APRS OTA

On the Air. On the Map.

Handbook

APRS On The Air

Contents

Introduction

Background and why

APRS (https://www.aprs.org/) was originally designed as a real-time two-way tactical digital communication system for sharing information about everything going in a local area. Innovative ham radio operators have connected local APRS nets via the internet with APRS-IS (https://www.aprs-is.net/). The aprs.fi site receives messages from APRS-IS and plots them on a map. Automated bots like APRSPH (https://aprsph.net/) facilitate worldwide APRS nets using APRS-IS. The #APRSThursday (https://aprsph.net/aprsthursday/) net regularly has 700+ operators check in.

Parks on the Air and Summits on the air bring fun and competition to making contacts by creating an event out of it. You can all CQ over the air, but you can also add a spot to the website, which lets more people know where you are and that you are ready to be contacted. Digital modes are allowed, but contacts can not be made using land-based repeaters, so APRS is hardly ever used. For Parks on the Air, logging is up to the activator, and it's so easy that the documentation has a section called Why is logging for Parks on the Air so complicated (https://docs.pota.app/docs/activator_reference/logging_made_easy.html).

APRS On The Air

APRS On The Air is an activity and associated service combining the vibe of a Parks on the Air activation with native APRS messaging which logs all the contacts as they happen. The purpose is to:

- Connect operators ready to go on the air
- Invite newcomers to do more with APRS
- Challenge seasoned operators to expand their skills
- Score every QSO with stamps, achievements, and leaderboards

APRS On The Air has two components: the aprsota.org website, and an APRS message bot named OTA. You use the service and participate in APRS OTA ops by sending APRS messages to the OTA bot. The OTA bot also listens for APRS position beacons you send. The website shows the messages to and from the OTA bot. You don't (and can't) create an account on the website. If you want to use the service, you send APRS messages to the bot.

The rules

There are three rules for APRS OTA.

1. Be nice.
2. Have fun.
3. When you host an op, all your messages must be sent and received via RF. In order for messages to reach the OTA bot, they will need to transit through APRS-IS. That's fine, but the first leg on a transmission and the last leg on a reception must occur via radio waves.

What's Next

Want to learn more? Let's get started! Or jump straight in and see who is on the air right now (https://aprsota.org/now).

Get started

The lingo

An **op** (short for operation) is an on-air event where ham radio operators exchange APRS messages and share position reports through APRS OTA. It's similar to a Parks on the Air (https://parksontheair.com/) or Summits on the Air (https://www.sota.org.uk/) activation but there are no geographic constraints.

A **host** announces and runs an op over RF, and confirms each chaser's contact.

A **chaser** finds an op on the air and makes a contact with its host.

The **OTA** bot facilitates the organization and running of ops. Hosts and chasers send APRS messages to OTA. These messages can be commands to start or end an operation, or messages between hosts and chasers which are logged as contacts. The OTA bot logs all the messages and they appear on aprsota.org as they are received.

Similar to other ham radio modes and activities, a **contact** is a confirmed exchange of messages between two operators. Contacts are often referred to as **QSOs**. On voice modes like FM or SSB, a contact typically includes the confirmation of call signs, exchange of locations, and a signal report from each operator.

For APRS OTA, we leverage the capabilities of APRS to share call signs and location information. In digital modes like APRS, the operators usually can't evaluate signal strength. Either the packet decodes or it doesn't. So APRS OTA contacts don't include signal strength.

Q-codes are three character shorthand for a phrase. QSO means a two way contact or conversation between stations. Invented when morse code was the most common mode for radio transmission, Q-codes make for more efficient and less error prone messaging. The OTA bot's commands are plain-English words like

HOST, DONE, and TIME. If you are familiar with Q-codes, `QRV`, `QRT`, and `QRT?` are accepted as shortcuts or synonyms for these commands.

How it works

A host starts an op by sending an APRS message to the OTA bot. The first word in the message is HOST (or the Q-code `QRV`, meaning "I am ready", if you prefer).

K7ABC-6 **OTA**

```
HOST op from the track at our high school
```

The host then transmits an APRS beacon of their current location. The OTA bot will receive that beacon, and will then send a message to the host:

OTA **K7ABC-6**

```
K7ABC-6 is on the air from DN40cm. aprsota.org/K7ABC
```

That's it. The host now has an op on the air. This is equivalent to calling CQ on an HF frequency.

With an op on the air, it's now available for other operators to find and chase.

What's Next

Most people start by chasing an op. Chasers need no RF, and one contact puts you in the game. Or skip ahead and see who is on the air right now (https://aprsota.org/now).

Equipment

Here's the equipment you'll need to make the most of APRS OTA.

1. A ham radio license that allows you to transmit APRS messages.
2. A way to send and receive APRS messages and position beacons
3. A way to access this website.

If you are reading this, you've already got #3 sorted.

If you want to chase an op or host an op, you will need a ham radio license. In the United States, every ham radio license class allows you to transmit on the commonly used APRS frequency of `144.390` MHz. Other countries and regions use different APRS frequencies and may have different license requirements, but generally APRS is available to most licensed amateur radio operators.

You can use APRS OTA without access to the website. You can do everything by sending APRS messages and position reports, and receiving APRS messages. This means you can run an op in the field with just a handheld radio as long as it meets requirement #2 above.

The website is a bonus, not a requirement.

To host or chase, you need to be able to send a position packet with a real location in it. Certain devices send all zeros for latitude and longitude if they don't have a GPS fix. Some devices may send position beacons that we don't know how to parse and decode. The `OTA` bot will tell you if it can't understand your position beacon. If you think you are sending a valid one, please reach out because I'd like to make sure we parse every valid position beacon.

Chasing an op

When you chase an op, you attempt to make a contact with the host of that op. You can chase even if you don't have a ham radio. You need some way to send

and receive APRS messages and position beacons. You can do this with an app on your smart phone like APRSdroid or APRS.fi. These apps can send your messages over the internet to a gateway which will transmit them on RF to the host of the op.

You can also chase an op with any of the equipment required to host an op.

Hosting an op

There are only three rules for APRS OTA. Rule #3 is relevant here: when you host an op, all your messages must originate from and be received via RF. In order for messages to reach the OTA bot, they will need to make their way to APRS-IS, which is fine, but the first leg on a transmission and the last leg on a reception must occur via radio waves.

Hosting an op therefore requires a ham radio. There are several ways you can meet the requirement.

1. A handheld ham radio with a user-accessible KISS TNC and a smart phone app or app on your laptop. Handhelds with this capability include the VGC VR-N76 and BTECH UV-PRO. You'll typically connect to the TNC with an app on your laptop or smart phone to send and receive messages. An external TNC such as a Mobilinkd, paired with a radio that has no TNC of its own, gets you to the same place.
2. A ham radio that can send and receive APRS messages and beacons. There are a number of inexpensive radios that claim to have APRS support, but most of them can only beacon. The messaging support, if it exists, is usually terrible. The best handheld for this is the very expensive Kenwood TH-D75.
3. Combine 1 or 2 with a digipeater or igate. If you go this route, not only are you complying with the letter of the "hosts must be on RF" rules, you have embraced the spirit of the event and the rules. The whole point is to encourage people to learn about and use APRS in a fun and exciting way.

Use your imagination. There are many other setups that you can put together that meet rule #3.

If your setup involves an app, one setting decides whether you meet rule #3 at all: the connection the app is using. The same app that drives your TNC will happily send everything straight to APRS-IS over your internet connection instead, and it looks identical while you use it. See point your app at your radio.

Recommended software

APRS OTA works with any software or apps that can send APRS messages and position report. The Equipment page outlines the radio requirements.

This page is about the software that makes it pleasant. There are applications here that are great APRS stations, and any good APRS station works with APRS OTA. Some of this software has APRS OTA specific features. All of these are tested and work well with APRS OTA.

Nothing here is sponsored or paid for, this is not an advertising page. The applications are grouped into two categories: those with APRS OTA specific features, and those without APRS OTA specific features that are just great APRS software. Within those categories, items are in alphabetic order. If you have built or used something that should be on this page, let us know in the Discord (https://discord.gg/CB7wXujbKf).

Software with APRS OTA specific features

Software in this category are great general purpose APRS apps, but also have additional features specific to APRS OTA. You don't need to use these apps to use APRS OTA, but if you do, the experience will be streamlined and more convenient.

APRS Connect

APRS Connect (https://aprsconnect.com) is a modern APRS client for Android, available on Google Play (https://aprsconnect.com/get/qws65w). An iOS version is planned but is not out yet.

This app has a robust APRS feature set. There is a vector map with offline caching, a packet log you can decode and filter, threaded messaging that shows the delivery state of each message, and it will talk either to a Bluetooth KISS TNC or straight to APRS-IS. APRS net traffic like the #APRSThursday (https://aprsph.net/aprsthursday/) is grouped into a room of its own which is a nicer way to read a net than a flat message list.

This app has APRS OTA specific features for hosting an op, with the chasers all shown on a single screen and an easy QSL response for each one. It also shows a helpful countdown timer for the op.

Radio Messenger

Radio Messenger (https://islandmagic.co/radiomessenger) is a beautifully designed iOS and iPadOS app focused on APRS messaging, and it is free on the App Store (https://apps.apple.com/app/id6730110865) with an in app purchase to enable additional features. It's radio first, but can transmit to APRS-IS if necessary, and can also share location information. Message history syncs via icloud across all your devices. It connects directly to radios with Bluetooth TNCs, works with external audio adapters like the Digirig, and with portable external modems like the Mobilinkd.

Since version 1.0.3 it has APRS OTA specific features. A help card lists every command with its syntax. Chasers arrive with their name looked up from their callsign, so you can answer them personally, and tapping a chase message pre-fills the QSL command with their callsign. It reads grid squares out of chaser messages to place them on your map, and the plus button sends a position beacon on demand.

APRS software

These software applications all work great with APRS OTA. They don't have features specific to APRS OTA, but they work great with it.

APRSdroid

APRSdroid (https://aprsdroid.org/) is an open source app for reporting your position to the APRS network, displaying nearby amateur radio stations, and the exchange of APRS messages. It's also available in Google Play (https://play.google.com/store/apps/details?id=org.aprsdroid.app).

aprs.fi

In addition to the aprs.fi website (https://aprs.fi), there is also an iOS app (https://apps.apple.com/us/app/aprs-fi/id922155038) and an Android app (https://play.google.com/store/apps/details?id=fi.aprs.android). These apps support APRS messaging and beacons, and show maps of APRS traffic. They can connect to many radios for transmission, or do it via the internet.

graywolf

graywolf (https://github.com/chrissnell/graywolf) is a fully-featured APRS station stack with a modern web UI. It has a sophisticated software modem, a digipeater, an iGate, messaging, beacons, offline maps, and weather all in one binary. It runs on most platforms, including Linux, any Raspberry Pi ever made, Windows, and macOS. Many APRS OTA users have built their stations (https://aprsota.org/W9PEM/ops/2) around this software.

The graywolf handbook (https://chrissnell.com/software/graywolf/) is the place to start.

Test connectivity

You can test your connectivity to the `OTA` bot. The first word of messages to `OTA` are usually a command to the bot. In the text of your message, make the first word be `PING` (case doesn't matter) followed by any text you like:

K7ABC-6 → OTA

```
PING my first aprs message
```

The OTA bot will send a message back to you with `PONG`, the path your message arrived on, and then your text.

OTA → K7ABC-6

```
PONG heard on RF my first aprs message
```

`heard on RF` means your message was transmitted on a radio. The other answer is `heard on APRS-IS`, which means it reached the bot over the internet and no radio was involved. Both are successful tests, and the difference only matters when you want to host an op, which you have to do on RF.

