



Track Commander

- User Manual -

SAR Technology Inc.

Professional-Grade



Tracking - Messaging - Navigation

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Section 1. Overview: Tracking and Messaging



Tracking

The 'Track Commander' Android application is typically used in conjunction with the 'Incident Commander Pro' software program to track the field locations of SAR personnel. Track Commander is used to track personnel field movements via their Android phone's GPS and automatically sends these location coordinates back to 'Incident Commander Pro', which plots them on a map. In this way 'Incident Commander Pro' can keep real-time track of personnel locations during search and rescue missions.



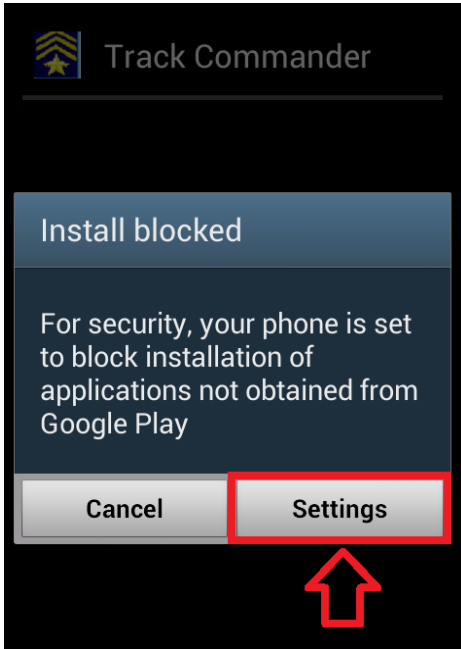
Send Message

Track Commander's 'One-Touch' Message function is used to quickly send individual pre-defined and custom messages, which also include the location from which the message was sent.

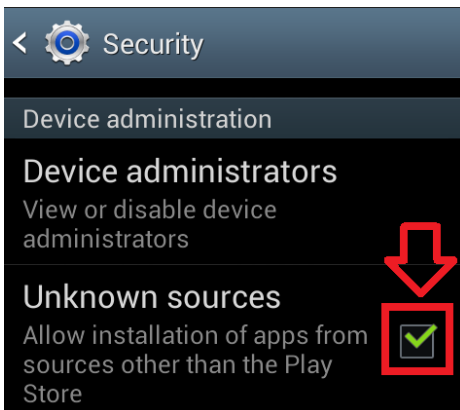
Section 2. Installation

To install **Track Commander** onto your Android device you can either:

1. Save the *TrackCommander.apk* file to your Android device.
Locate the file using a file manager and then tap to install, or
2. Open the link to *TrackCommander.apk*, download the file, and then tap to install.

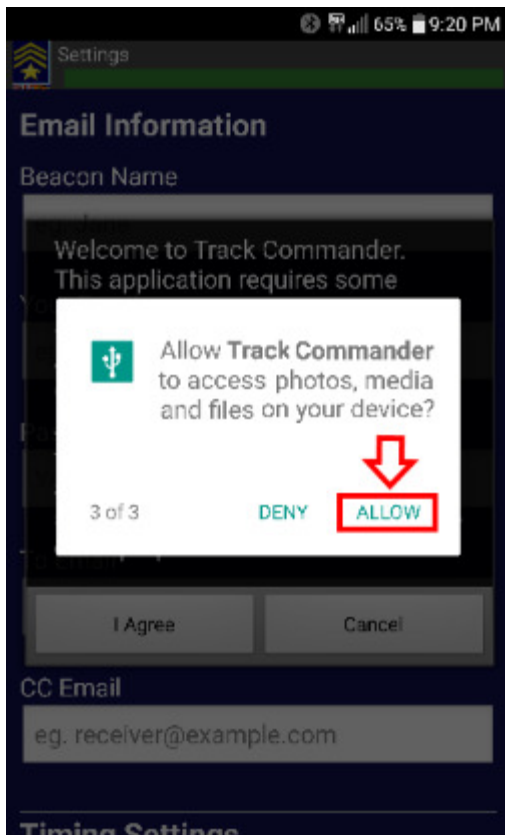


During installation a pop up may inform you that your phone is set to block installation of applications not obtained from Google Play. Press 'Settings' to change the permission.



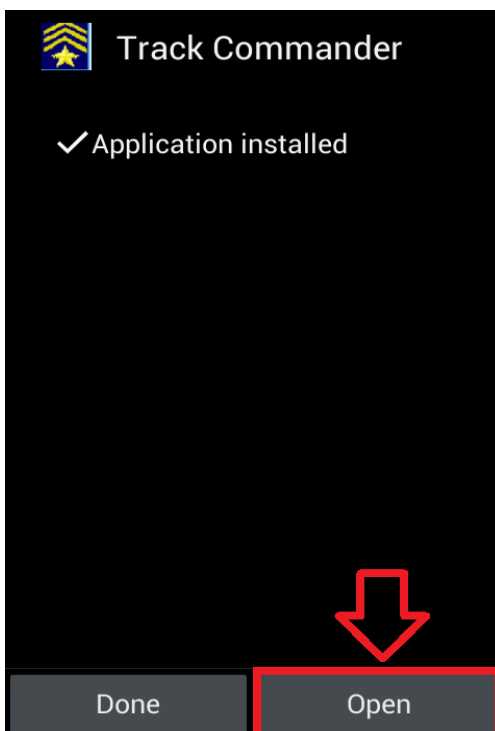
Under the Device administration section, select the checkbox beside Unknown Sources to allow installation of apps from sources other than the Play store.

Press OK to confirm.



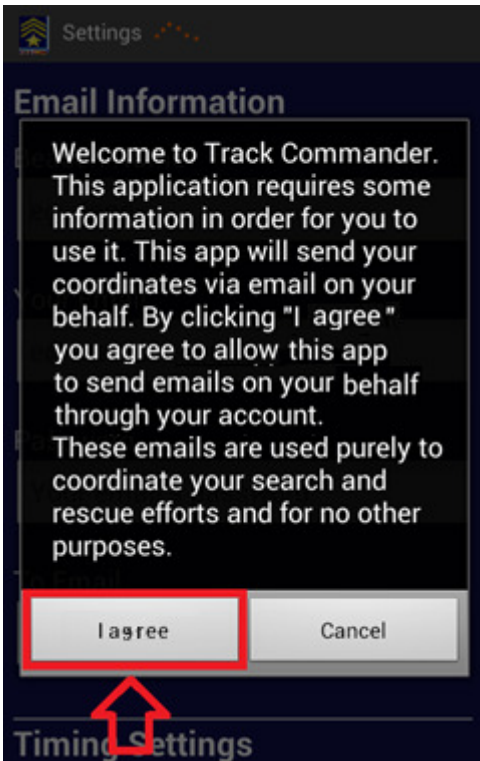
Allow the App permissions that Track Commander must have access to:

- Phone.
- Your location.
- Photos, media and files.



