preparation for eventual Mars missions.

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Key Features of the Approach

- ◆ Heavy reliance on commercial partners through the Commercial Lunar Payload Services (CLPS) program and other contracts.
- ◆ International collaboration remains part of the plan.
- ◆ Estimated investment in the range of \$20–30 billion over the next decade.
- ◆ The base is intended to serve as a science laboratory, technology testbed, and proving ground for deeper space exploration.

NASA's vision is to move from short Apollo-style visits to a real, growing outpost on the lunar surface, starting with robots and progressing toward sustained human presence in the early 2030s. With current technology this is a very achievable plan.

As we warmly begin our final goodbyes to the ISS, the depth and beauty of Earth's deep blue skies will forever remind us of the stunning truth we first learned because of the International Space Station: **The thin blue (or green) line of Earth's atmosphere and the Overview Effect.**

From the ground on Earth, we experience the atmosphere as an infinite sky. From the International Space Station, astronauts see something completely different. Earth is wrapped in an extraordinarily thin, glowing shell—often described as no thicker than the skin of an apple relative to the size of the fruit.

On the day side it appears as a delicate blue line; on the night side it can show as a faint green band. Beyond that razor-thin layer is the absolute blackness of space. This single visual revelation produces what is called the Overview Effect—a profound shift in perspective. Borders disappear, the planet looks finite and fragile, and the realization hits that every living thing we know exists inside that paper-thin envelope. Many astronauts say they only fully understood the true vulnerability and preciousness of life on Earth once they saw it from orbit with their own eyes. No photograph or ground-based description conveys the same emotional and intellectual impact. This is something we could never have fully perceived or felt until humans lived and looked continuously from space.



Stunning images of the Overview Effect as seen by astronauts on the International Space Station. Image: NASA

And so the circle closes in California. Reagan's beloved Rancho del Cielo still stands in the Santa Ynez Mountains, cared for by a foundation that preserves the simple adobe house, the riding trails, and the clear night skies he loved. His presidential library nearby keeps the record of a life spent lifting a nation's gaze. Not far away, along the California coast, SpaceX launches the very Dragon capsules that keep the International Space Station alive. Ronald Reagan would be proud of us. He would smile to know that a little girl who once drew herself among the stars now commands the station he called into existence, and that another dreamer—Elon Musk—carries forward the work of making life multi-planetary. America's future, and Earth's, as Reagan always believed, is brighter than ever before. The best is yet to come.

★★★



Contest Calendar - August 2026

+ 10-10 Int. Summer Contest, SSB	0001Z, Aug 1 to 2359Z, Aug 2
+ European HF Championship	1200Z-2359Z, Aug 1
+ North American QSO Party, CW	1800Z, Aug 1 to 0559Z, Aug 2
+ ARRL 222 MHz and Up Distance Contest	1800Z, Aug 1 to 1800Z, Aug 2
+ Hemus VHF Contest - 144 MHz	0600Z-1359Z, Aug 2
+ SARL HF Phone Contest	1400Z-1700Z, Aug 2
+ K1USN Slow Speed Test	0000Z-0100Z, Aug 3
+ ICWC Medium Speed Test	1300Z-1400Z, Aug 3
+ OK1WC Memorial (MWC)	1630Z-1729Z, Aug 3
+ ICWC Medium Speed Test	1900Z-2000Z, Aug 3
+ ARS Spartan Sprint	0000Z-0200Z, Aug 4
+ Worldwide Sideband Activity Contest	0100Z-0159Z, Aug 4
+ ICWC Medium Speed Test	0300Z-0400Z, Aug 4
	0800Z-0829Z (CW), Aug 4 and
+ ZL Sprint	0830Z-0859Z (SSB), Aug 4 and
	0900Z-0929Z (FT4), Aug 4
+ Tuesday's Telegraphy Contest	1930Z-2020Z, Aug 4
+ Phone Weekly Test	0230Z-0300Z, Aug 5
+ A1Club AWT	1145Z-1300Z, Aug 5
+ CWops Test (CWT)	1300Z-1400Z, Aug 5
+ VHF-UHF FT8 Activity Contest	1700Z-2100Z, Aug 5
+ Mini-Test 40	1700Z-1759Z, Aug 5
+ Mini-Test 80	1800Z-1859Z, Aug 5
+ CWops Test (CWT)	1900Z-2000Z, Aug 5
+ VHF-UHF FT8 Activity Contest-NA	0000Z-0500Z, Aug 6
	0000Z-0100Z, Aug 6 and
+ Walk for the Bacon QRP Contest	0200Z-0300Z, Aug 7
+ CWops Test (CWT)	0300Z-0400Z, Aug 6
+ CWops Test (CWT)	0700Z-0800Z, Aug 6

Continued on Page 20



Contest Calendar - August 2026

+ NRAU 10m Activity Contest

+ SKCC Sprint Europe

+ QRP Fox Hunt

+ NCCC FT4 Sprint

+ Weekly RTTY Test

+ NCCC Sprint Ladder

+ K1USN Slow Speed Test

+ WAE DX Contest, CW

+ ARRL EME Contest

+ SKCC Weekend Sprintathon

+ Maryland-DC QSO Party

+ Kentucky State Parks on the Air

+ SARL HF Digital Contest

+ 4 States QRP Group Second Sunday Sprint

+ K1USN Slow Speed Test

+ ICWC Medium Speed Test

+ OK1WC Memorial (MWC)