The PING command is a great way to practice sending APRS messages and to check if your setup is working like you expect. See its reference page for both answers side by side.

Send APRS messages

Everything you do with APRS OTA starts as an APRS message addressed to `OTA`. If you don't know how to send an APRS message, this page may be able to help.

Two things are true no matter what you are operating.

`OTA` **is the addressee, not part of the message.** An APRS message carries a destination callsign of its own, the way an email carries a To address. `OTA` goes in that field, which your radio may label Call Sign, SSID, To, or Addressee. Don't type `@OTA` into the message text. The bot has no SSID, so it is `OTA`, not `OTA-1`.

The command is the first word of the text. `PING` is the one to start with, because the OTA bot answers every one of them and tells you which path your message arrived on. See Test connectivity for what comes back.

K7ABC-6 → OTA

```
PING my first aprs message
```

That chip is the whole job, split the way your radio will ask for it: `OTA` in the addressee field, `PING my first aprs message` as the text.

Radios

If yours isn't here, please reach out on the project Discord with the steps that worked for you and it will get added. The APRS menu on most radios is buried deeply enough that writing the path down once saves the next person an evening.

AnyTone AT-D878UVII Plus

Menu → APRS → APRS SMS.

1. Type `PING` as the message.
2. When it asks for Call Sign/SSID, enter `OTA` as the APRS destination.

3. Send.

`OTA` is the APRS addressee here, which is why it goes in the Call Sign/SSID prompt rather than in the message you typed.

Kenwood TH-D75

MSG (ie the same key with the number 4 on it) → MENU → New

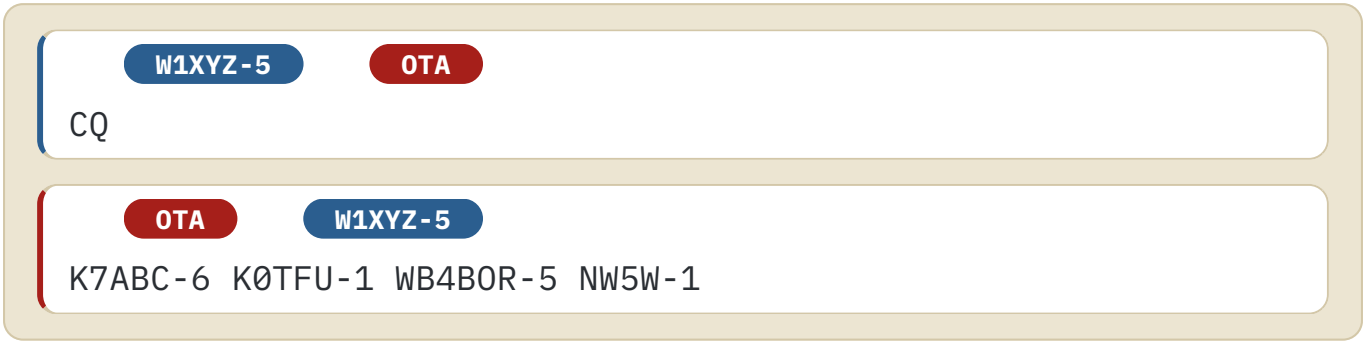
1. Press `ENT` while the `To:` field is highlighted
2. Type `OTA` in the `To:` field
3. Press `ENT`
4. Press `▼` to move to the `Message Text:` field
5. Press `ENT`
6. Type `PING` in the `Message Text:` field
7. Press `ENT`
8. Press `A/B` to send the message

Chase an op

Chasing an op is when you seek to make a QSO with the host of an op.

Finding who is on the air

Before you can chase an op, you have to find one to chase. You can do that by sending a CQ command to the `OTA` bot. The `OTA` bot replies with the callsigns of the hosts who have an op on the air.



The ops closest to going off the air lead the list, so you can reach them before they finish. If nobody is on the air, the bot says so and suggests you start your own op instead.

See the CQ reference page for more information about this command.

You can also open aprsota.org/now to see all the ops that are on the air.

Exchanging messages

Once you have found an op that is on the air, you can exchange messages with the host of that op.

Info about an op

Once you know the callsign of an op that is on the air, you can find out some information about that op:

W1XYZ-5 OTA

```
INFO K7ABC-6
```

OTA W1XYZ-5

```
K7ABC-6 on air from DN40fb, 5 QSOs, 22 min left
```

The `OTA` bot sends back the host's maidenhead grid square, how many QSOs the op has logged, and how long it has left. See the INFO command for the details.

Talking to everyone on the op

Once your position report has landed you are part of that op, QSL or no QSL, and you can send one message to everybody else on it:

W1XYZ-5 OTA

```
BLAST K7ABC-6 thanks for the contact, 73
```

OTA K7ABC-6

```
BLAST W1XYZ-5 on K7ABC: thanks for the contact, 73
```

That goes to the host and to every other chaser on the op. See the BLAST command for how many you get and how to stop receiving them.

What's Next

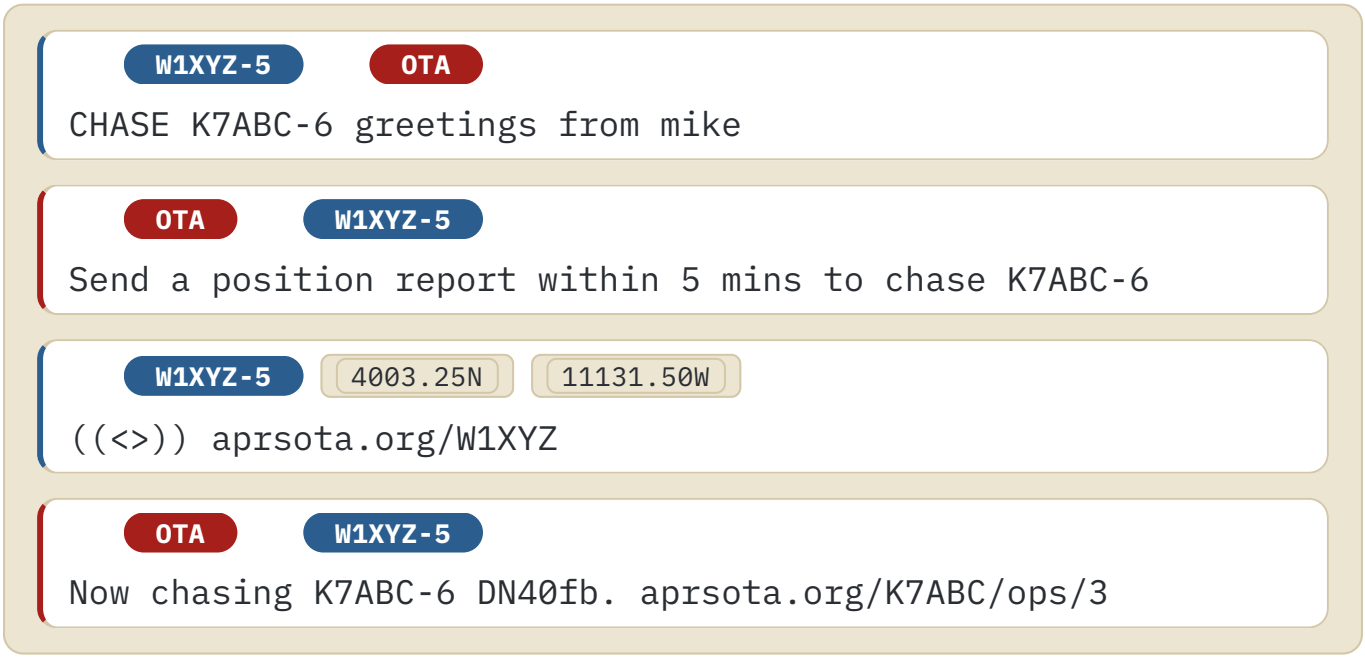
You now know everything a chaser needs. See who is on the air right now (https://aprsota.org/now) and chase them. And when you are ready for the other half of the game, learn how to host an op of your own.

Exchange messages

QSO is a Q-code that originally meant “I can communicate with”. Now, it’s widely used ham slang as a noun meaning a completed contact. Part of that completed contact is the acknowledgement of the receipt of a message from the other party, which is called a QSL.

A QSO [aka completing a contact] follows this pattern of exchange between the host, the chaser, and the OTA bot.

Step 1 - chaser initiates contact



The position report must be sent from the same callsign and SSID that sent the message. In this example that means W1XYZ-5 and not W1XYZ or W1XYZ-9. The position report must be received within 5 minutes. Beacons from other SSIDs will be ignored. That rule is about your own station. The host’s SSID is optional in the chase itself, so `CHASE K7ABC` finds the same op as `CHASE K7ABC-6`.

HEADS UP

When this handbook refers to a position report it means a native APRS position report with a valid latitude and longitude. These coordinates typically originate from a GNSS device. Position reports are often called APRS beacons. The `OTA` bot does not recognize gridsquares that you type into the messages you send. Many web based APRS services can send APRS messages but cannot send an APRS position report.

If the position report isn't received in time, the OTA bot lets you know so you can try again:

OTA **W1XYZ-5**

```
No beacon received. Send CHASE K7ABC to try again.
```

Once your position report has been received, you are chasing the op. That means you have completed your half of a QSO. Now it's up to the host to confirm. See the full CHASE reference for more information and some shortcuts for the `CHASE` command.

Step 2 - OTA bot notifies the host

The OTA bot will now attempt to contact the host and tell them that you would like to complete a QSO. It will include the chasers location encoded as a maidenhead grid square. If there are many chasers at the same time, your message may not get through. It may take the host a while to respond to all the chasers who have initiated contact.

OTA **K7ABC-6**

```
DE W1XYZ-5 DN40fb greetings from mike
```

Step 3 - host sends QSL

The host sends a QSL to the OTA bot. QSL is a Q-code that means “I am acknowledging receipt”

K7ABC-6 OTA

```
QSL W1XYZ-5 thx for the contact 73
```

The callsign is what tells the bot which chaser the host is answering, so a QSL always carries one. `@W1XYZ-5 QSL thx for the contact 73` says the same thing with the call in front. The SSID on it is optional either way, so `QSL W1XYZ thx for the contact 73` confirms the same contact.

Step 4 - OTA sends QSL to chaser

When the OTA bot receives the QSL from the host, it logs it for the website and passes it along to the chaser:

OTA W1XYZ-5

```
DE K7ABC-6 QSL thx for the contact 73
```

There has now been a confirmed bidirectional exchange of callsigns and locations. The QSO is complete and has been logged and scored on the website. The QSO earns points from named facts about the contact. The Stamps and combos has the catalog and what each one is worth. Your first confirmed QSO with a host during an op is the one that scores points. Repeat contacts in the same op are logged but do not earn points.

See the QSL reference for more information.

Score points

Every contact (except repeats, see below) made during an op via the `OTA` bot earns points. The points for all the contacts in a particular op are added together to show the total score for that op. The points earned by a contact between two operators are also added to the callsign totals for both operators.

This page describes how and when those points are calculated. On this page we use “completed contact” and “QSO” interchangeably. In APRS OTA these two terms are synonyms for the same thing.

Every point comes from a stamp

A stamp represents a particular aspect of a completed contact, and each stamp is worth a certain number of points. A QSO’s score is the sum of the values of its stamps. There are no points for hosting an op, and no points for having a long op. Points are only awarded for confirmed QSOs.

When the host of an op confirms the contact with a QSL, the OTA bot looks at the now complete QSO and adds all the relevant stamps to the contact. The sum of the values of those stamps is the total score for that contact. Once the QSO is complete, the score is finalized and never adjusted or modified.