After the application has been installed, you may open Track Commander by pressing 'Open'.

Section 3. Getting Started



Once the app is installed, a disclaimer will pop-up. Read the disclaimer before pressing 'I agree'.

 The first time you run Track Commander a Settings set-up screen will be displayed.

After entering your settings information you will be taken to the Main Menu where you may now use Track Commander for tracking, messaging and navigation.

Section 4. Settings

The Settings screen is used to change the information stored in the application. This page can be accessed by using the Settings button on your phone

 *It is highly recommended you use a Gmail, Yahoo, or Outlook account for emailing (with Gmail being preferred), otherwise you will have to enter specific STMP information for your email system.*



Settings information:

Settings

Email Information

Beacon Name
marty

Your Email
sarinfotechs@gmail.com

Password
.....

To Email
sarmessages@gmail.com

CC Email
sartechology@telus.net

Timina Settinas

Beacon Name: Enter the name that uniquely identifies you on your Android phone.

Enter either a single name e.g. 'Jane' or a first name and last name e.g. 'John Smith'.

Your Email: Your email address, from which tracking messages are emailed out from the Android smart-phone. Gmail accounts are recommended although other email accounts, such as Yahoo, Outlook, etc, may also be used.

Password: Enter the password for your personal email address.

To Email: Enter the designated email address of 'Incident Commander Pro's Message Center that your tracking messages will be emailed to.

CC Email: Enter a second email address that the messages will also be emailed to. These could include a team, friend or colleague.

SMTP Server: This is unique to your email provider. This field is automatically filled for Gmail, Yahoo and Outlook. If you are using any other email provider you will be required to enter their SMTP information into the settings.



Port Number: Enter the port number that your SMTP server uses.

Timing Settings

Select GPS update interval
15 Seconds

Set interval between tracking messages
2 Minutes

Set time elapsed before automatic tracking shutoff

24 Hours
 48 Hours

Auto-restart (10 minutes)

Timing Settings:

GPS update Interval:

The phone's GPS provides location, elevation, speed and GPS-error values. An update interval of 15 seconds, 30 seconds, 1, 2, 5, 10 and 15 minutes may be selected.

Typical GPS update intervals are:

Vehicle use: 15 seconds to 30 seconds.

Normal use: 30 seconds to 1 minute.

Extended-Duration use: 2 minutes to 15 minutes.

Interval between tracking messages:

The time interval between tracking messages being sent, from 2 minutes up to 4 hours.

(Default: 10 minute message tracking interval).

Automatic tracking shutoff time:

The total elapsed time before Track Commander will automatically stop sending tracking messages (Default: 24 hours elapsed time).

Auto-Restart (10 minutes): Track Commander will make five attempts to email the current tracking message. If the message cannot be sent, typically due to no cellular network being available, it will stop attempting to send the message, to conserve battery life.

Checking the Auto-Restart option enables Track Commander to restart messaging-sending attempts at ten minute intervals. If the phone has come back into cellular range the latest tracking message will then be sent and normal tracking will resume.

If Auto-Restart still fails to send messages after numerous auto-restarts, for example in remote back-country areas, then tracking may be turned off to conserve battery life.



Sound Settings:

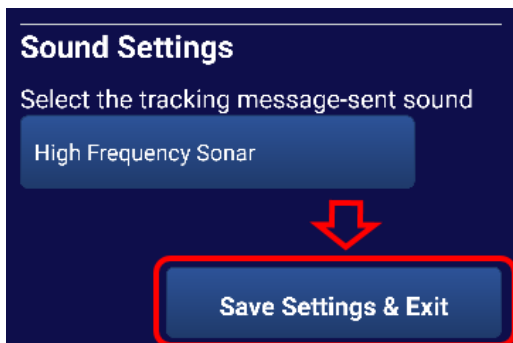
Tracking Message-Sent Sound:

Every time a tracking message is sent a sound can be selected to provide audible confirmation that the tracking message was actually sent.

There are five Tracking Message-Sent choices:

- Low Frequency Sonar
- High Frequency Sonar
- Beep
- Bell
- No Sound

When one of these choices is made the selected sound will be played.



Save Settings & Exit:

In order to save all the Settings entries press the 'Save Settings & Exit' button, otherwise any settings changes will not be saved.



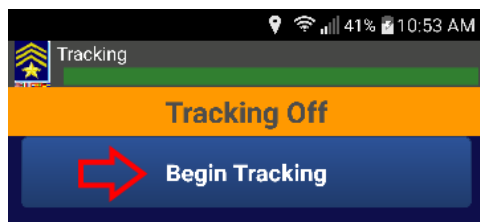
All the Settings information must be correctly entered for tracking messages to be sent.



Note: To edit Settings tracking must first be turn off.

Section 5. Tracking

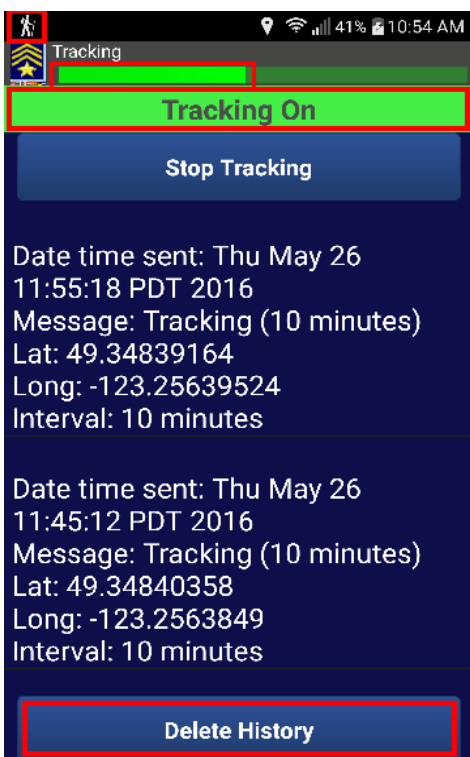
Track Commander's tracking function sends tracking messages at the interval selected. This automatic tracking will continue until tracking is stopped, or when the automatic tracking shutoff time has been reached (default 24 hours, or 48 hours).



