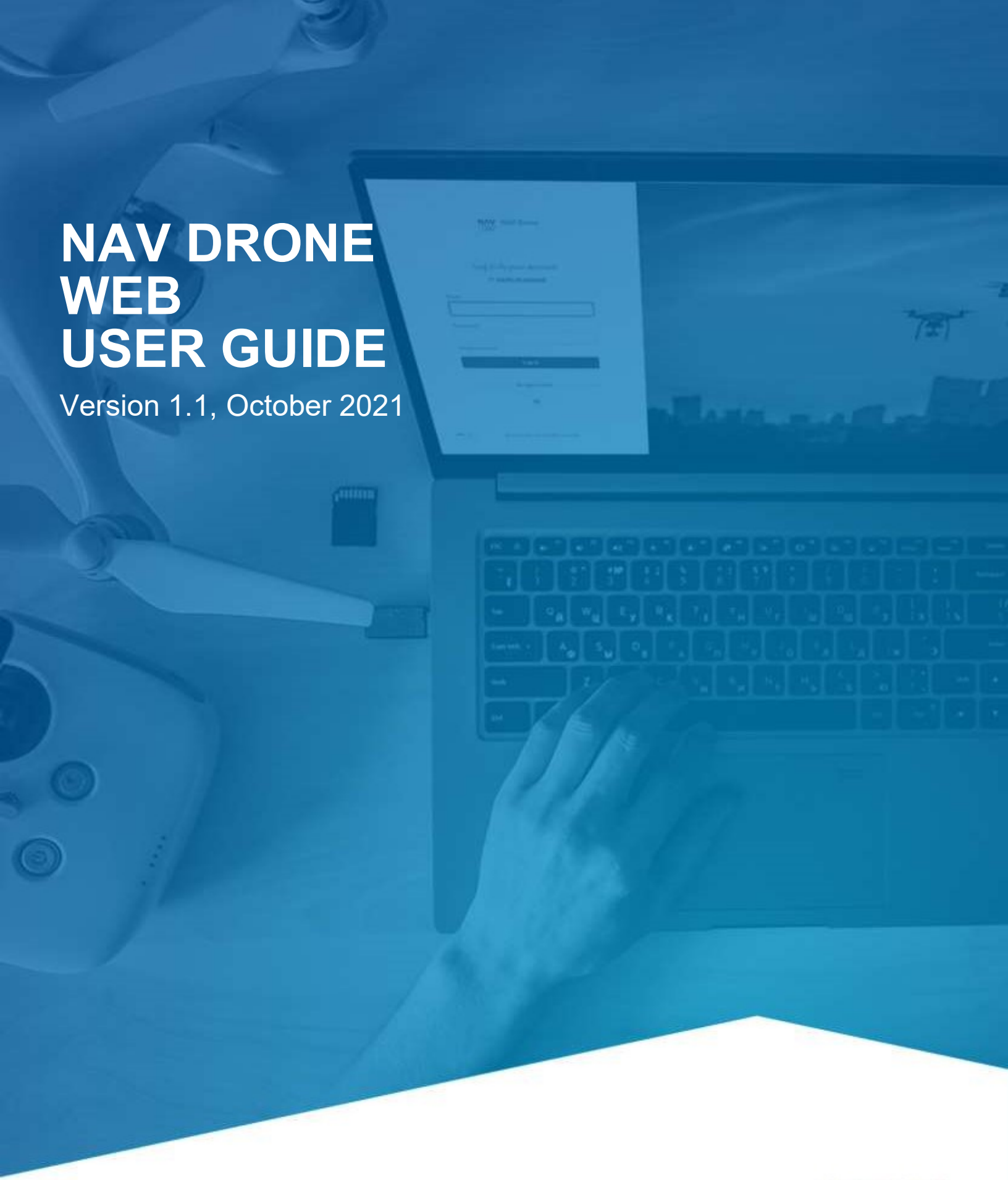


NAV DRONE WEB USER GUIDE

Version 1.1, October 2021

Au service d'un
monde en mouvement
Serving a world in motion
navcanada.ca

NAV CANADA

Version Record

Version	Date	Description
1.0	2021-06-02	Initial version
1.1	2021-10-26	Combined Prison layer with Class F. Updates to highlight permission request tasks. Takeoff warning when permission request tasks exist. Screenshot updates.

New or updated text is indicated in green shading.

Table of Contents

Preface

Intended audience

This user guide is intended for all drone operators, pilots and crew members who intend to use the NAV Drone Web application to plan and manage their drone operations.

Objective

The objective of this user guide is to help the reader understand how to use the functionalities offered by the NAV Drone Web application, to assist drone pilots and operators in the various phases of a drone operation: pre-flight planning, flight execution, and post-flight analysis.

Prerequisites

Basic familiarity with a web browser platform and a supported web browser are the only prerequisites for understanding the information presented in this guide.