Certain combinations of stamps have a special name. For example, if a chaser is at sea, they contribute a Davy Jones stamp to the QSO. If the host is also at sea, instead of two Davy Jones stamps, there is a special combo named Full Fathom Five.

You can see the stamps and total score for a QSO in the op logbook and on the QSO page. There is a catalog of all the stamps and combos and their values.

Only your first contact on an op scores points

Your first confirmed QSO with a host during an op is the one that earns stamps and points. Chase the same op again and the second contact is logged, counts as a QSO and gets its own QSL card. But it does not earn any stamps or points.

All the SSIDs for your callsign are collapsed, because they are all you. W1XYZ-5 and W1XYZ-9 are one operator, so switching radios partway through an op does not qualify for a second scoring contact. When the host's next op goes on the air, you can again score points by completing a new QSO with that host.

Both of you bank the whole score

A QSO is scored once, and the host and the chaser each add that score to their own total. There is no splitting, no halves, and no separate value for the two sides of a contact.

That holds even for a stamp only one of you earned. For example, if a chaser is afloat on a lake, they contribute the Nessie stamp to the QSO. The stamp shows which party was on the lake, but the points go to both of you.

Examples

Rule #3 requires a host to contact the OTA bot via RF. Being on RF earns a stamp worth one point, and therefore every QSO [that earns points, see above] has a score of at least one.

Here are a few examples:

THE CONTACT	WHAT IT EARNS	POINTS
A host on RF, a chaser on APRS-IS	PTT, for the host	1
Both of you on RF	PTT for each party, shown as the combo Two-Way	2
Both of you on RF from different countries	Two-Way and Foreign Lands	3

Notice that a combo doesn't add additional points. Two-Way is worth 2 because it is two PTT stamps, and giving that pair a name changes no arithmetic. Combos are there because "Mark and Space" is more fun than two "PTT".

Where your score shows up

While hosting an op, you can use the INFO command to find out how many points have been earned from that op:

```
OTA  K7ABC-6
3 chasing, 8 QSOs, 13 pts, off in 22 min
```

And the end-of-op summary arrives either way, whether you end the op yourself with DONE or it runs out of time:

```
OTA  KI7YAK-6
Op complete: 5 QSOs, 4 pts. aprsota.org/KI7YAK
```

Remember, only the first QSO between two operators earns points in an op, so the number of points can be less than the number of QSOs.

On the website, the scores are shown in several places:

- An op's page shows scores in several places. The scoreboard at the top shows the total score and summary of the stamps from all the contacts. The logbook shows the total score for each QSO and a breakdown of how that score was earned.
- A QSO's page shows every stamp and combo that contact earned.
- Your callsign page carries your callsign total, from all of your QSOs whether you were the host or a chaser.

Future stamps and combos

It's likely that in the future there will be new stamps. For example, there will probably be stamps for being on a SOTA summit or in a POTA park. These stamps will only be earned by contacts made after those stamps are available. Old contacts that happened to be made from a park will not retroactively gain the POTA stamp.

Combos do not earn their own points, they are just a fun name for a certain combination of stamps. Therefore, when new combos are added they will be retroactively applied to prior QSOs.

Host an op

Unlike POTA and SOTA, there are no geographic restrictions for where you can host an op. If you are in a park or on a summit, you can include the POTA reference or the SOTA summit code when you go on the air, and the OTA bot will notice and link your op to those sites.

Other than that informal linking of codes, there is no relationship between APRS OTA and POTA or SOTA.

QSOs you make using the OTA bot will almost certainly be disallowed as contacts for POTA or SOTA, both of which prohibit the use of land-based repeaters.

Prerequisites

In order to host an op you need:

- a way to send and receive APRS messages via RF
- a way to send APRS position reports via RF

Configuration recommendations

Communicating with the OTA bot requires your APRS messages transmitted via RF to make their way to an iGate, which puts them on the internet-based APRS-IS backbone. The OTA bot then receives your message from APRS-IS. Messages back to you follow the reverse path.

An iGate will typically only broadcast an RF packet to your callsign if it has heard you on RF in the last 30 minutes.

Therefore, while hosting an op, you should configure your APRS beacon to be sent at least every 15 minutes. This will ensure that your local iGate knows you are there and will therefore transmit messages from the OTA bot via RF to your radio.

Point your app at your radio, not the internet

If you use a phone or laptop app to send your APRS messages, check which connection it is using before you go on the air. Most of these apps can talk either to a radio or straight to APRS-IS over your internet connection, and they look exactly the same while you use them. If the app is set to APRS-IS, your radio is not involved at all and the OTA bot will decline your op.

In APRSdroid, this is Preferences, then Connection Preferences, then Connection Protocol. Choose the setting that matches how your radio is attached, such as Bluetooth SPP for a Mobilinkd or similar TNC, rather than APRS-IS. Other apps name it differently, but most of them have the setting somewhere.

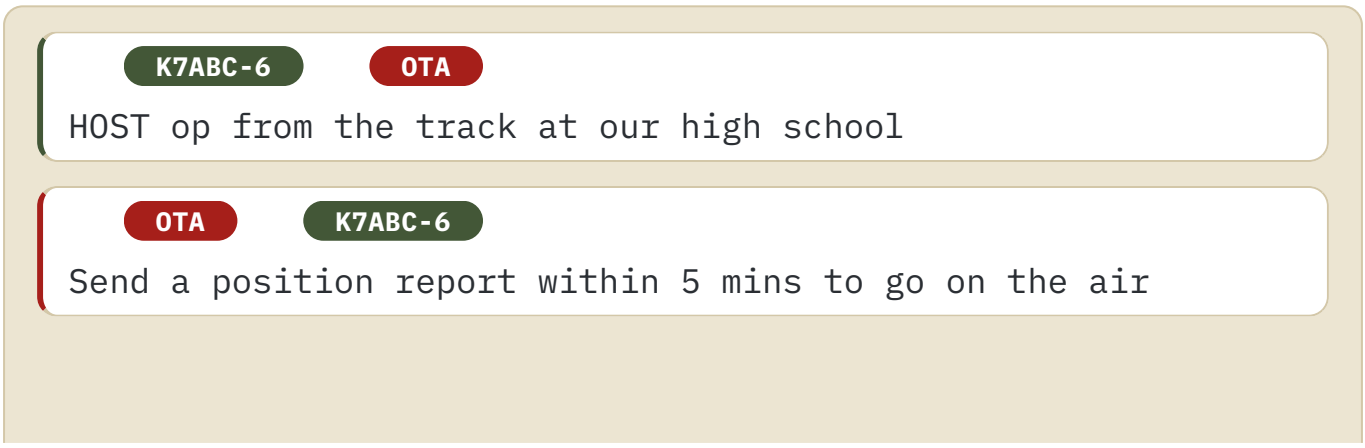
You can find out your path to the OTA bot using the PING command.

Plan ahead (optional)

You can announce your op up to 7 days in advance with the PLAN command. Your plan is posted to the website and to the project Discord, where chasers can see what is coming up, and when you go on the air near your planned time, your op takes the plan's place. Planning is optional: going straight on the air works exactly the same. See Plan an op for the whole flow.

Go on the air

Starting an op is what you do to go on the air. It requires a two-part exchange with the OTA bot:



K7ABC-6 4003.25N 11131.50W

((<>)) aprsota.org/K7ABC-6

OTA K7ABC-6

K7ABC-6 is on the air from DN40fb. aprsota.org/K7ABC

`HOST` is the command that tells the OTA bot you are ready to go on the air. (If you know your Q-codes, `QRV`, meaning "I am ready", does the same thing.) You then have 5 minutes to send a position report (aka beacon) of your current location. When the OTA bot notices your beacon it will send you a message telling you that you are now on the air. Your op will be posted to the website in two places, the page showing all ops that are on the air, and to your callsign page. It is also announced in the `#on-the-air` channel of the project Discord, along with your grid square and whatever description you sent with `HOST`. That same channel gets a second post with your totals when your op ends.

Anything after `HOST` is free text describing the op, and it is optional: a bare `HOST` goes on the air exactly the same way. The description is worth the extra words. It shows on your op's card on the website and on the QSL card for every contact you make, and it tells a chaser something a grid square cannot.

K7ABC-6 OTA

HOST lakeshore op, HT and a signal stick

Beacon from the same callsign and SSID that sent the HOST. K7ABC-6 goes on the air by beaconing from K7ABC-6, not from K7ABC or K7ABC-7. An op is run by one station, so a beacon from the digi at home can't stand in for the radio you are carrying. If the 5 minutes run out, the OTA bot tells you so you can try again:

OTA K7ABC-6

No beacon received. Send HOST to try again.

When your op is on the air, you have done the equivalent of calling CQ, meaning you have notified chasers that you are ready to be contacted.

See the full HOST reference for its rate limits and every reply it can send.

You won't be able to host an op without following rule #3.

If you try to go on the air by sending APRS messages via APRS-IS instead of sending them via RF, the OTA bot will decline your request to go on the air:

K7ABC-6 OTA

```
HOST op from the track at our high school
```

OTA K7ABC-6

```
Must transmit via RF to host. aprsota.org/handbook/host-an-op
```

If you get that reply while you are sitting in front of a radio you know is transmitting, the usual cause is your app: point it at your radio, not the internet.

Exchanging Messages

As a host, the primary thing you'll do during your op is make contacts with chasers.

Information about your op

You can do a few things to manage or get info about your op while it's on the air. You can always see all of this on the website, but the website is a supplement to what you can do with just APRS.

Any position reports you send will be noticed by the OTA bot and plotted on the map of the op along with the locations of all the chasers you QSO with.

Send a message to the OTA bot containing “TIME” and receive a message back telling you how much time remains before your op goes off the air automatically (see below). If you know your Q-codes, `QRT?` does the same thing: `QRT` means “stop sending”, and followed by a question mark it means “shall I stop sending?”. The traditional meaning of the Q-code is not an exact fit for what the command does, but if you squint it’s close enough.

K7ABC-6 **OTA**

```
TIME
```

OTA **K7ABC-6**

```
Off the air in 35 minutes, max 95 minutes. STAY adds 30 mins
```

Read that as three facts about the same op. You go **off the air in 35 minutes** unless something extends you. The **maximum** is 95 minutes away, which is the 2 hour ceiling no op can pass. And STAY would move the first number by **30 minutes**, to 65, still short of the ceiling.

The last part only appears while there is room to use it, and it always quotes what a STAY would really add. Near the end of a long op that is less than 30:

K7ABC-6 **OTA**

```
TIME
```

OTA **K7ABC-6**

```
Off the air in 9 minutes, max 25 minutes. STAY adds 16 mins
```

Here a STAY buys 16 minutes rather than 30, because 16 is all the room there is between going off the air and the maximum. Once those first two numbers are the same you are at the maximum, and the offer stops appearing because there is nothing left to add.

See the TIME reference for its rate limit.

You can also ask how many chasers are calling you, how many QSOs you have completed, your score so far, and the countdown timer. Send it from the station running your op.

K7ABC-6 OTA

```
INFO
```

OTA K7ABC-6

```
3 chasing, 12 QSOs, 11 pts, off in 22 min
```

See the INFO reference for its rate limit.

Talking to everyone on the op

Your chasers are not in a group chat. If the weather turns or you are moving to another summit, you can let everyone know by sending a BLAST. One message from you reaches everyone on your op, including the chasers still waiting on a QSL from you.