1. Starting Tracking

Go to the Tracking screen from the Main Menu.

Press the 'Begin Tracking' button to start sending your tracking messages at regular intervals.



Notice the large 'Tracking On' green bar at the top of the Tracking screen. This large green bar and a narrower green Tracking Progress bar above, indicate that you are now in active tracking mode.


The upper Tracking Progress bar displays how much time has elapsed, for the selected message-tracking interval, until the next tracking message will be sent.

The Tracking Progress bar will change to an orange colour as Track Commander prepares to send the tracking message. When the message has been sent it will be displayed at the top of the Sent Message list and the selected Message-Sent sound will also be heard.

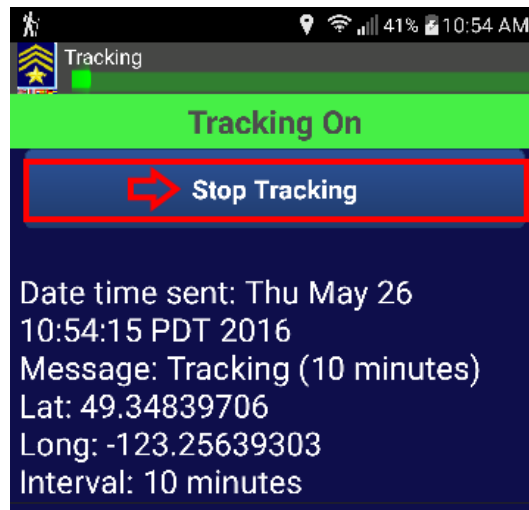
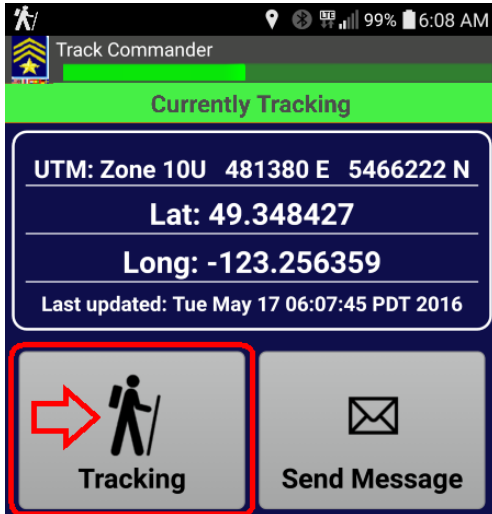
Abbreviated copies of the last ten sent messages will be displayed in the Sent Message list.

The Delete History button at the bottom of the Sent Message list may be used to delete all of the sent messages.

A 'Currently Tracking' green bar, as well as the smaller Tracking Progress bar, are also displayed on Track Commander's Main Menu.

 **Tip:** A grey Track Commander 'tracking' icon is displayed on the upper-left status bar even when Track Commander has been minimized, providing a visual indication that that tracking is still in progress.

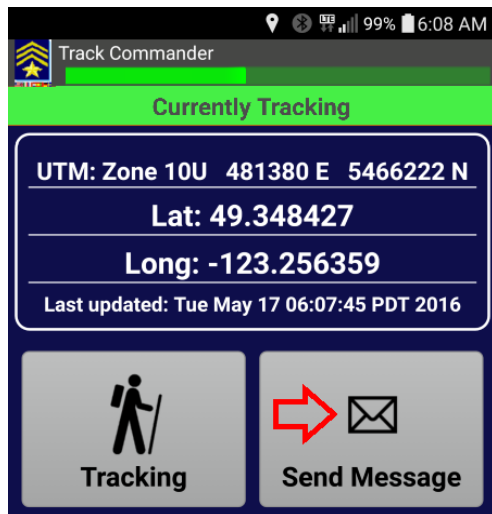
2. Stopping Tracking



From the Main Menu go to the Tracking screen....

On the Tracking screen Press the 'Stop Tracking' button.

Section 6. Messages



To send a message:

From the Track Commander Main Menu press the 'Send Message' button.

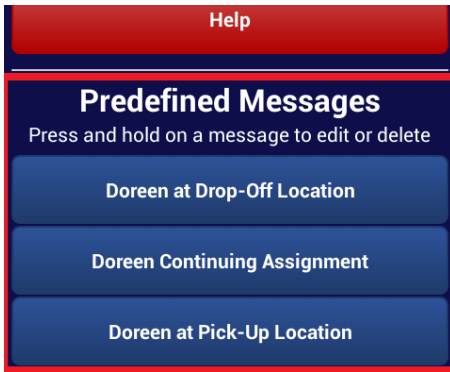
There are three message types:

- Predefined Messages: Editable Messages that have been pre-loaded into Track Commander.
- Custom Messages: User-defined editable messages you can create yourself.
- Urgent Messages: SOS and HELP messages that will be sent to everyone in your 'Incident Commander Pro' SOS/HELP message group.

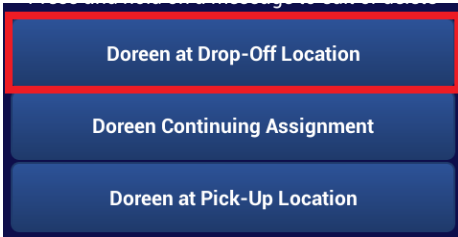
1. Predefined Messages

Predefined messages have the beacon name automatically added to the beginning of the button's (editable) message text. Predefined messages can be quickly sent by just pressing on the selected message, as shown below.

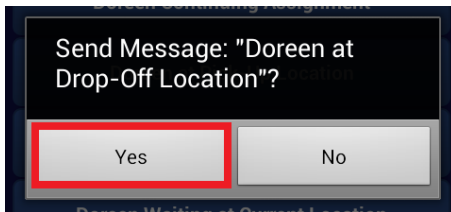
1. Sending Predefined Messages



View the Predefined Messages screen.



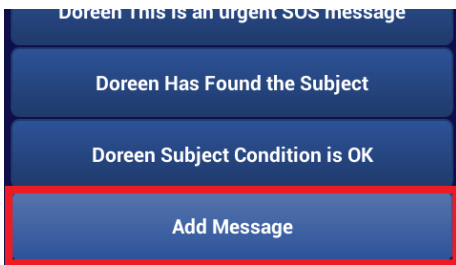
Press on the predefined message you wish to send.