+ ICWC Medium Speed Test

+ Worldwide Sideband Activity Contest

+ ICWC Medium Speed Test

+ ZL Sprint

+ DARC FT4 Contest

+ Tuesday's Telegraphy Contest

+ NAQCC CW Sprint

1700Z-1800Z, Aug 6 (CW) and

1800Z-1900Z, Aug 6 (SSB) and

1900Z-2000Z, Aug 6 (FM) and

2000Z-2100Z, Aug 6 (Dig)

2000Z-2200Z, Aug 6

0100Z-0230Z, Aug 7

0100Z-0130Z, Aug 7

0145Z-0215Z, Aug 7

0230Z-0300Z, Aug 7

2000Z-2100Z, Aug 7

0000Z, Aug 8 to 2359Z, Aug 9

0000Z, Aug 8 to 2359Z, Aug 9

1200Z, Aug 8 to 2400Z, Aug 9

1400Z, Aug 8 to 0400Z, Aug 9

1400Z-2200Z, Aug 8

1300Z-1600Z, Aug 9

0000Z-0200Z, Aug 10

0000Z-0100Z, Aug 10

1300Z-1400Z, Aug 10

1630Z-1729Z, Aug 10

1900Z-2000Z, Aug 10

0100Z-0159Z, Aug 11

0300Z-0400Z, Aug 11

0800Z-0829Z (CW), Aug 11 and

0830Z-0859Z (SSB), Aug 11 and

0900Z-0929Z (FT4), Aug 11

1900Z-2029Z, Aug 11

1930Z-2020Z, Aug 11

0030Z-0230Z, Aug 12

Continued on Page 21



Contest Calendar - August 2026

+ Phone Weekly Test	0230Z-0300Z, Aug 12
+ MMonVHF/DUBUS 144 MHz Meteorscatter Sprint Contest	0700Z, Aug 12 to 0700Z, Aug 14
+ A1Club AWT	1145Z-1300Z, Aug 12
+ CWops Test (CWT)	1300Z-1400Z, Aug 12
+ VHF-UHF FT8 Activity Contest	1700Z-2100Z, Aug 12
+ Mini-Test 40	1700Z-1759Z, Aug 12
+ Mini-Test 80	1800Z-1859Z, Aug 12
+ CWops Test (CWT)	1900Z-2000Z, Aug 12
+ VHF-UHF FT8 Activity Contest-NA	0000Z-0500Z, Aug 13
+ CWops Test (CWT)	0300Z-0400Z, Aug 13
+ CWops Test (CWT)	0700Z-0800Z, Aug 13
+ QRP Fox Hunt	0100Z-0230Z, Aug 14
+ NCCC FT4 Sprint	0100Z-0130Z, Aug 14
+ Weekly RTTY Test	0145Z-0215Z, Aug 14
+ NCCC Sprint Ladder	0230Z-0300Z, Aug 14
+ K1USN Slow Speed Test	2000Z-2100Z, Aug 14
+ SARTG WW RTTY Contest	0000Z-0800Z, Aug 15 and 1600Z-2400Z, Aug 15 and 0800Z-1600Z, Aug 16
+ Russian District Award Contest	0800Z, Aug 15 to 0800Z, Aug 16
+ ARRL 10 GHz and Up Contest	0900Z, Aug 15 to 0759Z, Aug 17
+ Keyman's Club of Japan Contest	1200Z, Aug 15 to 1200Z, Aug 16
+ SARL Youth QSO Party	1200Z-1300Z, Aug 15
+ Feld Hell Sprint	1600Z-1759Z, Aug 15
+ North American QSO Party, SSB	1800Z, Aug 15 to 0559Z, Aug 16
+ CVA DX Contest, CW	1800Z, Aug 15 to 2100Z, Aug 16
+ YB Bekasi Merdeka Contest	0000Z-2359Z, Aug 16
+ NJQRP Skeeter Hunt	1700Z-2100Z, Aug 16
+ ARRL Rookie Roundup, RTTY	1800Z-2359Z, Aug 16

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Contest Calendar - August 2026