The following web browsers are supported:

- Evergreen i.e. auto-updating browsers such as Microsoft Edge (current version and two versions back), Mozilla Firefox (current version and two versions back with major patches applied), and Google Chrome (current version and two versions back).
- Apple Safari (current version and one version back).
- Opera (current version and two versions back).

Visiting the NAV Drone Web website using Microsoft Internet Explorer is not supported. Please use one of the browsers listed above.

Document structure

Each chapter describes concepts and procedures to assist you in using the NAV Drone Web application.

- Chapter 1: Introduction
- Chapter 2: Registration and login
- Chapter 3: User and operator profile
- Chapter 4: Gear
- Chapter 5: Users
- Chapter 6: Operations
- Chapter 7: Flightmap

- Chapter 8: Logbook
- Chapter 9: Glossary

Reader’s comments

NAV CANADA welcomes your comments on this user guide. Provide your comments at navdrone@navcanada.ca.

Chapter 1. Introduction

1.1. NAV Drone's applications

NAV Drone consists of the following applications:

- The NAV Drone Viewer web application: accessible at https://map.navdrone.ca.
- The NAV Drone Web application: accessible at https://portal.navdrone.ca.
- The NAV Drone Mobile app: available for both Apple iOS and Google Android.

NAV Drone Viewer is a web application which displays Canadian domestic airspace and data relevant to Visual Line of Sight Operations (VLOS).

Together, the NAV Drone Web application and the NAV Drone Mobile app offer a complete and user-friendly solution for recreational and professional drone pilots, drone operators, and drone crew members.

This user guide focuses on how to use the NAV Drone Web application.

1.2. NAV Drone's functionalities

The functionalities offered by the NAV Drone Web application can be divided into three categories:

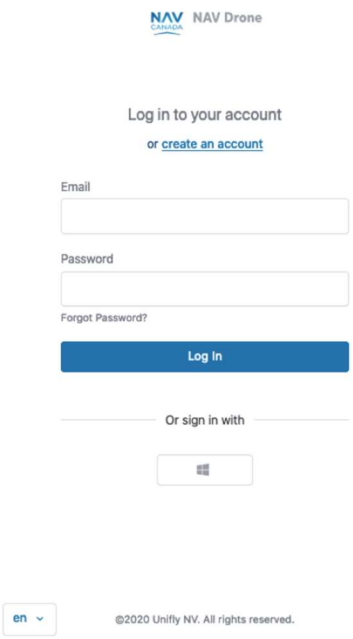
1. Pre-flight services:
    - Operator and user profile management
    - Crew management
    - Drone fleet management
    - Operation planning and validation
    - Obtaining the required permissions, when applicable
    - Document management
2. In-flight services:
    - Flight logging
    - Visualizing the flight zones of active drone operations (no real-time drone tracking)
3. Post-flight services:
    - Logbooks