K7ABC-6 OTA

```
BLAST moving to the north summit
```

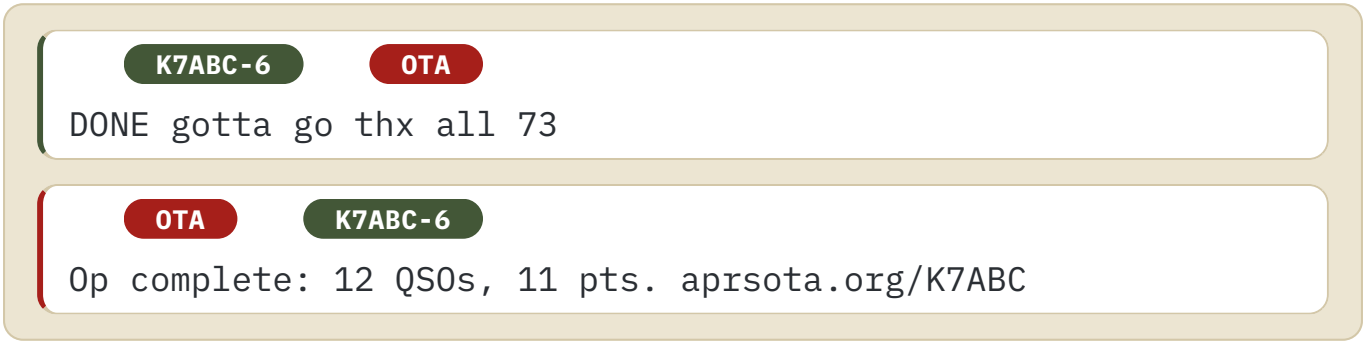
OTA W1XYZ-5

```
BLAST K7ABC-6: moving to the north summit
```

Chasers can also send a blast.

Finishing your op

Ops are time limited by a simple algorithm described below. You can end your op at any time by:



The reply is the end-of-op summary: how many QSOs you made, your score, and any chasers still waiting on a QSL when the op ended. You get the same summary if your op ends on a timer instead of a DONE.

`DONE` ends your op. (If you know your Q-codes, `QRT`, meaning “stop sending”, does the same thing.) See the DONE reference for the details.

An op will remain on the air:

- until the host ends it by sending the OTA bot a DONE message
- for at least 60 minutes unless ended by a DONE from the host
- for 15 minutes past the last QSO
- plus 30 minutes each time the host sends a STAY
- for no longer than 120 minutes

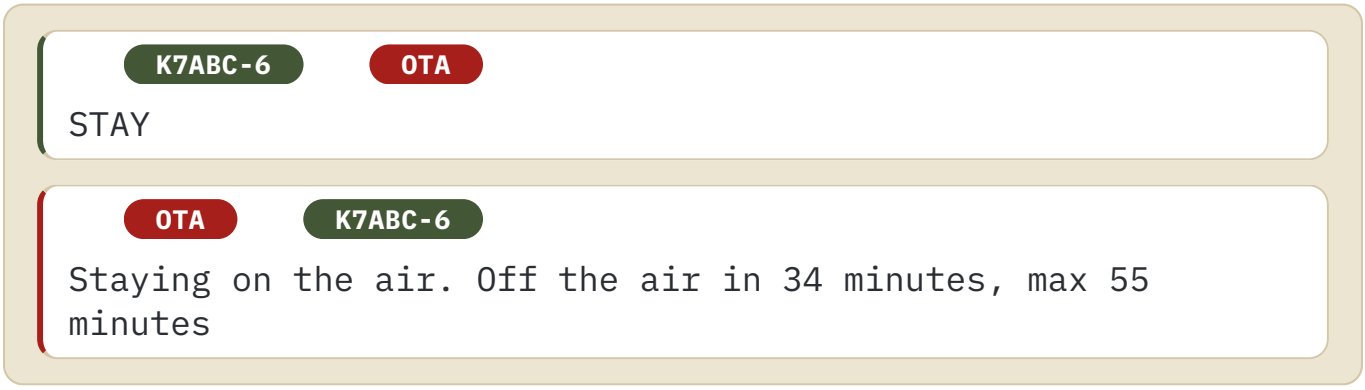
This means that if the host doesn’t send a DONE:

- you have 60 minutes to complete the first QSO, if you don’t the op goes off the air
- after 60 minutes, you have to get a QSO once every 15 minutes or the op goes off the air

- if you log a QSO at 55 minutes, and don't get any more, the op will go off the air 70 minutes after it started
- no matter what happens, at 120 minutes the op goes off the air and is over

The countdown timer for automatic ending of the op is shown on the website, and the method of ending the op will also be shown, meaning if it times out or if the host sends a DONE.

If nobody has come back to you, or the pileup has gone quiet but you want to keep going, send STAY and the OTA bot adds 30 minutes:



It works whether or not you have completed any QSOs, and you can send it more than once. What it cannot do is get you past the 120 minute maximum, so in practice that is room for two extensions.

If your op goes off the air because you hit the 120 minute max time limit, you can always start another op and keep going.

What's Next

Announce your op ahead of time by planning it, so chasers know when to listen for you. And see who is on the air right now (https://aprsota.org/now) to get a feel for what a live op looks like.

Plan an op

Planning an op is announcing, ahead of time, that you intend to go on the air. Your plan is posted on the website and in the project Discord, where chasers can see what is coming up and arrange to be around when you are.

Planning is optional. You can always go straight on the air without sharing your plan beforehand. A planned op is more likely to draw chasers, because chasers will have more notice of when you expect to be on the air.

Announce your plan

Send the `OTA` bot a PLAN message with the time you intend to start, and anything you want to say about the op:

K7ABC-6 **OTA**

```
PLAN 2026-08-12T18:30Z lake op, HT and a signal stick
```

OTA **K7ABC-6**

```
Op planned for 12 Aug 2026 18:30Z. aprsota.org/plans
```

The time is one word, ISO 8601, and it is **UTC unless you say otherwise.** `2026-08-12T18:30Z`, `20260812T1830Z`, and `2026-08-12T12:30-06:00` all name the same minute. Seconds are optional, but will be ignored. If the bot cannot read your time, it replies with an example you can copy. The PLAN reference page has the full grammar.

The description is worth the extra words. “lake op, HT and a signal stick” tells a chaser more about your plans, and is shown on your plan’s card on the website.

Unlike hosting an op, planning does not require RF. You can send a `PLAN` from your desk over APRS-IS tonight for the park you will visit this weekend.

Where your plan shows

An accepted plan is posted in four places:

- the aprsota.org/plans page
- your callsign page
- the Coming up section of aprsota.org/now once it is within 24 hours
- the `#planned-ops` channel of the project Discord

The card shows your base callsign regardless of which station you sent the `PLAN` from: a plan belongs to you, not to a radio.

Time constraints

A plan must name a date and time that is:

- in the future
- at most 7 days out
- at least 2 hours away from your other plans

and you can have at most 3 standing plans at a time. Once a plan's time passes, it comes off the website on its own and stops counting against your 3; nothing bad happens if life got in the way and you never went on the air.

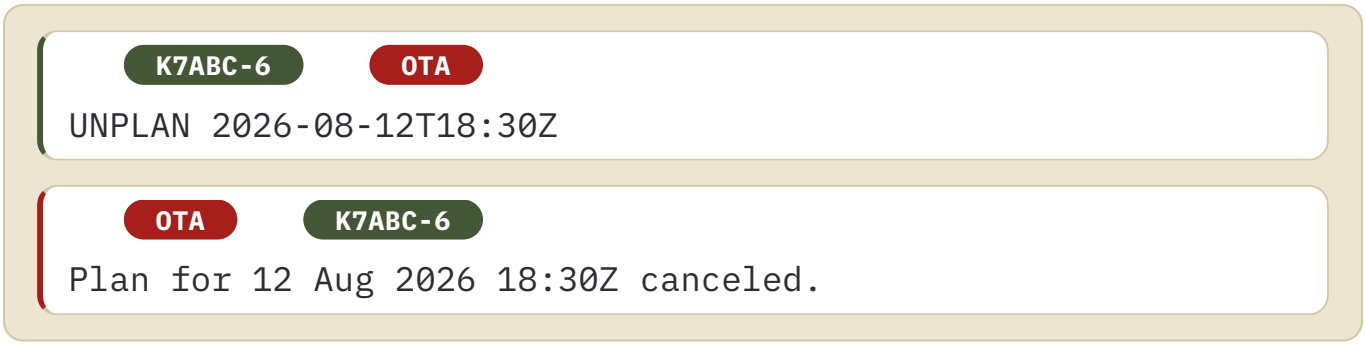
Go on the air

When the time comes, start your op the normal way. Send HOST and a beacon, via RF, from whichever of your stations you like. If you go on the air within the window, up to 1 hour early or 2 hours late, the op takes the plan's place on the website. The plan comes off the upcoming lists and your live op takes its place.

There is no code to send and nothing to link by hand. The bot matches your op to your plan by callsign and time. Running late is fine, that's what the window is for.

Change of plans

Sometimes your plans change. Cancel with UNPLAN and the plan's time (again, seconds are ignored), in any form the `PLAN` command accepts. You can cancel from any of your SSIDs:



Canceling frees the time immediately, so moving an op is just an `UNPLAN` followed by a new PLAN. A canceled plan comes off the website, and the Discord channel gets a follow-up note so nobody shows up for it.

See the PLAN and UNPLAN reference pages for every reply the bot can send and the rate limits.

OTA bot commands

The OTA aprs service, or bot, responds to many commands.

The command is the first space delimited word in an APRS message you send to `OTA`. In this handbook, the commands are always shown in upper case, but they are not case-sensitive. Upper case, lower case, mixed case, it doesn't matter.

Most commands take additional arguments after the command. Some of these arguments will be optional. The reference page for the command will have all the details.

All commands to the OTA bot are rate limited from your callsign regardless of SSID. This is done to prevent the OTA bot from being used in denial-of-service attacks, and because we all share the same slow bit rate over the airwaves. When you hit a rate limit the OTA bot will stop responding to your messages. The specific rate limits for each command are documented in that command.

There are bot commands which are only valid in certain contexts. For example, the `DONE` command, meaning I am done transmitting, is only valid if you are currently hosting an op. The first time you send a `DONE` to the `OTA` bot when you aren't currently hosting an op, you'll get a friendly hint telling you how to start one. If you send another `DONE` command, it will be ignored. You won't get the hint again until 24 hours have passed since the last hint for the DONE command was sent to you.

Command Summary

COMMAND	DESCRIPTION
BLAST	Send one message to everyone on an op.
CHASE	Call a host on the air to start a QSO.
CQ	Find an op to chase: list the hosts on the air.

COMMAND	DESCRIPTION
DONE	End your op and go off the air, or leave another op's blasts.
HELP	Ask what to send: the three commands to start with.
HOST	Go on the air and start hosting an op.
INFO	Ask about an op: yours, or the one a callsign is running.
PING	Check your messaging path to the OTA bot, and whether it is RF.
PLAN	Announce a planned op: a future time, posted to aprsota.org.
QSL	Confirm a chaser's contact and log the QSO.
STAY	Add 30 minutes to your op, up to the 2 hour maximum.
TIME	Ask how much time is left before your op ends.
UNPLAN	Cancel one of your planned ops.

BLAST

Every other OTA command reaches at most one other station. `BLAST` sends a direct message to everyone who has participated in the op so far. Use it for the things the whole group needs to hear at once. Moving to another location, the weather turning, twenty minutes left, thanks to everybody at the end.

`QST` is a synonym for the `BLAST` command. It is the traditional ham signal for a message addressed to all amateurs, which is exactly what this is.

This command is named blast for a reason. If you have a bunch of chasers on your op that are on the same igate, you can easily overwhelm the RF capacity in that area. Use with caution.