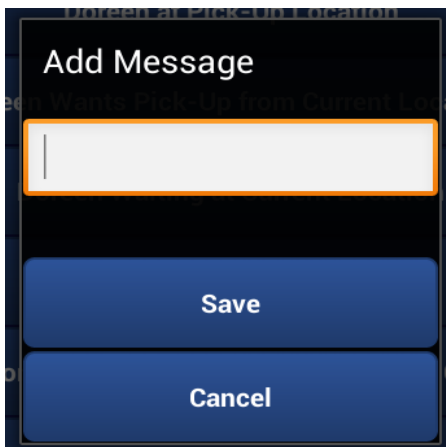
Confirm that you would like to send the message.

2. Creating New Predefined Messages

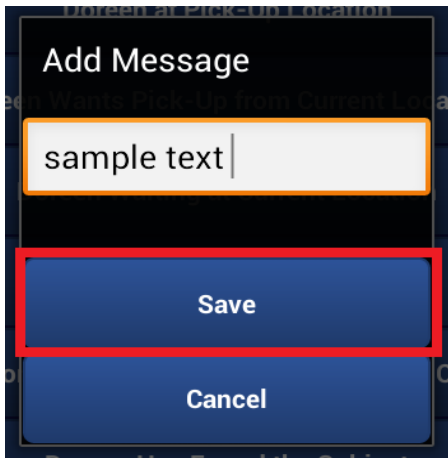
You may add your own predefined messages:



Go to the bottom of the Predefined messages and press the 'Add Message' button.

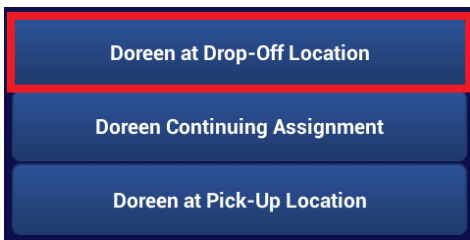


A pop-up will open prompting for the message text to be entered.

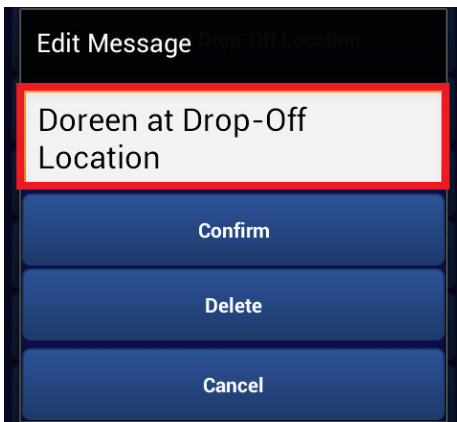


Enter the text and then press the 'Save' button.

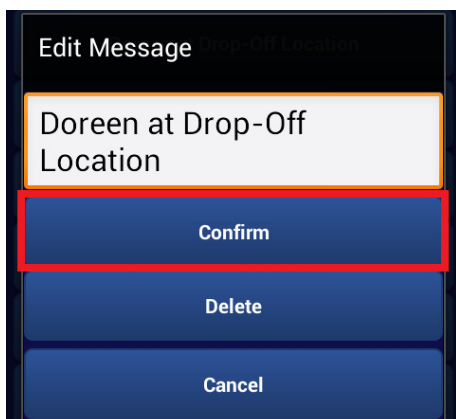
3. Editing Predefined Messages



Hold down on the message you wish to edit.



The pop-up will allow you to edit the message.

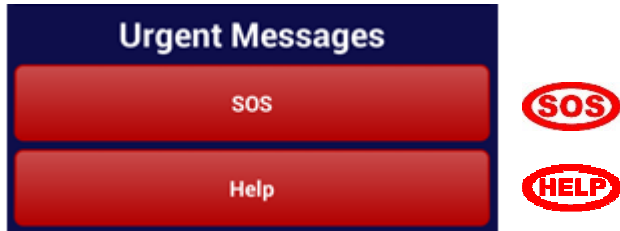


To save your changes press the 'Confirm' button.

4. Creating Map-Symbol Messages

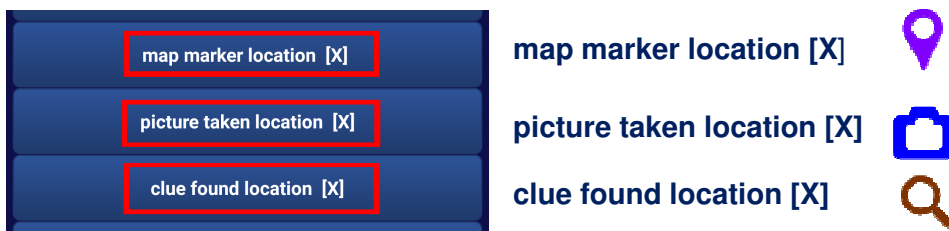
Map Symbol messages send a selected map symbol (along with the message) from 'Track Commander' to the 'Incident Commander Pro' map.

- SOS and Help button's selected map symbols:



- Creating Pre-Defined Map-Symbol Messages:

Either 'Add Message' or edit an existing message button (by a long press on the button) to edit the button's text. Enter the following text exactly for each Map-Symbol message button:



These five message buttons will send a map-symbol marker (along with the message) to the 'Incident Commander Pro' map.



To receive and display these map-symbol messages edit '**Incident Commander Pro**' **GIS Map** settings:

Tracking Tools... Beacon Tools... Beacon Setup. Add or right-click to edit a beacon record.

- Enter the beacon's single-word name *exactly* as displayed on the Track Commander button i.e for each beacon record enter one of the following (keyword) Beacon Names:

Beacon Name: **SOS Help marker picture clue**

Beacon Type: trackcommander

Beacon Unit ID (blank)

Display Name (blank)

'Receive-From' Email Address: symbols@gmail.com (a temporary dummy email address)

Message Forwarding Rule: SPOT Beacon Rules xml (default)

Symbol Style: Select the map symbol required from the drop-down list

Size: 22 Color: Select from the color palette

Description: (blank)

Display Symbol: Check Display Name: Check Log Messages: Check

- Click Update to save the completed beacon-symbol record.