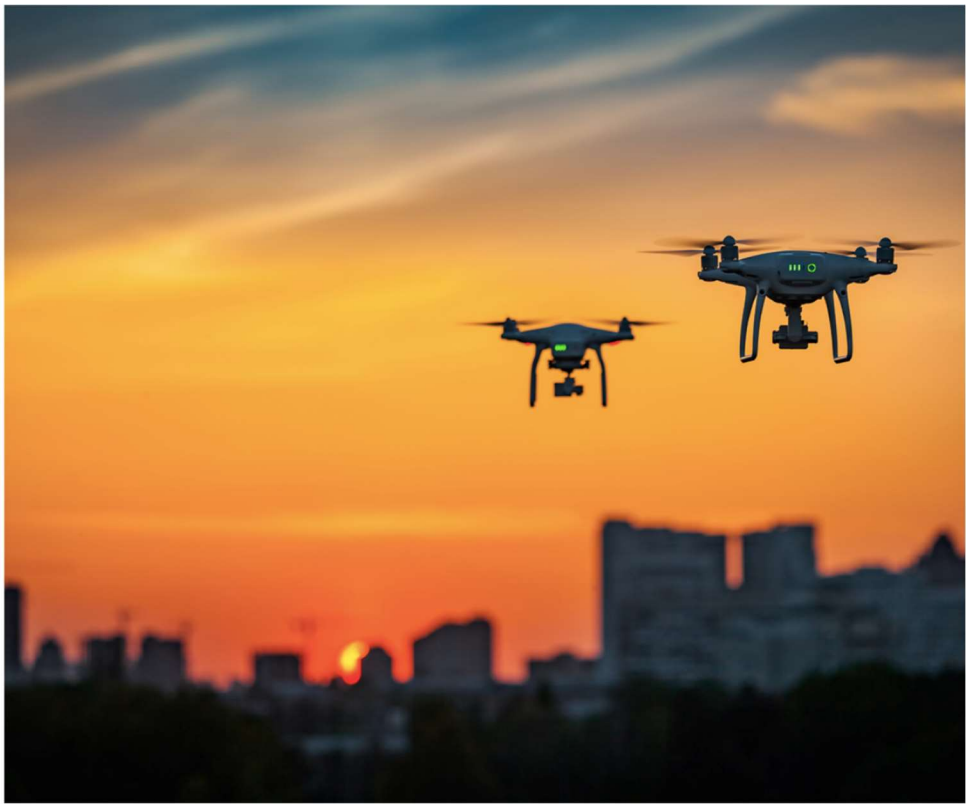
Chapter 2. Registration and login

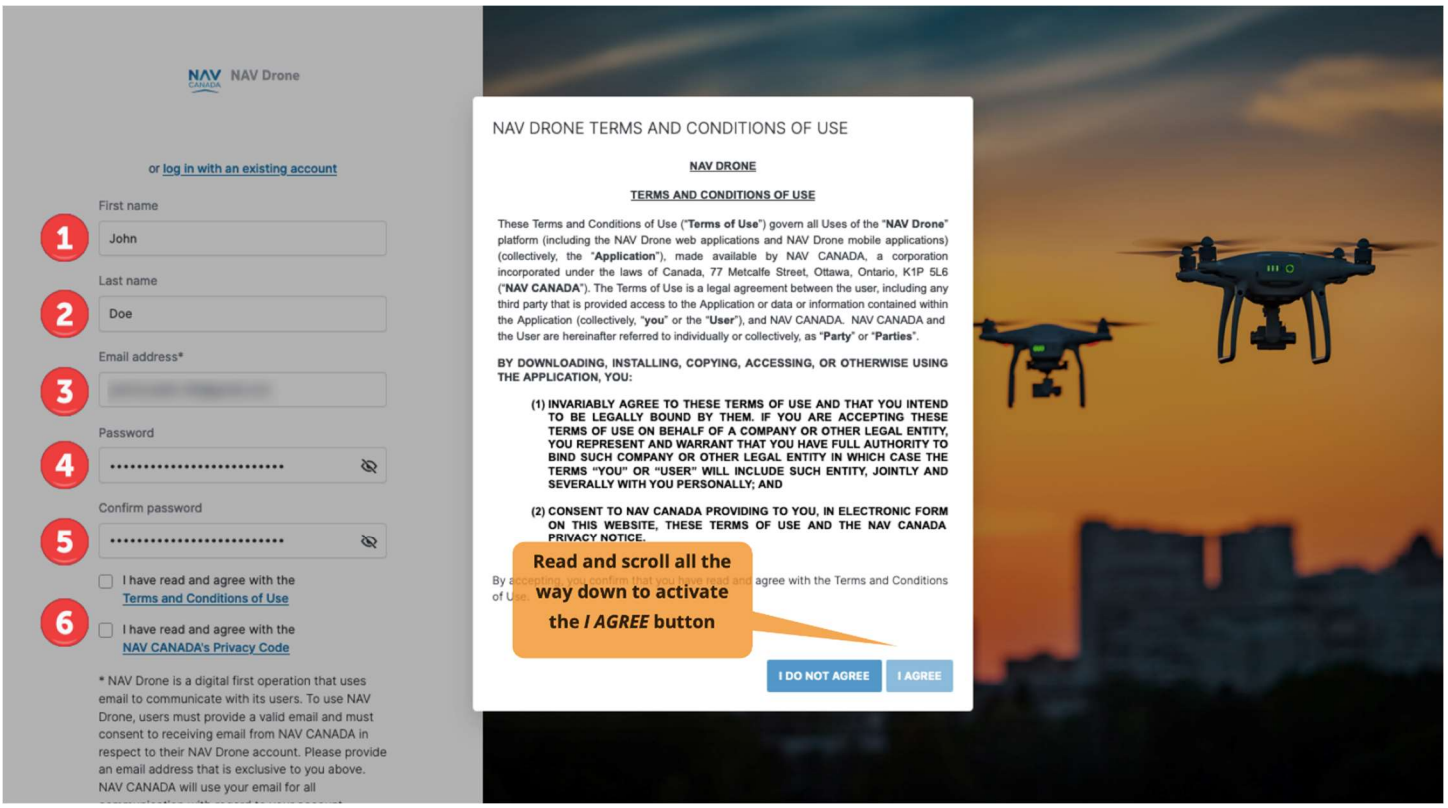
The use of the NAV Drone Web application requires the initial creation of a drone operator account, as described in this section.