`BLAST [callsign] <text...>`

Send one message to everyone on an op.

callsign
The host of the op. Omit it to send to your own op, from the station running it. OPTIONAL

text
What everyone on the op will receive.

ALSO ANSWERS TO	`QST`
AVAILABLE TO	The host and any chaser who has beaconed, while the op is on the air. RF or APRS-IS.
RATE LIMIT	4 per 10 minutes and 8 per hour

REPLIES

`blast_relay`
`BLAST {station_call}{op}: {text}`

`blast_receipt`

`Blast sent to {stations}.`

HINTS

no text after the keyword and any target

`A blast needs some text after the callsign.` limited to 1 per 24 hours, then silent

the named callsign has no op on the air

`{base_call} is not on the air. See aprsota.org/now` limited to 1 per hour, then silent

bare BLAST from a different SSID than the live op's

`Your op is run by {station_call}. Send BLAST from it.` limited to 1 per 24 hours, then silent

bare BLAST with no live op of the sender's

`BLAST needs a host. Send BLAST callsign your text` limited to 1 per 24 hours, then silent

sender is not chasing that op and is not its host

`Chase {base_call} first to send a blast on their op` limited to 1 per 24 hours, then silent

sender has already sent MAX_PER_SENDER blasts on this op

`You have sent all your blasts on this op.` limited to 1 per 24 hours, then silent

the op already holds MAX_PER_OP blasts

`This op has taken all the blasts it can.` limited to 1 per 24 hours, then silent

the audience exceeds MAX_RECIPIENTS

`Too many stations on this op to send a blast.` limited to 1 per 24 hours, then silent

Hosting? Leave off the callsign

If you are the host, you are running exactly one op, so OTA already knows which one you mean. Send it from the station running your op.

K7ABC-6 OTA
BLAST moving to the north summit

OTA K7ABC-6
Blast sent to 3 stations.

OTA W1XYZ-5
BLAST K7ABC-6: moving to the north summit

OTA KI7YAK-5
BLAST K7ABC-6: moving to the north summit

OTA W1QRS-5
BLAST K7ABC-6: moving to the north summit

Chasing? Name the host

Once you have called an op and sent your position report, you can send a blast to it. Put the host's callsign first, the same way you called them in the first place. An `@` in front of it works too, and always has.

W1XYZ-5 OTA
QST K7ABC-6 thanks for the contact, 73

OTA W1XYZ-5
Blast sent to 3 stations.

OTA K7ABC-6

```
BLAST W1XYZ-5 on K7ABC: thanks for the contact, 73
```

OTA KI7YAK-5

```
BLAST W1XYZ-5 on K7ABC: thanks for the contact, 73
```

OTA W1QRS-5

```
BLAST W1XYZ-5 on K7ABC: thanks for the contact, 73
```

Notice what KI7YAK-5 receives. They are chasing K7ABC too, but they have never heard of W1XYZ-5, so the relay names the op as well as the speaker. When the host is the one talking, that would be the same callsign twice, so it is left off.

Who gets it

Everyone on the op except you. Chasers get blasts if they have sent their chase message and their position report, whether the QSL has happened yet or not. The moment your position report lands you are on the op, which matters most while you are waiting on a busy host. A blast saying the wx turned is exactly what you want before the QSL comes, not after.

Prior blasts are not sent to new chasers. If the host sends a blast before you chased the op, the only way for you to know whether there was a blast and what it said is to go to the website and look at the op page.

How many you can send

Blasts go out over the air to a lot of people at once, so they are rationed more tightly than anything else the bot does:

- at most 6 from you on any one op
- at most 12 on an op from everyone together

They cost nothing but your restraint, and the op ends soon enough that you will rarely meet either limit. Sending one does not extend your op: the clock runs on contacts, not conversation.

Too many blasts?

If you are chasing an op and you don't want any more blasts from that op, send DONE callsign naming the host, and you will not get any more from that op.

CHASE

Use the CHASE command to call a host who is on the air and start a QSO. Follow it with a position report within 5 minutes, and the OTA bot relays your callsign and grid square to the host.

W1XYZ-5 OTA

```
CHASE K7ABC-6 greetings from mike
```

OTA W1XYZ-5

```
Send a position report within 5 mins to chase K7ABC-6
```

Your position report must come from the same callsign and SSID that sent the chase. W1XYZ-5 chases, so W1XYZ-5 beacons, not W1XYZ or W1XYZ-9. A beacon from any other station does not satisfy the window.

See exchange messages for the whole QSO, step by step, and QSL for how the host confirms it.

You can leave the SSID off

`CHASE K7ABC` is the same command as `CHASE K7ABC-6`. A callsign runs one op at a time, so the callsign on its own is all the bot needs to find the op. That saves you two or three characters on every chase you thumb into a radio.

W1XYZ-5 OTA

```
CHASE K7ABC greetings from mike
```

Every SSID form works too, so a callsign you copied straight off a CQ reply needs no editing.

Only the host's SSID is optional. Your own still has to match, because your position report has to come from the exact station that sent the chase.

The short form

A message that opens with the callsign itself is the same command. It is the shortest chase there is, which is worth knowing when you are thumbing letters into a radio:

W1XYZ-5 OTA

```
@K7ABC-6 greetings from mike
```

Both spellings are permanent. `CHASE @K7ABC-6` is accepted as well, so nothing you learn here has to be unlearned later.

Reference

`CHASE <callsign> [message...] | @<callsign> [message...]`

Call a host on the air to start a QSO.

callsign

The host to chase. The SSID is optional, so K7ABC and K7ABC-6 both work.

message

Free text relayed to the host along with your grid square. OPTIONAL

AVAILABLE TO Anyone, from RF or APRS-IS.

RATE LIMIT 2 per minute and 5 per 10 minutes

REPLIES

`beacon_prompt`
`Send a position report within 5 mins to chase {station_call}`

`de_relay`

`DE {chaser_call} {grid} {message}`

`chase_receipt`

`Now chasing {station_call}{location}. aprsota.org/{base_call}/ops/{number}`

`no_beacon_nudge`

`No beacon received. Send CHASE {base_call} to try again.`

`no_position_nudge`

`No position report from your client. See aprsota.org/beacon`

HINTS

a chase whose target has no op on the air

`{base_call} is not on the air. See aprsota.org/now` limited to 1 per hour, then silent

a chase targeting your own operator

`You cannot chase your own op` limited to 1 per 24 hours, then silent

a repeat chase while one is already relayed

`Already chasing {base_call}. Wait for their QSL.` limited to 1 per 24 hours, then silent

CHASE or @ with no callsign after it

`CHASE needs a callsign. Send CQ for the ops on the air.` limited to 3 per 15 minutes and 5 per 24 hours, then silent

beacon with no usable position while a chase awaits one

`Beacon has no usable position. Wait for a GPS fix and beacon again` limited to 1 per hour, then silent

CQ

Use the `CQ` command to find an op to chase. The `OTA` bot answers with the callsigns of hosts on the air right now, the ones closest to going off the air first (so you can reach them before they finish).

`CQ`

Find an op to chase: list the hosts on the air.

AVAILABLE TO	Anyone, from RF or APRS-IS.
RATE LIMIT	1 per 3 minutes and 3 per 15 minutes

REPLIES

`cq_reply`
`{spots}`

`cq_reply`
`No ops on the air. Send HOST to start one.`

`cq_reply`
`more at aprsota.org/now`

No error hints; OTA does not reply to an invalid CQ.

W1XYZ-5 **OTA**

CQ

OTA **W1XYZ-5**

K7ABC-6 K0TFU-1 WB4BOR-5 NW5W-1

When no op is on the air, the answer says so and suggests you start your own:

W1XYZ-5 OTA

CQ

OTA W1XYZ-5

No ops on the air. Send HOST to start one.

If more hosts are on the air than fit in one message, the bot sends two, each tagged `(1/2)` and `(2/2)`. If they still do not all fit, the second message ends with `more at aprsota.org/now`, where the full list is available.

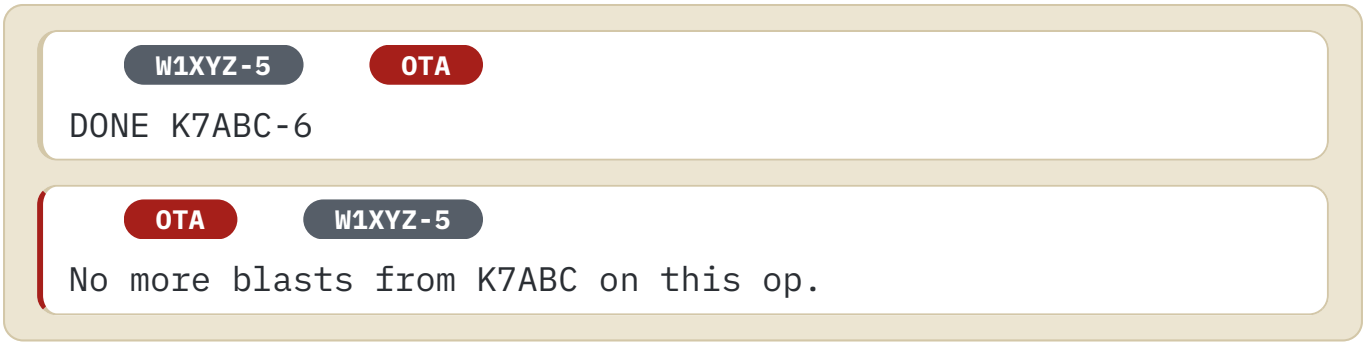
DONE

Use the DONE command to terminate an op you are hosting. If you know your Q-codes, `QRT` [meaning “stop sending”] does the same thing.

See Host an op for more information on when to use this command.

Done with somebody else’s op

DONE has a second use, for chasers rather than hosts. Add a callsign and you are telling OTA you are done with *that* op’s blasts, not that you are ending anything:



Nothing else changes. Your contact still counts, the op page still shows you everything anyone sent, and you can still send a blast yourself. You just stop receiving them over the air for the rest of that op.

Two things to know. Send the callsign **on its own**: a DONE with words after it is a sign-off, so `DONE K7ABC-6 thanks all` is not this command. And while you have an op of your own on the air, every DONE you send ends *your* op, no matter what follows it. That is deliberate, because getting your own op to end matters more than anything else this command does.

Reference

`DONE [signoff...] | DONE <callsign>`

End your op and go off the air, or leave another op's blasts.

`callsign`
A host whose op you are done receiving blasts from. Send it alone, with no sign-off, and only when you have no op of your own on the air. OPTIONAL

`signoff`
Optional sign-off, kept for display. Ending your own op only. OPTIONAL

ALSO ANSWERS TO	`QRT`
AVAILABLE TO	Hosts with a live op, from the op's station. Chasers, targeted, to leave an op's blasts. Self-limiting, so no command rate limit.
RATE LIMIT	No command rate limit (self-limiting)

REPLIES

`on_air_confirmation`
`Op complete: {qsos}, {points}{unanswered}. aprsota.org/{base_call}`

`timeout_notice`
`Op complete: {qsos}, {points}{unanswered}. aprsota.org/{base_call}`

`hard_cap_nudge`
`Want to continue on the air? Send HOST to start another op.`

`blast_left_confirmation`
`No more blasts from {base_call} on this op.`

HINTS

DONE with no live op
`DONE needs an op on the air. Send HOST to start one.` limited to 1 per 24 hours, then silent

DONE from a different SSID than the op's
`Your op is run by {station_call}. Send DONE from it.` limited to 1 per 24 hours, then silent

DONE callsign naming an op the sender is not on

> `You are not chasing {base_call}. Nothing to leave.` limited to 1 per 24 hours, then silent

HELP

Use the `HELP` command when you cannot remember what to send. The `OTA` bot answers with the three commands worth knowing first, and a short URL to the rest.