+ Run for the Bacon QRP Contest	2300Z, Aug 16 to 0100Z, Aug 17
+ K1USN Slow Speed Test	0000Z-0100Z, Aug 17
+ ICWC Medium Speed Test	1300Z-1400Z, Aug 17
+ OK1WC Memorial (MWC)	1630Z-1729Z, Aug 17
+ RSGB FT4 Contest	1900Z-2100Z, Aug 17
+ ICWC Medium Speed Test	1900Z-2000Z, Aug 17
+ Worldwide Sideband Activity Contest	0100Z-0159Z, Aug 18
+ ICWC Medium Speed Test	0300Z-0400Z, Aug 18
	0800Z-0829Z (CW), Aug 18 and
+ ZL Sprint	0830Z-0859Z (SSB), Aug 18 and
	0900Z-0929Z (FT4), Aug 18
+ Tuesday's Telegraphy Contest	1930Z-2020Z, Aug 18
+ Phone Weekly Test	0230Z-0300Z, Aug 19
+ A1Club AWT	1145Z-1300Z, Aug 19
+ CWops Test (CWT)	1300Z-1400Z, Aug 19
+ VHF-UHF FT8 Activity Contest	1700Z-2100Z, Aug 19
+ Mini-Test 40	1700Z-1759Z, Aug 19
+ Mini-Test 80	1800Z-1859Z, Aug 19
+ CWops Test (CWT)	1900Z-2000Z, Aug 19
+ VHF-UHF FT8 Activity Contest-NA	0000Z-0500Z, Aug 20
	0000Z-0100Z, Aug 20 and
+ Walk for the Bacon QRP Contest	0200Z-0300Z, Aug 21
+ CWops Test (CWT)	0300Z-0400Z, Aug 20
+ CWops Test (CWT)	0700Z-0800Z, Aug 20
+ NTC QSO Party	1900Z-2000Z, Aug 20
+ QRP Fox Hunt	0100Z-0230Z, Aug 21
+ NCCC FT4 Sprint	0100Z-0130Z, Aug 21
+ Weekly RTTY Test	0145Z-0215Z, Aug 21
+ NCCC Sprint Ladder	0230Z-0300Z, Aug 21

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Contest Calendar - August 2026

+ K1USN Slow Speed Test	2000Z-2100Z, Aug 21
+ Turkey HF Contest	0600Z, Aug 22 to 0600Z, Aug 23
+ YO DX HF Contest	1200Z, Aug 22 to 1200Z, Aug 23
+ ARSI VU DX Contest	1200Z, Aug 22 to 1200Z, Aug 23
+ Hawaii QSO Party	1600Z, Aug 22 to 0400Z, Aug 24
+ Ohio QSO Party	1600Z, Aug 22 to 0400Z, Aug 23
+ CVA DX Contest, SSB	1800Z, Aug 22 to 2100Z, Aug 23
+ SARL HF CW Contest	1400Z-1700Z, Aug 23
+ K1USN Slow Speed Test	0000Z-0100Z, Aug 24
+ ICWC Medium Speed Test	1300Z-1400Z, Aug 24
+ OK1WC Memorial (MWC)	1630Z-1729Z, Aug 24
+ ICWC Medium Speed Test	1900Z-2000Z, Aug 24
+ Worldwide Sideband Activity Contest	0100Z-0159Z, Aug 25
+ ICWC Medium Speed Test	0300Z-0400Z, Aug 25
	0800Z-0829Z (CW), Aug 25 and
+ ZL Sprint	0830Z-0859Z (SSB), Aug 25 and
	0900Z-0929Z (FT4), Aug 25
+ Tuesday's Telegraphy Contest	1930Z-2020Z, Aug 25
+ SKCC Sprint	0000Z-0200Z, Aug 26
+ Phone Weekly Test	0230Z-0300Z, Aug 26
+ A1Club AWT	1145Z-1300Z, Aug 26
+ CWops Test (CWT)	1300Z-1400Z, Aug 26
+ Mini-Test 40	1700Z-1759Z, Aug 26
+ Mini-Test 80	1800Z-1859Z, Aug 26
+ CWops Test (CWT)	1900Z-2000Z, Aug 26
+ CWops Test (CWT)	0300Z-0400Z, Aug 27
+ CWops Test (CWT)	0700Z-0800Z, Aug 27
+ NCCC FT4 Sprint	0100Z-0130Z, Aug 28
+ Weekly RTTY Test	0145Z-0215Z, Aug 28

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Contest Calendar - August 2026

+ NCCC Sprint Ladder	0230Z-0300Z, Aug 28
+ K1USN Slow Speed Test	2000Z-2100Z, Aug 28
+ SCRY/RTTYOps WW DX RTTY Contest	2200Z, Aug 28 to 1200Z, Aug 29 and 1200Z-2359Z, Aug 30
+ Feld Hell Sprint	0000Z-2359Z, Aug 29
+ ALARA Contest	0600Z Aug 30 to 0559Z, Aug 31
+ U.S. Islands QSO Party	1200Z, Aug 29 to 0300Z, Aug 30
+ World Wide Digi DX Contest	1200Z, Aug 29 to 1200Z, Aug 30
+ Kansas QSO Party	1400Z, Aug 29 to 0200Z, Aug 30 and 1400Z-2000Z, Aug 30
+ K1USN Slow Speed Test	0000Z-0100Z, Aug 31
+ QCX Challenge	1300Z-1400Z, Aug 31
+ ICWC Medium Speed Test	1300Z-1400Z, Aug 31
+ OK1WC Memorial (MWC)	1630Z-1729Z, Aug 31
+ QCX Challenge	1900Z-2000Z, Aug 31
+ ICWC Medium Speed Test	1900Z-2000Z, Aug 31

Our thanks to **Bruce Horn, WA7BNM** for use of this calendar
Visit Bruce at www.contestcalendar.com/contestcal.html

The ARAC RELAY



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