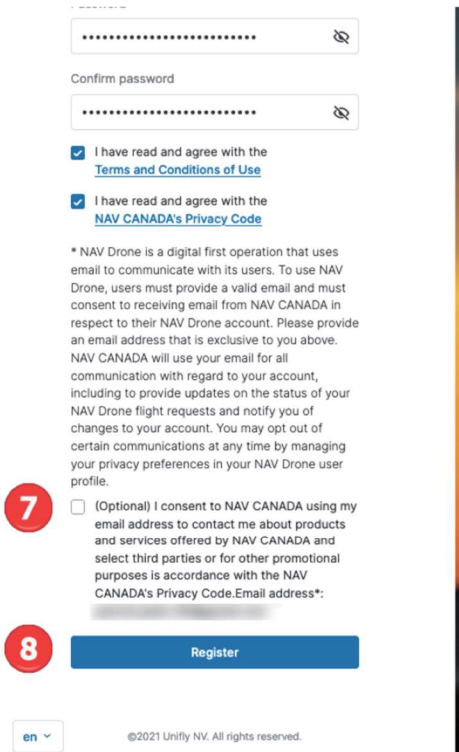
2.1. User registration

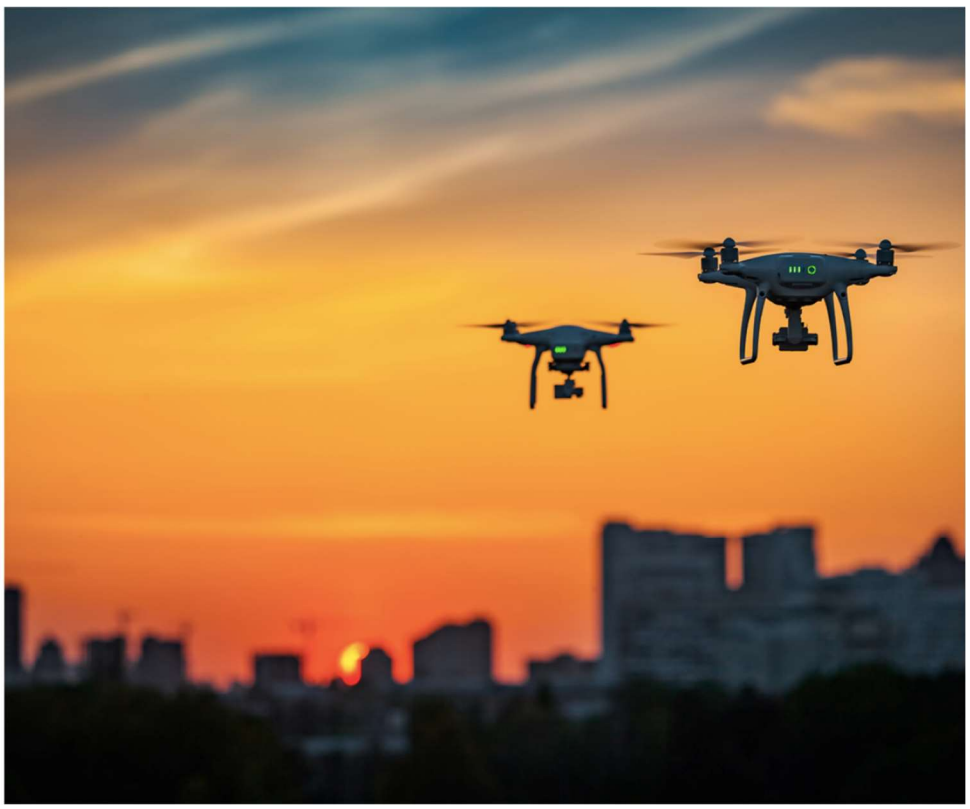
Start your browser, open the NAV Drone Web application (https://portal.navdrone.ca) and click on the **[create an account]** link.











① Enter your first name.

② Enter your last name.

③ Enter your email address. Make sure to use an active email address since this email address will be used to verify your registration. NAV Drone only supports ASCII characters.

④ Enter your password.

⑤ Confirm your password.

⑥ Check these two checkboxes after reading and agreeing with the NAV Drone Terms and Conditions of Use and the *NAV CANADA's Privacy Code*. Read the agreements in their entirety and scroll down to activate the **[I AGREE]** button at the bottom of each agreement.

⑦ Check this checkbox to allow NAV CANADA to contact you.

⑧ Finally, click on the **[Register]** button to continue.

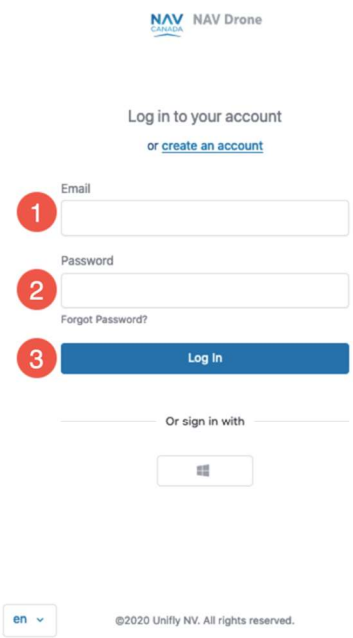
By clicking on this button, a confirmation email will be sent to the email address provided in the registration form.