`HELP [anything...]`

Ask what to send: the three commands to start with.

anything
Ignored. Every HELP gets the same answer. OPTIONAL

AVAILABLE TO Anyone, from RF or APRS-IS.

RATE LIMIT 1 per 3 minutes and 3 per 15 minutes

REPLIES

`help_reply`
`CQ finds an op. CHASE it. HOST your own. More at aprsota.org/help`

HINTS

a message to OTA that no command claimed, from a station that spoke first `Unknown command. Send HELP or see aprsota.org/help` limited to 3 per 15 minutes and 5 per 24 hours, then silent

W1XYZ-5 OTA
HELP

OTA W1XYZ-5
CQ finds an op. CHASE it. HOST your own. More at aprsota.org/help

One APRS message holds 67 characters, which is why the answer names three commands rather than all thirteen. Those three are the whole game in miniature. CQ tells you who is on the air, CHASE works one of them, and HOST puts you on the air yourself.

`aprsota.org/help` is this handbook's command index, which lists every command with a page of its own for each. It is worth typing into a phone while you are still standing in the field.

Anything after the keyword is ignored, so `HELP CHASE` gets the same answer as a bare `HELP`. Per-command help over the air is not built; the reference page for each command carries that detail instead.

HOST

Use the HOST command to host an op and go on the air. If you know your Q-codes, `QRV` (meaning “I am ready”) does the same thing.

This command only works if you are transmitting over RF, enforcing rule #3.

The position report that puts you on the air has to come from the same callsign and SSID that sent the `HOST` command. K7ABC-6 goes on the air by beaconing from K7ABC-6, not from K7ABC or K7ABC-7. An op is run by one station, so a beacon from any other SSID does not meet the requirements to start the op.

See Host an op for a description of how to use this command.

Reference

`HOST [description...]`

Go on the air and start hosting an op.

description
Free-text description of the op. OPTIONAL

ALSO ANSWERS TO	`QRV`
AVAILABLE TO	Hosts only. Must be sent via RF; one op per operator at a time.
RATE LIMIT	2 per minute and 3 per 10 minutes

REPLIES

`beacon_prompt`
`Send a position report within 5 mins to go on the air`

`on_air_confirmation`
`{station_call} is on the air{location}. aprsota.org/{base_call}`

`no_beacon_nudge`

`No beacon received. Send HOST to try again.`

HINTS

HOST not sent via RF

`Must transmit via RF to host. aprsota.org/handbook/host-an-op` limited to 1 per hour, then silent

HOST while already on the air

`You already have an op on the air` limited to 1 per 24 hours, then silent

beacon with no usable position while awaiting one

`Beacon has no usable position. Wait for a GPS fix and beacon again` limited to 1 per hour, then silent

HOST while the service is going quiet for maintenance

`Going quiet for maintenance. No new ops. aprsota.org` limited to 1 per hour, then silent

INFO

Ask the OTA bot about an op. Add a callsign to ask about the op that station is running; send `INFO` bare from the station running your own op to get its stats, pileup included.

`INFO [callsign]`

Ask about an op: yours, or the one a callsign is running.

`callsign`
Ask about another station's op. Without it, INFO reports your own. OPTIONAL

AVAILABLE TO — Anyone, from RF or APRS-IS. The bare form answers the station running the op.

RATE LIMIT — 1 per 3 minutes and 3 per 15 minutes

REPLIES

`op_info_reply`
`{chasing} chasing, {qsos}, {points}, off in {minutes} min`

`op_info_reply`
`{station_call} on air{location}, {qsos}, {minutes} min left`

`op_info_reply`
`{base_call} isn't hosting an op. Send CQ or see aprsota.org/now`

HINTS

bare INFO from a different SSID than the live op's

`Your op is run by {station_call}. Send INFO from it.` limited to 1 per 24 hours, then silent

bare INFO with no live op

`You aren't hosting an op. Send CQ for ops on the air now.` limited to 1 per 24 hours, then silent

the deprecated callsign-first lookup {callsign} INFO

`Next time send INFO {target}. Callsign-first is going away.` limited to 1 per 6 hours, then silent

W1XYZ-5 OTA

INFO K7ABC-6

OTA W1XYZ-5

K7ABC-6 on air from DN40fb, 5 QSOs, 22 min left

K7ABC-6 OTA

INFO

OTA K7ABC-6

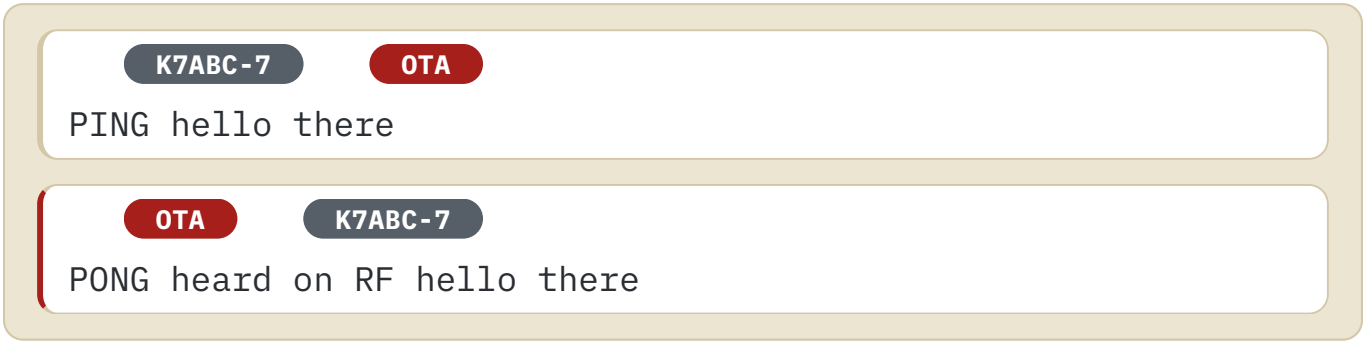
3 chasing, 5 QSOs, 5 pts, off in 22 min

The old order still works, for now

`INFO` used to want the callsign first, as `K7ABC-6 INFO`. That was backwards from every other bot command, so it changed. Send it the old way and OTA still answers, then reminds you of the new order. Support for the old callsign first syntax goes away in September.

PING

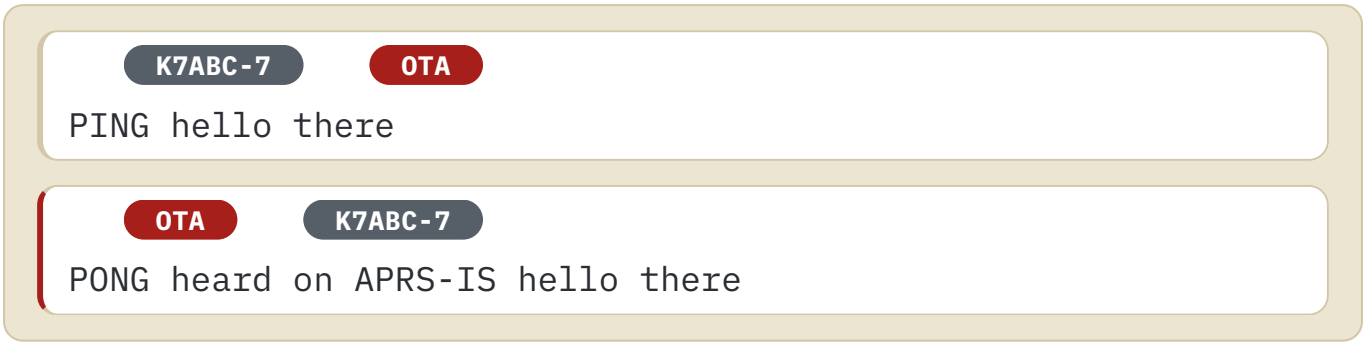
An easy way to see if your transmissions are successfully making their way to the OTA bot, and to find out which path they took to get there.



Whatever arguments you give to the PING command will be returned to you in the PONG response.

Which path you came in on

`heard on RF` means your packet was transmitted on a radio and an iGate put it on APRS-IS, which is what rule #3 requires of a host. The other answer is `heard on APRS-IS`:



That means your packet reached the bot over the internet and no radio was involved. PING itself is happy either way, so this is a successful test and not a refusal. It matters when you want to host an op, because a host's messages have to come in on RF. If you expected `heard on RF` and got this instead, the usual

cause is your app rather than your radio: see point your app at your radio, not the internet.

This is worth doing before you go on the air rather than after. One PING tells you what a `HOST` would tell you, without spending your op on it.

Reference

`PING [text...]`

Check your messaging path to the OTA bot, and whether it is RF.

`text`
Text echoed back in the PONG reply. OPTIONAL

AVAILABLE TO Anyone, from RF or APRS-IS.

RATE LIMIT 2 per minute and 5 per 10 minutes

REPLIES

`pong`
`PONG heard on {via} {text}`

No error hints; OTA does not reply to an invalid PING.

PLAN

You don't have to plan your op in advance, but if you do, you'll probably get more chasers. Use the `PLAN` command to share your plans with others. `QRX`, the Q-code meaning "I will call you again at", does the same thing.

Send a future time and an optional description, and your plan is posted to `aprsota.org/plans` and to your callsign page, where chasers can see what is coming up.

See Plan an op for more information on when to use this command.

`PLAN <time> [description...]`

Announce a planned op: a future time, posted to aprsota.org.

time
ISO 8601 date and time, e.g. 2026-08-12T18:30Z. Zone optional (UTC assumed); seconds optional.

description
Free-text description of the planned op. OPTIONAL

ALSO ANSWERS TO	`QRX`
AVAILABLE TO	Anyone, from RF or APRS-IS. At most 3 active plans per operator.
RATE LIMIT	2 per minute and 3 per 10 minutes

REPLIES

`plan_confirmation`
`Op planned for {time}. aprsota.org/plans`

HINTS

time missing or unreadable

`Couldn't read that time. Try PLAN {example}` limited to 1 per 24 hours, then silent

time in the past

`That time already passed. Plans need a future time.` limited to 1 per 24 hours, then silent

time more than 7 days out

`Plans can be at most 7 days out.` limited to 1 per 24 hours, then silent

operator already has 3 active plans

`You already have 3 planned ops. aprsota.org/plans` limited to 1 per 24 hours, then silent

within 120 minutes of an active plan

`Too close to another of your plans. Space them 2 hours apart.` limited to 1 per 24 hours, then silent

K7ABC-6 OTA

```
PLAN 2026-08-12T18:30Z lake op, HT and a wire
```

OTA K7ABC-6

```
Op planned for 12 Aug 2026 18:30Z. aprsota.org/plans
```

The time

Times are ISO 8601 in a single word (meaning no spaces). If you don't specify an offset, it will be interpreted as UTC. Seconds are optional, and if you send them, they won't show up on the website. These all name the same minute:

- `2026-08-12T18:30Z`
- `20260812T183024Z`
- `2026-08-12T12:30-06:00`

- `2026-08-12T18:30` (no zone, so UTC is assumed)

Minutes are optional too: `2026-08-12T18Z` means 18:00 UTC.

Time constraints

A plan must name a date and time that is:

- in the future
- at most 7 days out
- at least 2 hours away from your other plans

and you can have at most 3 standing plans at a time. Once a plan's time passes, it comes off the website on its own and stops counting against your 3; nothing bad happens if life got in the way and you never went on the air.