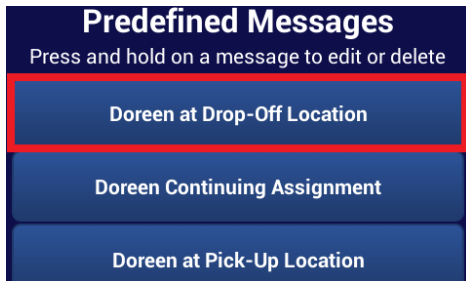
- Close the Edit Beacon table and then re-open to edit the same beacon-symbol record.

Delete the temporary dummy email address

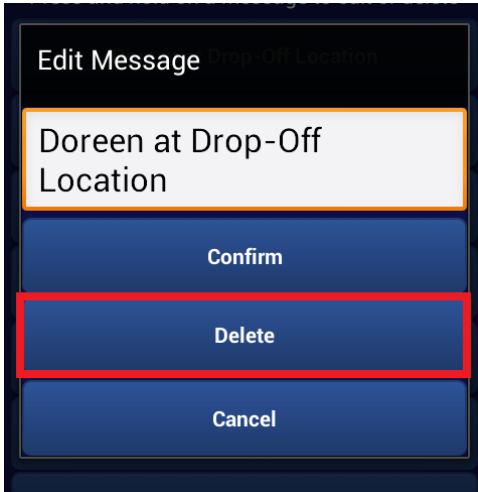
- Click Update to save the beacon-symbol record.

- Close the Edit Beacon table.

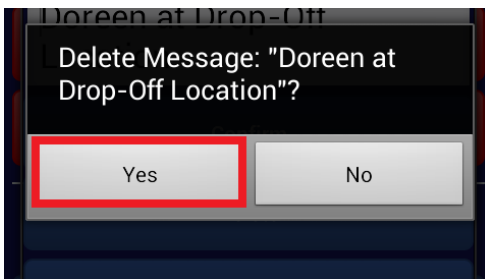
5. Deleting Predefined Messages



Hold down the message you wish to delete.



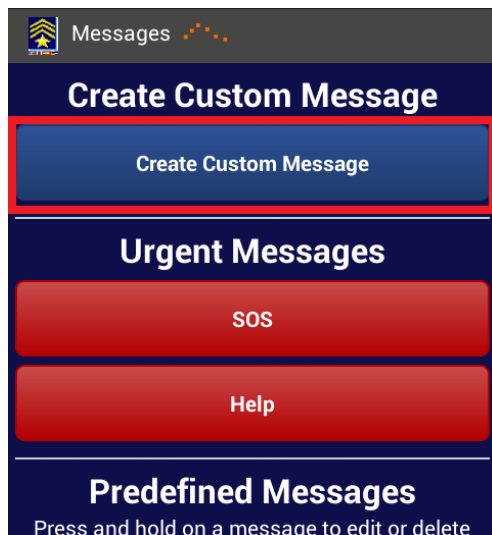
Press the 'Delete' button from the pop-up.



Confirm 'Yes' hat you wish to delete the message.



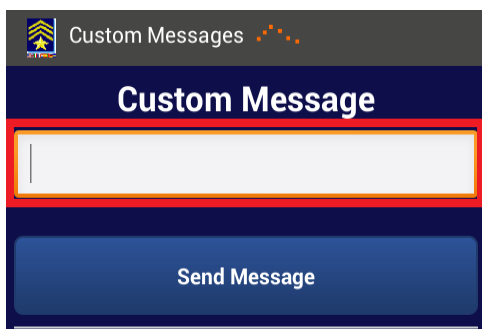
2. Custom Messages



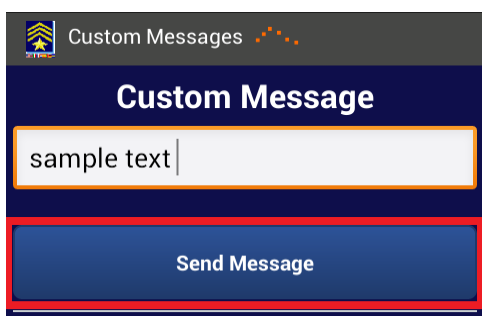
Custom messages can be created and stored in Track Commander's message screen.

On the message screen press the 'Create Custom Message' button.

1. Creating and Sending New Custom Messages



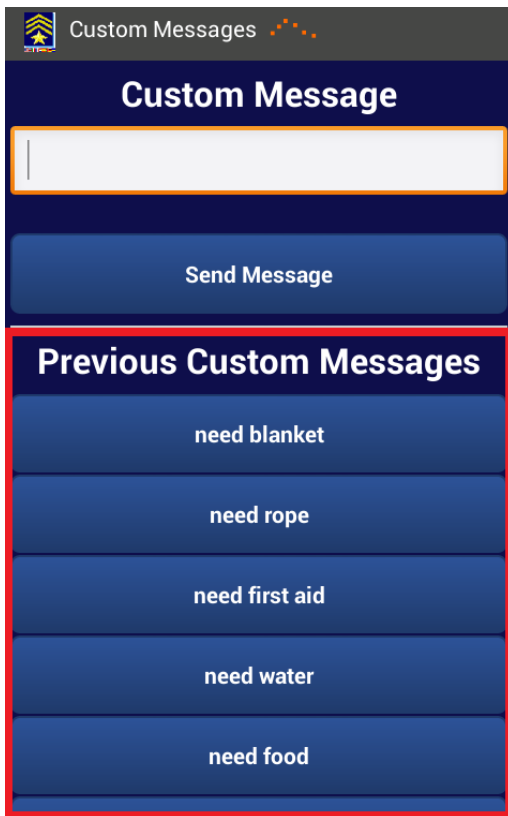
Type your own custom message into the text box.



When you are ready to send your custom message press the 'Send Message' button.

2. Sending Previous Customized Messages

The Previous Custom Messages section displays the 10 most recently sent Custom Messages.



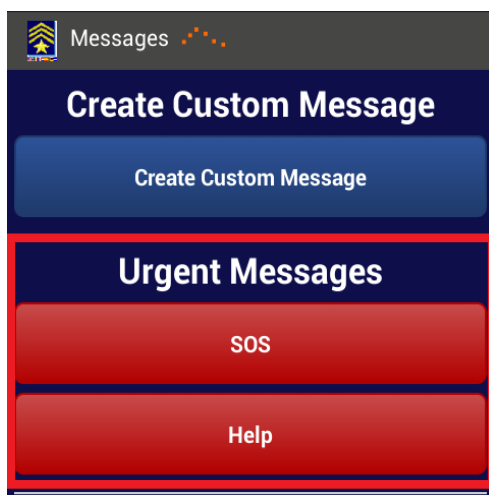
Press on a Previous Custom Message and its text will be automatically entered into the empty text box.