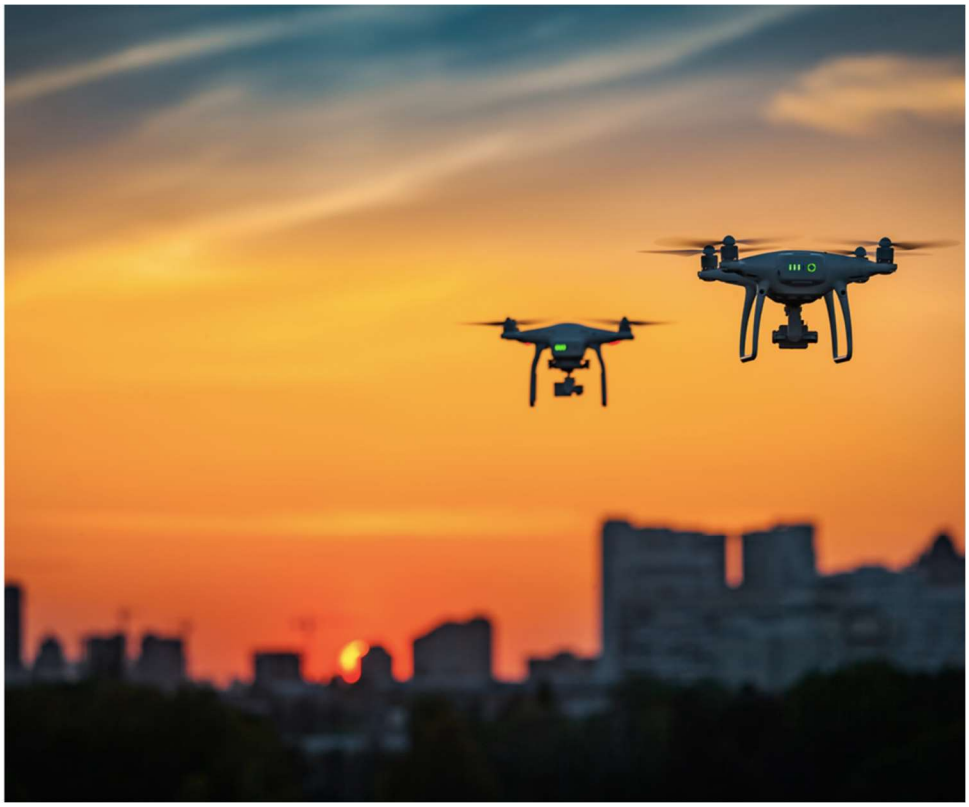
Activate your account by clicking on the button in the email or by pasting the link included in the email in your web browser in case the button doesn't work for you. Account activation is required to access the full functionalities of the NAV Drone Web application.

Your NAV Drone account is now active and ready for use.

2.2. Log in

Start your browser and open the NAV Drone Web application (https://portal.navdrone.ca).





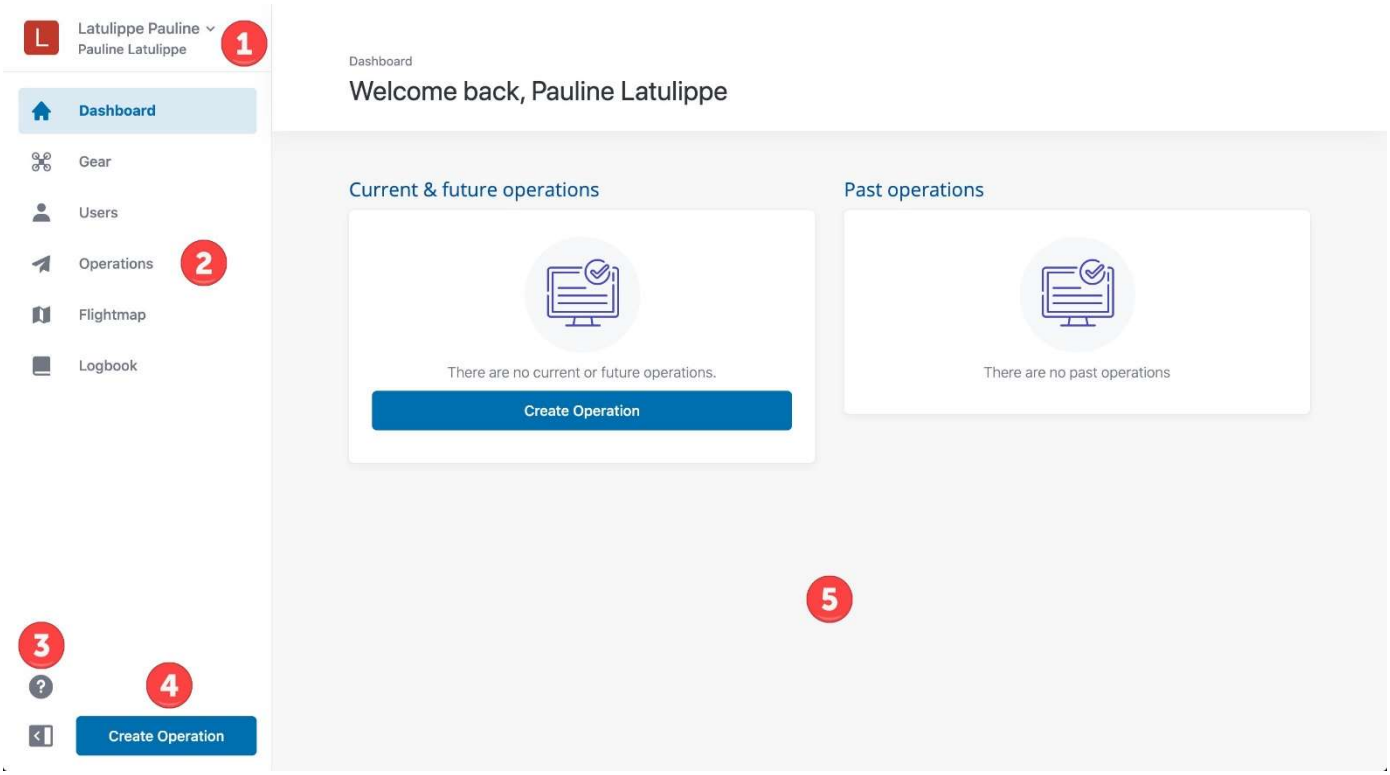
① Enter the email address used for registration.