When you go on the air with HOST near your planned time (1 hour early or 2 hours late), your op takes the plan's place on the website. Change of plans? Cancel with UNPLAN and send a new one.

QSL

Confirm a chaser's contact. When the OTA bot relays a `DE` message to you, answer with QSL and that chaser's callsign. The QSO is logged, scored, and relayed back to them.

K7ABC-6 OTA
QSL W1XYZ-5 thx for the contact 73

OTA W1XYZ-5
DE K7ABC-6 QSL thx for the contact 73

Send the QSL from the station running your op.

You can leave the SSID off

`QSL W1XYZ` confirms the same contact as `QSL W1XYZ-5`. However many radios a chaser owns, they are one callsign to the bot, so the SSID on their call is optional and the confirmation still reaches the station that chased you.

K7ABC-6 OTA
QSL W1XYZ thx for the contact 73

Only the chaser's SSID is optional. Yours is exact, because every host message has to come from the station running the op.

The other spelling

`@W1XYZ-5 QSL thx for the contact 73` confirms exactly the same contact. Both spellings are permanent, so use whichever you remember.

What neither can do without is the callsign. A host with a pileup can have several chasers waiting at once, so a QSL carrying nothing but a message cannot say who was worked, and the bot asks for the call rather than guessing:

K7ABC-6 OTA
QSL thx for the contact 73

OTA K7ABC-6
QSL needs a callsign. Send QSL callsign to confirm

The word matters as much as the callsign. Name a chaser without it and nothing is confirmed, so the bot says the contact is still waiting rather than guessing that you meant to log it:

K7ABC-6 OTA
@W1XYZ-5 thx for the contact 73

OTA K7ABC-6
W1XYZ is waiting on your QSL. Send QSL W1XYZ.

See exchange messages for the whole QSO, step by step.

Reference

`QSL <callsign> [message...] | @<callsign> QSL [message...]`

Confirm a chaser's contact and log the QSO.

`callsign`
The chaser you are confirming. The SSID is optional, so W1XYZ and W1XYZ-5 both work.

message

Free text relayed back to the chaser with the QSL. OPTIONAL

AVAILABLE TO	Hosts with an op on the air, via RF, from the op's station. Self-limiting, so no command rate limit.
RATE LIMIT	No command rate limit (self-limiting)

REPLIES

`qsl_relay`

`DE {station_call} QSL {message}`

HINTS

a QSL not sent via RF

`You must transmit via RF to confirm a QSO` limited to 1 per 24 hours, then silent

a QSL with no op on the air

`QSL needs an op on the air. Send HOST to start one.` limited to 1 per 24 hours, then silent

a QSL from a different SSID than the op's

`Your op is run by {station_call}. Send QSL from it.` limited to 1 per 24 hours, then silent

a QSL with no relayed chase by that operator

`No chase from {base_call} to confirm` limited to 1 per 24 hours, then silent

a host naming a chaser who is waiting on their QSL, with no keyword in the message

`{base_call} is waiting on your QSL. Send QSL {base_call}.` limited to 3 per 15 minutes and 5 per 24 hours, then silent

a QSL with no callsign

`QSL needs a callsign. Send QSL callsign to confirm` limited to 1 per 24 hours, then silent

STAY

Use the STAY command to add 30 minutes to the op you are hosting. Send it from the same callsign and SSID that is running the op, any time while you are on the air.

Unlike the other op commands, STAY has no Q-code synonym. There isn't a Q-code that means "give me more time", and rather than bend one that means something else, STAY answers only to its own name.

It does not matter whether you have worked anybody. A quiet op and a busy one extend exactly the same way.

The two hour maximum still applies

STAY cannot push an op past the 2 hour maximum, which nothing can. Since an op runs at least 60 minutes to begin with, that leaves room for **two** extensions, and the second one may be trimmed to fit under the maximum. The reply always tells you when you are actually going off the air, so you never have to work it out yourself:

K7ABC-6 OTA

```
STAY
```

OTA K7ABC-6

```
Staying on the air. Off the air in 34 minutes, max 55
minutes
```

The second number is how much time is left before the maximum. If you want to know what a STAY would buy before you send one, ask TIME: its reply quotes the exact number, which is under 30 once the maximum is close.

When the two numbers are the same, you are at the maximum and another STAY will not add anything. Sending one anyway just tells you so:

K7ABC-6 OTA

STAY

OTA K7ABC-6

```
At the 2 hour max. Off the air in 12 minutes.
```

When the op does end at the maximum, the OTA bot invites you to start a fresh one with HOST. There is no limit on how many ops you can run in a day.

Related commands

TIME tells you how much time is left without changing anything. DONE ends the op early. See Host an op for how the timer works and what else extends it.

Reference

STAY

Add 30 minutes to your op, up to the 2 hour maximum.

AVAILABLE TO Hosts with an on-air op, from the op's station.

RATE LIMIT 1 per 3 minutes and 3 per 15 minutes

REPLIES

`stay_confirmation`

```
Staying on the air. Off the air in {minutes_remaining}, max {minutes_to_hard_cap}
```

`stay_at_cap_notice`

```
At the 2 hour max. Off the air in {minutes_remaining}.
```

HINTS

STAY with no live op

`STAY needs an op on the air. Send HOST to start one.` limited to 1 per 24 hours, then silent

STAY from a different SSID than the op's

`Your op is run by {station_call}. Send STAY from it.` limited to 1 per 24 hours, then silent

TIME

Use the TIME command to find out when the timer on the op you are hosting will timeout and take the op off the air. If you know your Q-codes, `QRT?` (asking "shall I stop sending?") does the same thing.

The first number is when you go off the air. The second is the 2 hour maximum, which no op can pass. When there is still room between them, the reply adds what STAY would buy you:

K7ABC-6 **OTA**

```
TIME
```

OTA **K7ABC-6**

```
Off the air in 35 minutes, max 95 minutes. STAY adds 30 mins
```

That last number is what a STAY would really add, so near the maximum it is less than 30. When the first two numbers are the same you are at the maximum, and it goes away because there is nothing left to add.

See Host an op for more information on when to use this command.

Reference

`TIME`

Ask how much time is left before your op ends.

ALSO ANSWERS TO	`QRT?`
AVAILABLE TO	Hosts with an on-air op.
RATE LIMIT	1 per 3 minutes and 3 per 15 minutes

REPLIES

`info_reply`

`Off the air in {minutes_remaining}, max {minutes_to_hard_cap}{stay}`

HINTS

TIME with no live op

`TIME needs an op on the air. Send HOST to start one.` limited to 1 per 24 hours, then silent

TIME from a different SSID than the op's

`Your op is run by {station_call}. Send TIME from it.` limited to 1 per 24 hours, then silent

UNPLAN

Use the `UNPLAN` command (or `CANCEL`, which does the same thing) to withdraw a plan you announced with PLAN. Send the plan's exact time, in any form PLAN accepts, from any of your SSIDs.

See Plan an op for more information on when to use this command.

`UNPLAN <time>`

Cancel one of your planned ops.

time
The plan's exact time, in any accepted ISO 8601 form.

ALSO ANSWERS TO `CANCEL`

AVAILABLE TO The planning operator, from any SSID. Self-limiting, so no command rate limit.

RATE LIMIT No command rate limit (self-limiting)

REPLIES

`plan_cancel_confirmation`
`Plan for {time} canceled.`

HINTS

no active plan at that time, or an unreadable time
`No matching plan. Your plans: aprsota.org/{base_call}` limited to 1 per 24 hours, then silent

K7ABC-6 OTA

```
UNPLAN 2026-08-12T18:30Z
```

OTA K7ABC-6

```
Plan for 12 Aug 2026 18:30Z canceled.
```

The time has to match your plan to the minute; your callsign page shows each plan's exact time. Canceling frees the slot immediately, so you can plan a different time right away.

Stamps and combos

Every point a QSO earns comes from a fact about the contact, represented as a **stamp**. The stamp is created the moment the host confirms with QSL. A **combo** is a name for a pattern of stamps on one QSO. A combo doesn't have any points of its own, it's just a fun name for a combination of stamps on a QSO.

The how to score points page describes how and when points are assigned to a QSO and to the two participants in the contact.

Stamps

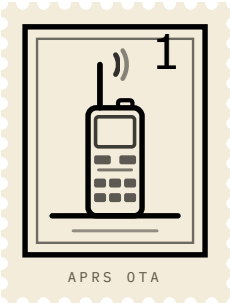
Some stamps have similar characteristics, for example, there are several stamps that are related to location, like Nessie (when someone is located on a lake), and Foreign Lands (when the host and the chaser are located in different countries). Stamps with similar characteristics belong to the same **family**.

These interpretations of location are made using the information in the APRS position report sent by the host and the chaser. The system is pretty good at interpreting these locations, it can usually figure out if you are on a lake and the name of that lake. But these calculations, including which country you are in, are limited by the resolution of publicly available datasets. If you are very close to a border between countries, or send approximate location precision in your APRS beacon report, APRS OTA might think you are in a different country than you actually are.

If you are on a boat in a slip, it might say you are at sea, or it might say you are on the land. The system doesn't know about maritime exclusive economic zones or other maritime laws. If you aren't on the land of a country, or a lake within a country, then you are deemed to be at sea. If one of the parties in a QSO is at sea, you can not earn the Foreign Lands stamp, because by definition if you are at sea, you are not in a country.

Remember rule #2, this is for fun. `OTA` makes its best effort and whatever it decides is final. There is no appeals process and no re-adjudication.

STAMP	FAMILY	POINTS	WHAT IT SAYS
PTT	RF	1 point	You were on RF for both of your frames on this contact.
Foreign Lands	Country	1 point	You and the other party were in different countries.
Nessie	Water	1 point	You worked this contact from a lake.
Davy Jones	Water	1 point	You worked this contact from the sea.



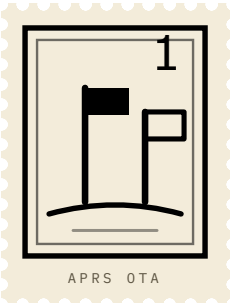
PTT

You were on RF for both of your frames on this contact.

WORTH 1 point

EARNED BY You, for your own side of the contact. Both sides can each earn one on the same QSO.

FAMILY RF



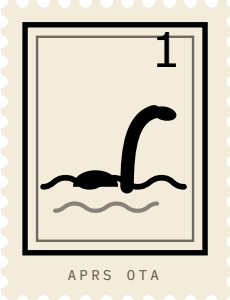
Foreign Lands

You and the other party were in different countries.

WORTH 1 point

EARNED BY Both of you together. It belongs to the pair, so one QSO carries at most one.

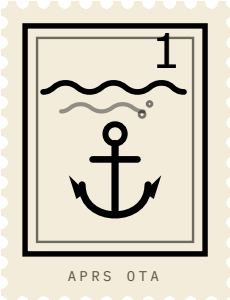
FAMILY Country



Nessie

You worked this contact from a lake.

WORTH	1 point
EARNED BY	You, for your own side of the contact. Both sides can each earn one on the same QSO.
FAMILY	Water
RECORDS	The lake, when the map names it.



Davy Jones

You worked this contact from the sea.

WORTH	1 point
EARNED BY	You, for your own side of the contact. Both sides can each earn one on the same QSO.
FAMILY	Water
RECORDS	The body of water, when the map names it.

Combos

When the stamps on a QSO match one of the combo patterns below, a special combo graphic is shown instead of the original stamps. The combo doesn't change the score, it celebrates the existing stamps with a unique name and graphic.

New combos can be defined which apply to old QSOs, but because combos don't earn points, the previous score of the QSO will always remain what it was when it was completed.