You may edit the text and send it, or send it just as it is.

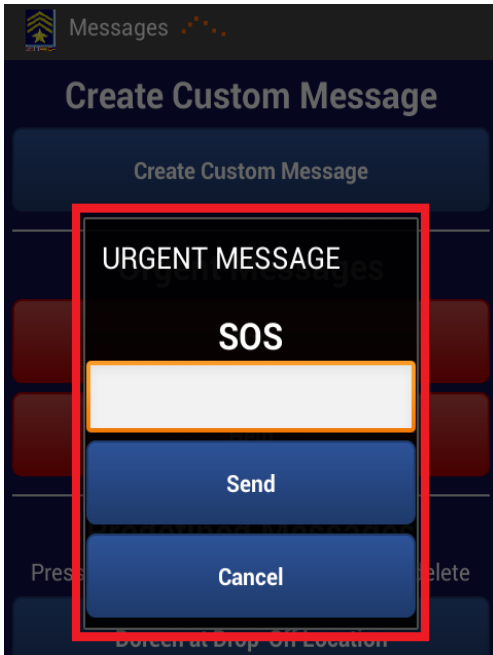
3. Urgent Messages

There are two types of urgent messages: **SOS** and **HELP**. Sending an urgent message can also email your message to everyone listed in your 'Incident Commander Pro' SOS/HELP email group, for a wider distribution.

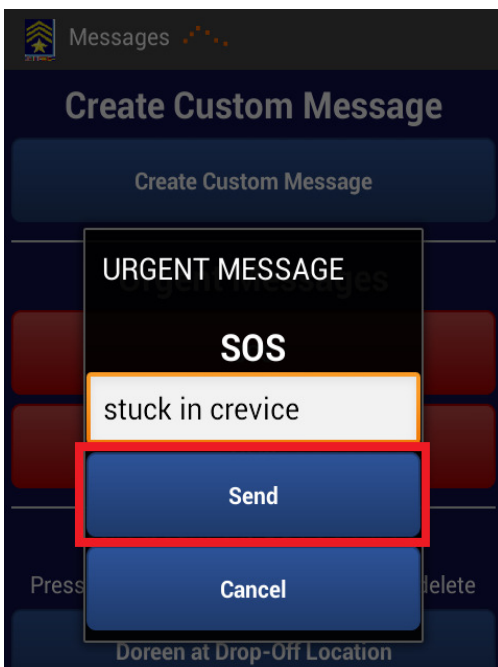
1. Sending an Urgent Message



Press the **SOS** or **HELP** button on the Message page. 



A pop-up window will be displayed allowing you to enter additional information with the **SOS** or **HELP** message.

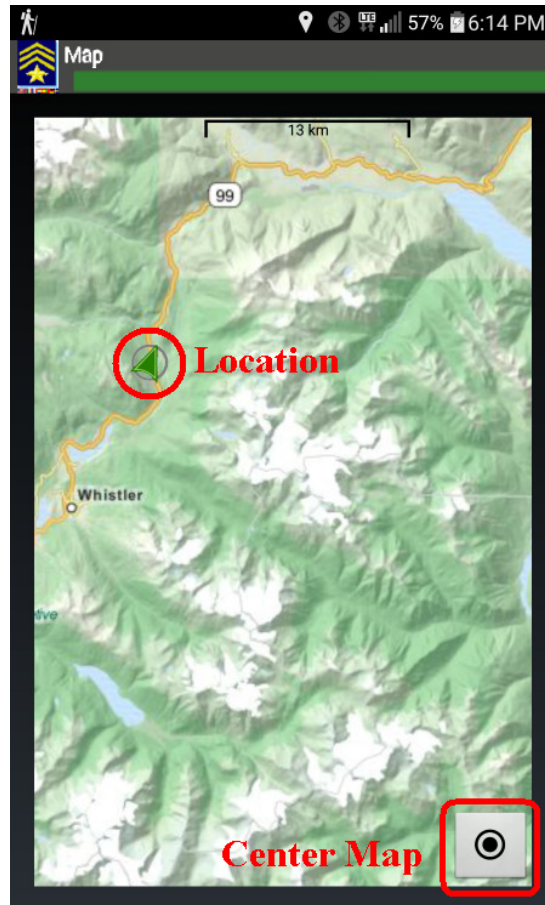
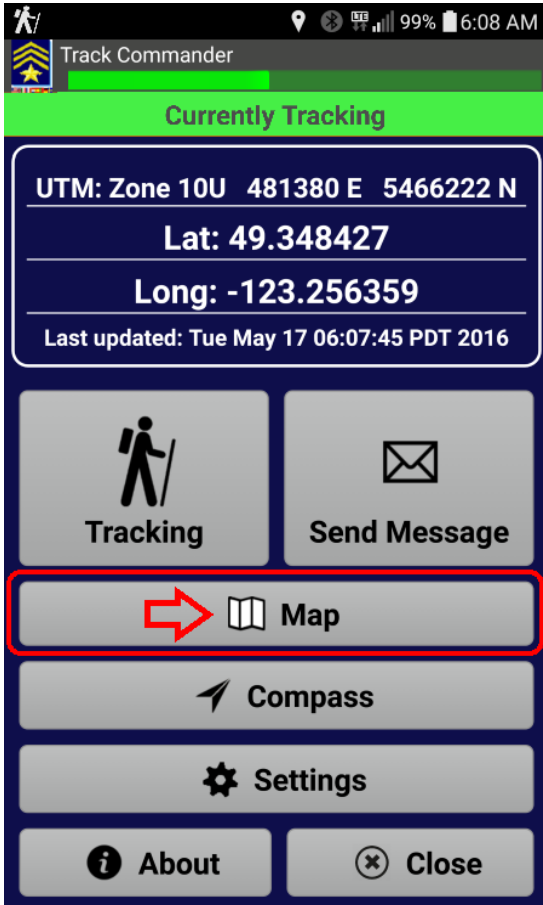


Press the 'Send' button to send the message.



Section 7. Map

From the 'Track Commander' Main Menu press the 'Map' button.
The Map screen, showing a topographical map, will then be displayed.