② Enter your password.

③ Click on the **[Log In]** button.

If the multi-factor authentication is enabled in your settings, you will be prompted to enter the SMS code sent to your mobile number.

Once logged in, you will be presented with the Dashboard screen of the NAV Drone Web application. This screen displays the following information:



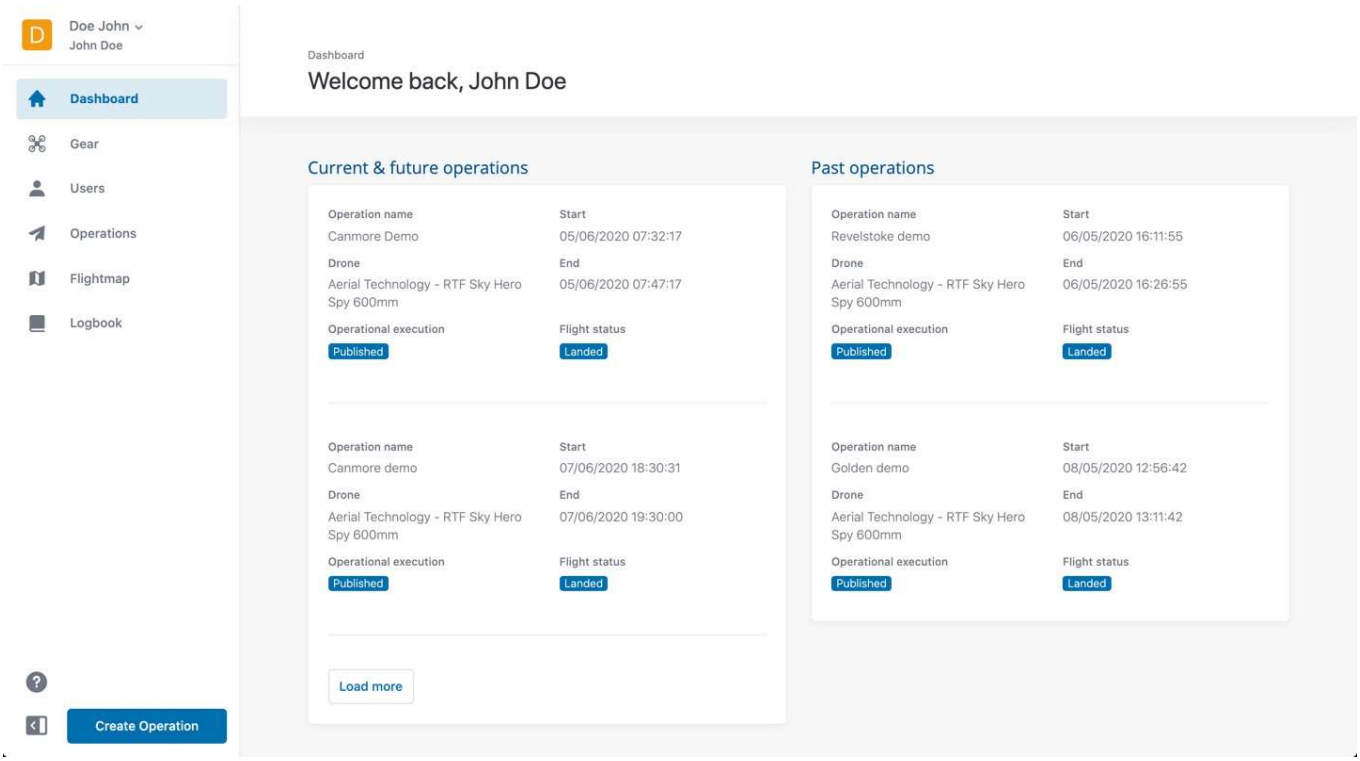
① Click on the top left area (the menu button) to activate the operator tools menu.