COMBO	PATTERN	POINTS SHOWN
Two-Way	PTT + PTT	2 points
Nessie's Reunion	Nessie + Nessie	2 points
Full Fathom Five	Davy Jones + Davy Jones	2 points
Brackish	Nessie + Davy Jones	2 points

Two-Way

Both of you were on RF for the whole exchange.

PATTERN PTT + PTT

SHOWS 2 points, all from the stamps it names. A combo never adds points of its own.

Nessie's Reunion

Both of you were on a lake.

PATTERN Nessie + Nessie

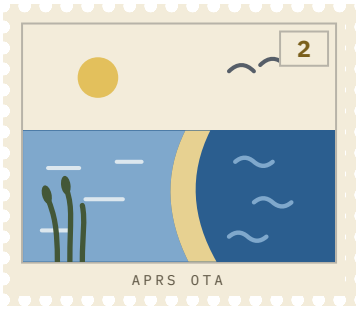
SHOWS 2 points, all from the stamps it names. A combo never adds points of its own.

Full Fathom Five

Both of you were at sea.

PATTERN Davy Jones + Davy Jones

SHOWS 2 points, all from the stamps it names. A combo never adds points of its own.



Brackish

One of you was on a lake, the other at sea.

PATTERN Nessie + Davy Jones

SHOWS 2 points, all from the stamps it names. A combo never adds points of its own.

Glossary

Terms used throughout this handbook, gathered in one place. See also Q-codes for the on-air abbreviations used inside messages.

Beacon

A position report you send that tells the OTA bot (and anyone else listening) where you are. Also just called a position report.

Chaser

An operator who calls in to make contact with a host's op. POTA calls this role "hunter"; this handbook always says chaser.

Combo

A name for a pattern of stamps on one QSO, like Brackish when one party was on a lake and the other at sea. A combo has no points of its own: it is worth exactly what the stamps it names are worth, and it exists to give a better name to a combination worth noticing. Because it adds nothing, a combo can be invented later and still apply to old contacts without changing what any of them scored. The catalog is on the stamps and combos page.

Command

The instruction inside a message's text when the message is addressed to the OTA bot. It is the first word, like `HOST`, `CQ`, or `QSL`. Some commands have a traditional Q-code you can use instead (`QRV` for `HOST`, `QRT` for `DONE`). All commands are listed in OTA bot commands.

Exchange

A linked run of packets (messages and any position reports) that together make up one interaction with the OTA bot: a command and whatever comes back in response. Most exchanges are short (a command and a single reply); going on the

air is a four-packet exchange: your `HOST`, the bot's request for a position, your position report, and the bot's confirmation.

An exchange is the plumbing that links packets together. A QSO, below, is the bigger thing that emerges once one or more exchanges result in a confirmed contact.

Frame

The raw data demodulated off the air (or relayed via APRS-IS), also called a packet. A frame has a type, such as message or position report.

Host

The operator running an op, the one who goes on the air and waits to be chased. POTA and SOTA call this role "activator". Since there are no geographic constraints to APRS OTA, you aren't activating a location, so we use host instead.

Maidenhead locator or grid square

A Maidenhead locator (https://en.wikipedia.org/wiki/Maidenhead_Locator_System), commonly referred to as a grid square, compresses latitude and longitude into a short string of characters. Some resolution is lost, but for most ham radio uses, the precision of multi-digit latitude and longitude is not required. Maidenhead locators also remove the negative/positive and east/west confusion of latitude and longitude. Maidenhead locators are widely used in ham radio for contest logs and grid square awards

A locator is a four tier hierarchical grid:

- a **field** is the coarsest division, a 20°-longitude × 10°-latitude cell identified by two letters (A–R for each axis, covering the whole globe in an 18×18 grid)
- within each field, a **square** subdivides it into a 10×10 grid of 2° × 1° cells identified by two digits (0–9)

- within each square, a **subsquare** further subdivides it into a 24×24 grid of 5’ × 2.5’ cells identified by two more letters [a–x]
- within each subsquare, an **extended square** divides a subsquare into a 10x10 grid identified by two digits [0-9]

Extended squares are not used very often, the most common Maidenhead locates are six characters. Even though a six character locator includes a subsquare, it is still commonly referred to as a grid square.

A six-character locator like `DN40bi` identifies a location within a few kilometers.

APRS position reports natively use the DDMM.mmm format for latitude and longitude, and the transmitter can choose to omit certain digits for less precision. APRS OTA shows the exact position transmitted on the map. When the OTA bot relays messages between hosts and chasers, it uses the shorter, but less precise, Maidenhead grid subsquare.

Message

An APRS packet addressed from one callsign to another, as opposed to a position report or other packet type. If a message is addressed to the OTA bot, its text is a command.

Op

One on-air session created by a host. Chasers make QSOs with the host while the op is on the air. POTA and SOTA call this an activation, but since there are no geographic constraints to APRS OTA you aren’t activating a location. Op is short for operation, and it’s so convenient that we never use the longer term.

OTA bot

The APRS messaging bot at the center of APRS On The Air. You use the service by sending it APRS messages.

Points

The unit of scoring. Every point comes from a stamp, so nothing else on a contact can earn one. Points are never split or divided: when a QSO earns points, the host and the chaser each add the whole amount to their own total. See Score points for how and when they are awarded.

Q-codes

We use a few Q-codes and other ham abbreviations, which are all listed on their own page

QSO

A completed contact between two operators. QSO is a Q-code that originally meant “I can communicate with”, now used all over ham radio as a noun for a contact both sides confirmed. In APRS OTA a QSO is complete once a chaser has called in and the host has acknowledged with QSL; see exchange messages for the whole sequence. This handbook uses “QSO” and “completed contact” to mean the same thing. Each one is logged, gets a page and a QSL card of its own, and carries its own score.

Score

A total of points. Three things carry one: a QSO scores the sum of its stamps, an op scores the sum of the QSOs made during it, and a callsign carries a callsign total, every point you have earned whether you were the host or the chaser. A QSO’s score is settled the moment the host confirms the contact and is never adjusted afterward.

Stamp

A named fact about one contact that is usually worth points, added the moment the host confirms the contact with QSL. Stamps are the only source of points. Stamps that record a similar kind of fact belong to the same family, like the two

water stamps Nessie and Davy Jones. The catalog of every stamp, what it says, and what it is worth is on the stamps and combos page.

Going quiet

From time to time APRS OTA needs maintenance for operating system patches, upgrades, or other work that can not be done while the service is running.

We can deploy new releases of the website and the bot while everything is running. In fact, you probably have never noticed these deployments, which is great because they can sometimes happen multiple times per day.

Someday we'll be able to do all those things without the service going down, but until then, we will need periodic scheduled downtime.

In preparation for these maintenance events, the service **goes quiet**.

Going quiet means that **no new ops can start**, but everything else will continue to work.

K7ABC-6 OTA
HOST at the overlook

OTA K7ABC-6
Going quiet for maintenance. No new ops. aprsota.org

When the service is going quiet, a banner with the same explanation will appear on the website. Because the reason for going quiet needs to fit in an APRS message, there isn't much room for detailed explanations. I'll usually post more detailed explanations in the discord server if you want more information.

Everything already on the air keeps working

While the service is going quiet, everything on the air continues to work:

- Chasers can still CHASE you, and their position reports still reach you.

- You can still QSL them, and those contacts are still logged, scored, and shown on the website.
- BLAST still reaches everyone on your op.
- STAY still adds 30 minutes, as many times as the two hour cap allows.
- TIME still tells you how long you have.
- DONE still ends your op and still sends your summary.

CQ, INFO, HELP and PING all answer normally, so you can still find an op and still test your setup.

Planning is not affected either. PLAN and UNPLAN work the same as always, and a plan you already announced stays exactly where it is. If your planned time happens to fall inside a quiet period, you will get the going quiet message when you send HOST, and your plan is still there waiting for you when the service comes back.

After the service is quiet

When the service is finally quiet, (ie there are no ops on the air), you can expect that it will go offline. The website will be down, and the OTA bot will stop responding to any messages.

When this happens, all you can do is try again later. There is nothing for you to fix on your end, and no settings to change. Once quiet, which could take up to two hours from the time we started going quiet, the actual maintenance work is typically pretty short. The most common reason for planned maintenance is to install operating system kernel patches, which require a reboot.

Why we do it this way

Going quiet gives a gentle ramp into planned maintenance. Once all the ops on the air go off the air and everything is quiet, then the maintenance can be done with the least impact possible.

Instead of cutting ops off in the middle, going quiet lets those ops keep running to their conclusion, instead of ruining the ops in flight when we decide to take the service down for maintenance.

Q-codes

Here's the Q-codes and other ham radio abbreviations used in APRS OTA, along with their meaning in this context.

Three of the OTA bot's commands have a plain-English primary name, with the traditional Q-code accepted as a shortcut. You can send either one.

CODE	MEANING	ALSO WRITTEN
`QRV`	I am ready to go on the air now	`HOST`
`QRT`	End an op and go off the air	`DONE`
`QRT?`	How much time is left before my op ends?	`TIME`
`QSL`	Confirm a message exchange with another operator	
`QSO`	A completed message exchange	
`CQ`	Find an op to chase	
`DE`	The French word for "from"	

Zulu Time

Zulu time is the military and aviation designation for Coordinated Universal Time (UTC). The name Zulu comes from the old NATO military time zone system. Each zone was assigned a letter and the zero meridian at Greenwich was assigned the letter “Z”. In the phonetic alphabet, letter “Z” is pronounced Zulu. Aviation adopted Zulu time globally for flight plans, weather reports and air traffic communications to avoid confusion from crossing time zones and daylight saving shifts. Ham radio operators also have adopted Zulu time so contacts, contests, and propagation data stay consistent regardless of where each station is physically located.

Every time on this website is written in Zulu time, with some supplemental affordances for your local time.

Reading a time here

You will see Zulu written a few ways, each chosen for where it appears:

- `18:30Z` in sentences and on plan cards: hours and minutes with a colon, the reading voice.
- `1745z` in dense rows, like an op card’s timeline facts or a logbook column. This is the compact form that hams often write on a paper log.
- `0127:49z` in packet logs and expanded contacts, where APRS frames arrive seconds apart and the minute alone cannot order them. The colon marks off the seconds and keeps the familiar `0127z` intact. We deliberately do not write `012749z`. In raw APRS frames, six digits before a `z` is how the timestamp is represented in a position report, where those six digits represent day-hour minute (`DDHHMMz`).
- Dates show the month as a word abbreviation (`2 Aug 2026`), not a number. This avoids potential confusion about the various numeric only date formats used around the world.

Your local time

Wherever a time in the compact form [`2215z`] appears, **hover over it** to see the equivalent time in your local time zone, or **tap it** and the local time pops up beside it. This local time zone conversion happens in your browser, because the website doesn't know where you are. One implication is that if the time is wrong on your local computer, the displayed local time will also be wrong.

Plan cards do the translation for you. A planned op's start is shown in both clocks at once, Zulu on top and your local time under it, each with its own date. Zulu rolls to tomorrow during your evening if you live west of Greenwich, and a plan for `0230z Saturday` may well be your Friday night. When the two dates disagree, both are marked in green.

The now page (https://aprsota.org/now) carries a station clock, Zulu beside your local time with ticking seconds.

Why not show everything in local time?

Because the game is shared. An op on the air "until 2130z" ends at one moment. When translated into every reader's local clock it becomes many different statements that no two people can compare. Ham logging convention settled this decades ago, and we follow it. Log your times in Zulu, making one clock for everyone. Operators convert to their local time as necessary.