The current GPS location of the smart-phone, as well as the direction of travel, are displayed by the map's green location pointer, even if cellular connectivity is lost.

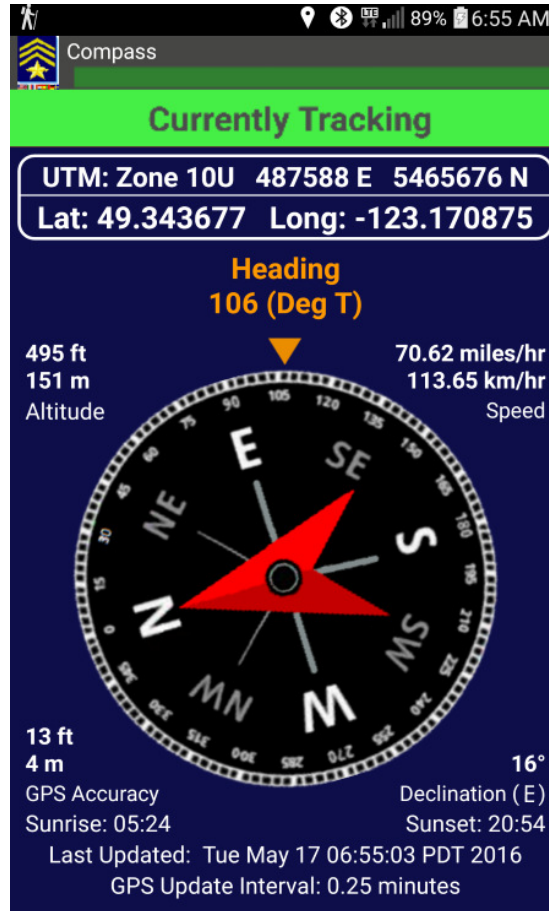
If the location pointer cannot be seen pressing the Center Map button will move the map until the present location is displayed at its center.



Tip: *To ensure that the map remains displayed when you move away from cellular connectivity be sure to fully zoom into the area of interest before you travel to that location. This will help ensure that the map is locally cached on your smart-phone and can still be displayed without cellular connectivity.*

Section 8. Compass

From the 'Track Commander' Main Menu press the 'Compass button'.
The GPS / Compass screen will then be displayed.



1. Compass

- The combined GPS/Compass screen displays a compass dial surrounded by detailed GPS information.
- The triangular compass pointer indicated the phone's compass bearing in True North degrees, while automatically adjusting for the magnetic declination at the smart-phone's current geographic location. This magnetic declination adjustment value is displayed in the lower right corner of the compass screen.

*Note: **The 'compass' sensor is actually a solid-state magnetic-field measuring device that must be recalibrated every time the compass is used.***

If the compass display is noisy or appears to be pointing in the wrong direction then the 'compass' sensor must be recalibrated.

The 'compass calibration procedure is described in Track Commander's About screen and in Section 10 of this User Manual.



2. GPS

- The smart-phone's present GPS location is displayed in both UTM and Latitude-Longitude coordinates at the top of the Compass screen. The same GPS location coordinates are also displayed at the top of Track Commander's Main Menu screen.
- Surrounding the compass dial GPS-derived Altitude, Speed, Accuracy and Magnetic Declination are also displayed, in both metric and imperial units.
- Sunrise and Sunset times for the present location are displayed below the GPS information.
- Valid GPS locations and compass bearings are still displayed when cellular connectivity is lost.



- The GPS 'Last Updated' date/ time should be read to determine that the location and GPS-related information displayed were recently obtained and therefore accurate at the present time.
- The GPS update interval, selected in Settings, is displayed at the bottom of the screen.



Section 9. Battery-Life Tips

Track Commander has been designed to conserve battery power and operate effectively in marginal cell-phone coverage areas. The following tips are designed to increase your smart-phones battery life even further, while tracking and messaging with Track Commander.

1. Track Commander Battery-Saving settings.

Typical battery life for a fully-charged battery, using all the battery-saving settings below:

Message-Tracking Interval	GPS-Update Interval	Typical Battery Life	Typical Tracking Use	
2 minutes	30 seconds:	13 hrs 38 min.	Vehicle/Hi-Resolution	(Auto-Shutoff: 24 hrs)
5 minutes	30 seconds:	-		(Auto-Shutoff: 24 hrs)
10 minutes	1 minute:	17 hrs 54 min.	Default Settings	(Auto-Shutoff: 24 hrs)
20 minutes	2 minutes:	26 hrs 18 min.		(Auto-Shutoff: 48 hrs)
30 minutes	5 minutes:	-		(Auto-Shutoff: 48 hrs)
1 hour	5 minutes:	27 hrs 17 min.	Extended-Duration	(Auto-Shutoff: 48 hrs)
2 hours	10 minutes:	-		(Auto-Shutoff: 48 hrs)
4 hours	15 minutes:	24 hrs 43 min.		(Auto-Shutoff: 48 hrs)

Note: Continuous heavy rain may reduce battery life by approx. 10%

2. Android Phone Battery-Saving settings. (Quick-Settings Turn Off: Wifi, Bluetooth, Sync, NFC)

Disabling many non-essential features on the smart-phone can very dramatically increase battery life and help deliver the typical battery life values reported above.

Wireless-Turn Off: Wifi, Bluetooth, Share&Connect NFC, Notifications. Mobile Data: **On**.

Wireless-Mobile Network Mode: LTE Auto: Off **GSM/HSPA Auto: On** (better connection & battery life)

Sound Levels: Ringtone: 50%, Notification: 0%, Music: 50%.

Vibration: Incoming Calls 0%, Notification: 0%, Vibration on Tap: 0%, Sound with Vibration: Off

Display: Brightness: 65%, Screen Timeout: 30 seconds.

Location: High Accuracy Mode: **On**. Location Services: Off, Location History: Off

Accounts & Sync - Turn Off: Auto-Sync data.

Email - Turn Off: AutoSync, Notifications, load linked images.

3. External Battery Recommendation

- A spare 12-15,000 mAh battery will recharge an Android phone up to 4-5 times - for extended-duration tracking.
- Keep the external battery and a connected USB cable fully charged in your vehicle.



Section 10. Compass Calibration

The phone's compass sensor must always be checked before use

to ensure that it is fully calibrated.

Compare the phone's compass arrow direction against a traditional mapping compass arrow (e.g. Silva Ranger).