② The left sidebar gives access to the main functionalities offered by the NAV Drone Web application. This sidebar can be hidden by clicking on the highlighted icon at the bottom left of the sidebar. Expand the sidebar by clicking on the icon.

③ The icon allows you to access the NAV Drone Support site, information about the NAV Drone Web application version, the Terms and Conditions of Use, the *NAV CANADA's Privacy Code*, and the Cookie Policy.

④ The **[Create Operation]** button allows you to create a new drone operation.

⑤ The *Dashboard*'s main area, initially empty, provides an overview of your current, future, and past drone operations as shown below:


Doe John
John Doe
Dashboard
Gear
Users
Operations
Flightmap
Logbook
Create Operation
Dashboard
Welcome back, John Doe
Current & future operations
Operation name
Canmore Demo
Start
05/06/2020 07:32:17
Drone
Aerial Technology - RTF Sky Hero Spy 600mm
End
05/06/2020 07:47:17
Operational execution
Published
Flight status
Landed
Operation name
Canmore demo
Start
07/06/2020 18:30:31
Drone
Aerial Technology - RTF Sky Hero Spy 600mm
End
07/06/2020 19:30:00
Operational execution
Published
Flight status
Landed
Load more
Past operations
Operation name
Revelstoke demo
Start
06/05/2020 16:11:55
Drone
Aerial Technology - RTF Sky Hero Spy 600mm
End
06/05/2020 16:26:55
Operational execution
Published
Flight status
Landed
Operation name
Golden demo
Start
08/05/2020 12:56:42
Drone
Aerial Technology - RTF Sky Hero Spy 600mm
End
08/05/2020 13:11:42
Operational execution
Published
Flight status
Landed

Chapter 3. User and operator profile

A distinction is made between the *operator* level (commercial entity) and the *user* level (individual) as the NAV Drone Web application allows one operator to invite multiple users to join their crew (drone pilots, observers, and payload specialists). See section Users for more details about the invitation mechanism.

In the same way, one user can be associated with multiple drone operators, as is the case for a freelance pilot who is contracted by multiple operators, for example.

Upon creation of a new account, your name will appear twice at the top left of the screen:

Last name, *first name*: as an operator, the default name for your commercial entity.

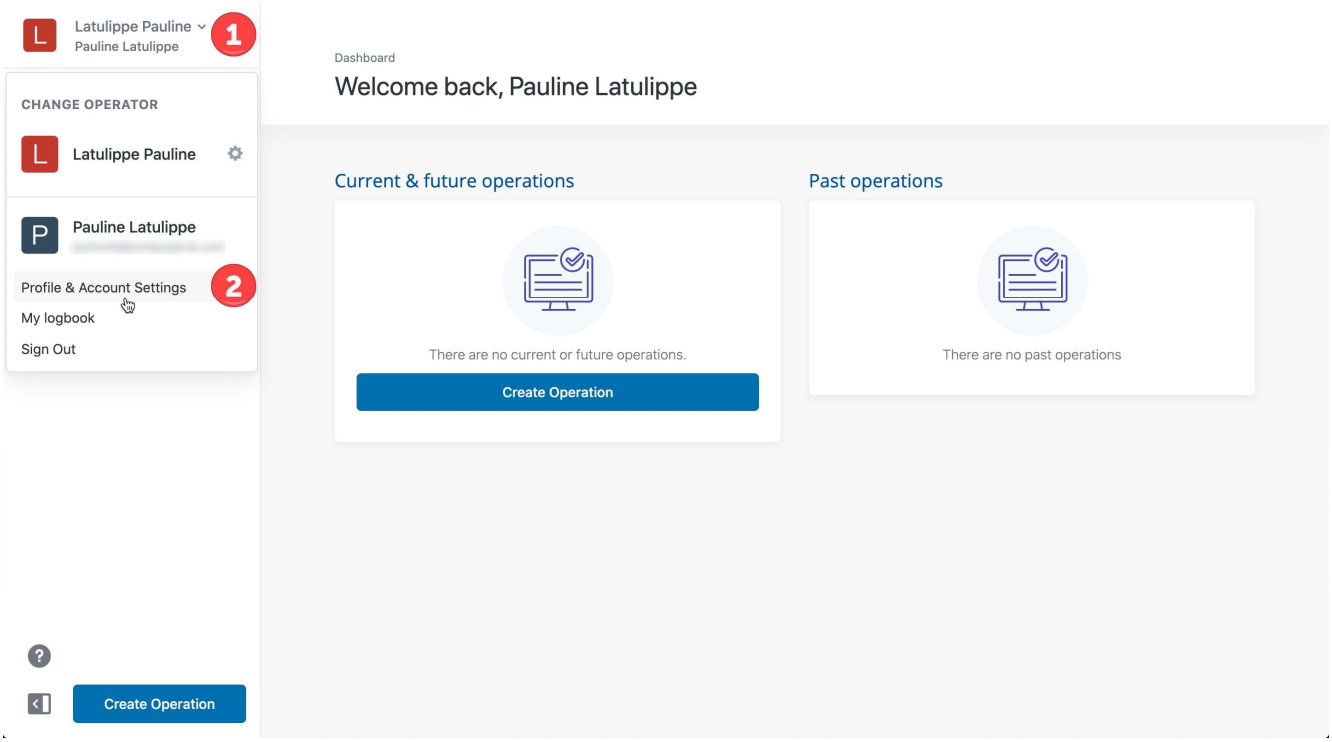
First name, *last name*: your name as a user.