If the phone's compass arrow is pointing in the wrong direction then its compass sensor must be re-calibrated.

Calibration Method 1 (Google Maps Method):

1. Hold the phone vertically.
 2. Tilt the phone forwards and backwards twice. (hinging from the bottom)
 3. Rotate the phone about its vertical axis twice. (rotate about 45 degrees clockwise and anti-clockwise).
 4. Tilt the phone left and right twice. (hinging from the bottom-left and bottom-right corners).
- Repeat these four steps until the compass is calibrated.

Calibration Method 2 (Three Axis Rotation):

Rotate the phone 360° around each of its three axes

- one full rotation with screen facing up.
- one full rotation "rolling" sideways.
- one full rotation "tilting" forward.

Repeat these three rotations until the compass is calibrated.



Section 11. Troubleshooting

1) My android device cannot run Track Commander.

Track Commander's minimum requirement is for Android phones with a SDK version of 14 or higher. Unfortunately, older phones are not supported.

2) Track Commander does not send email messages.

- Setup:

- Check that Settings has your phone's correct email address and email password.
 - For email providers other than Gmail, Yahoo and Outlook you will have to enter your SMTP information (e.g. smtp.telus.net).
 - Using Gmail's Android phone app is recommended. You may have to lower Gmail's security settings to permit your tracking email messages to be sent.
 1. Login to google.com using Track Commander's Your Email (from) email address.
 2. Go to <https://www.google.com/settings/security/lesssecureapps>
 - or go to... Gmail... Settings... Accounts and Import... Change account settings... Other Google Account settings... Signing in...
 3. Access for less secure apps... **Turn On (Allowed)**
- (Test this setup before you run Track Commander for the first time).

- Operation:

If Track Commander cannot send a tracking message check the items below and then restart tracking.

- Check that you have adequate cellular signal strength.
- Check that you have an active network connection.
- Check that your smart-phone has Wi-Fi turned off.
- Check that your smart-phone has Airplane-Mode turned off.
- Check that your smart-phone wireless network mode has LTE auto turned off and GSM/HSPA auto turned on.
- Reboot your phone to ensure that Track Commander's email access is enabled.
- Check if your Gmail account is using two-step verification. If it is go to <https://security.google.com/settings/security/apppasswords> for instructions to generate an Android app password:

In the drop down menu ("Select app"), on bottom left click "Other" and type in 'Track Commander', then click Generate.

A new window with the app password appears in the form.

Enter this app password in Track Commander instead of the usual email password to enable email message sending.

3) My device locations are not being displayed by 'Incident Commander Pro'.

- It is important that exactly the same beacon name and Your Email address are entered into both Track Commander and Incident Commander Pro's beacon table.
- Exactly match any capitalization of the beacon name in both 'Track Commander' and 'Incident Commander Pro'.

- Confirm that the To Email address in 'Track Commander' is the same as 'Incident Commander Pro's message-center email address.

- Gmail may have embedded some hyperlinks that must be removed to email only plain-text messages:

GMail. Settings... Chat... If Chat is on.... Call Phones... Disable outbound voice calling. (also disable any hyperlinked Skype in your web-browser... Tools... Extensions... Skype... Click to Call... Disable)

4) I cannot change my settings.

You cannot change your settings while in tracking mode.
Stop tracking and then edit your settings.

5) I cannot find my previous custom message.

Track Commander only saves the 10 most recent previous custom messages.

6) How do I know if my messages have been sent?

- When the progress bar reaches the far end it prepares to send the message.
- Listen for the message-sent sound.
- View the tracking screen for a list of the last ten messages sent.
- View Incident Commander Pro's incoming message-center emails in either its Pre-Plan Notepad or in the email's browser, e.g. Gmail.

7) The Message-Sent sounds are too loud, too quiet or not heard.

(i). The volume of the Message-Sent sounds is controlled by the Android operating system. Go to Settings... Sounds & notification... Volume... **Music**, videos, games & other media and adjust the volume slider to the desired volume.

(ii). If the phone has Bluetooth turned on and is connected to another Bluetooth device, e.g. to a vehicle sound system, then the 'music' Message-Sent sounds will be played by the vehicles sound system, if it is turned on. If the vehicles sound system is turned off then the Message-Sent (music) sounds may not be heard.

Disabling Bluetooth between the phone and the vehicle should permit the Message-Sent (music) sounds to be heard from the phone.

8) I do not know my SMTP information.

- Check the email account properties of your current email account. Alternatively contact your email provider to obtain this information.
- A recommended alternative would be to use Gmail as your email provider.

9) The map image is not being displayed on the map screen.

- Track Commander must be allowed app permissions to access photos, media and files. Go to the Android App permissions screen and allow Track Commander access to Phone, Storage and Your Location.

10). The compass appears to be pointing in the wrong direction.

Phone Compass Calibration:

The compass sensor in the phone must always be **checked before use** to ensure that it is fully calibrated.

Compare the phone's compass arrow direction against a traditional mapping compass arrow (e.g. Silva Ranger). If the phone's compass arrow is pointing in the wrong direction then it's compass sensor must be recalibrated.

Calibration Method 1 (Google Maps Method):

If the compass arrow is pointing in the wrong direction, the phone's compass sensor must be recalibrated.

1. Hold the phone vertically.
2. Tilt the phone forwards and backwards twice (hinging from the bottom).
3. Rotate the phone about its vertical axis twice (rotate about 45 degrees clockwise and anti-clockwise).
4. Tilt the phone left and right twice (hinging from the bottom-left and bottom-right corners).

Repeat these four steps until the compass is calibrated.

Calibration Method 2 (Three Axis Rotation):

Rotate the phone 360° around each of its three axes

- one full rotation with screen facing up.
- one full rotation "rolling" sideways.
- one full rotation "tilting" forward.

Repeat these three rotations until the compass is calibrated.



Section 12. Message Format

- Richard

Latitude:49.2497496

Longitude:-123.0018407

Altitude: 210m

Accuracy: 22m

Date and time: Fri May 16 11:00:10 PDT 2016

IMEI: 354439055358677

Phone Number: +17785263120

Network Operator: ROGERS

Signal Strength: Excellent

Battery Level: 88%

Message Type: SOS

SOS I need urgent help

Track Commander by SAR Technology Inc.

For real-time tracking and messaging in 'Incident Commander Pro'

<http://www.sartechnology.ca>