Both can be modified as described in the next section.

3.1. Complete your user profile

3.1.1. User information

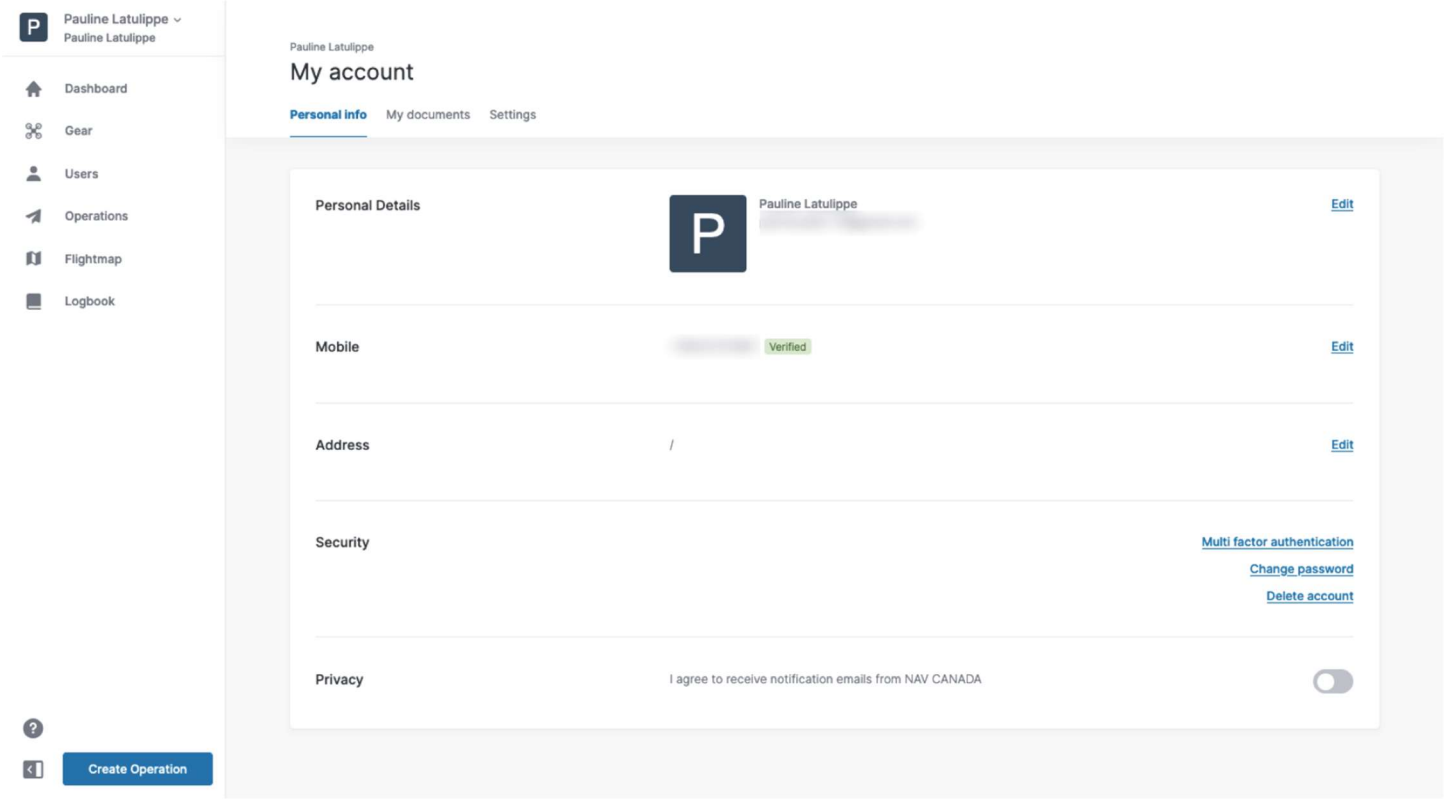
The *Profile & Account Settings* allow you to complete your profile at the user level.



① Click on the menu button at the top left of the screen to display the menu.

② Click on the *Profile & Account Settings* menu entry.

You will now see the *My account* screen displaying your personal details in the *Personal info* tab:



To modify your personal details, click on the appropriate *Edit* link, make the change, and click on the **[Save]** or **[Cancel]** button to save or cancel your changes.

Two-way communication capability is required when operating in NAV CANADA control zones. Therefore, make sure to verify your mobile number and to have your phone with you when flying.

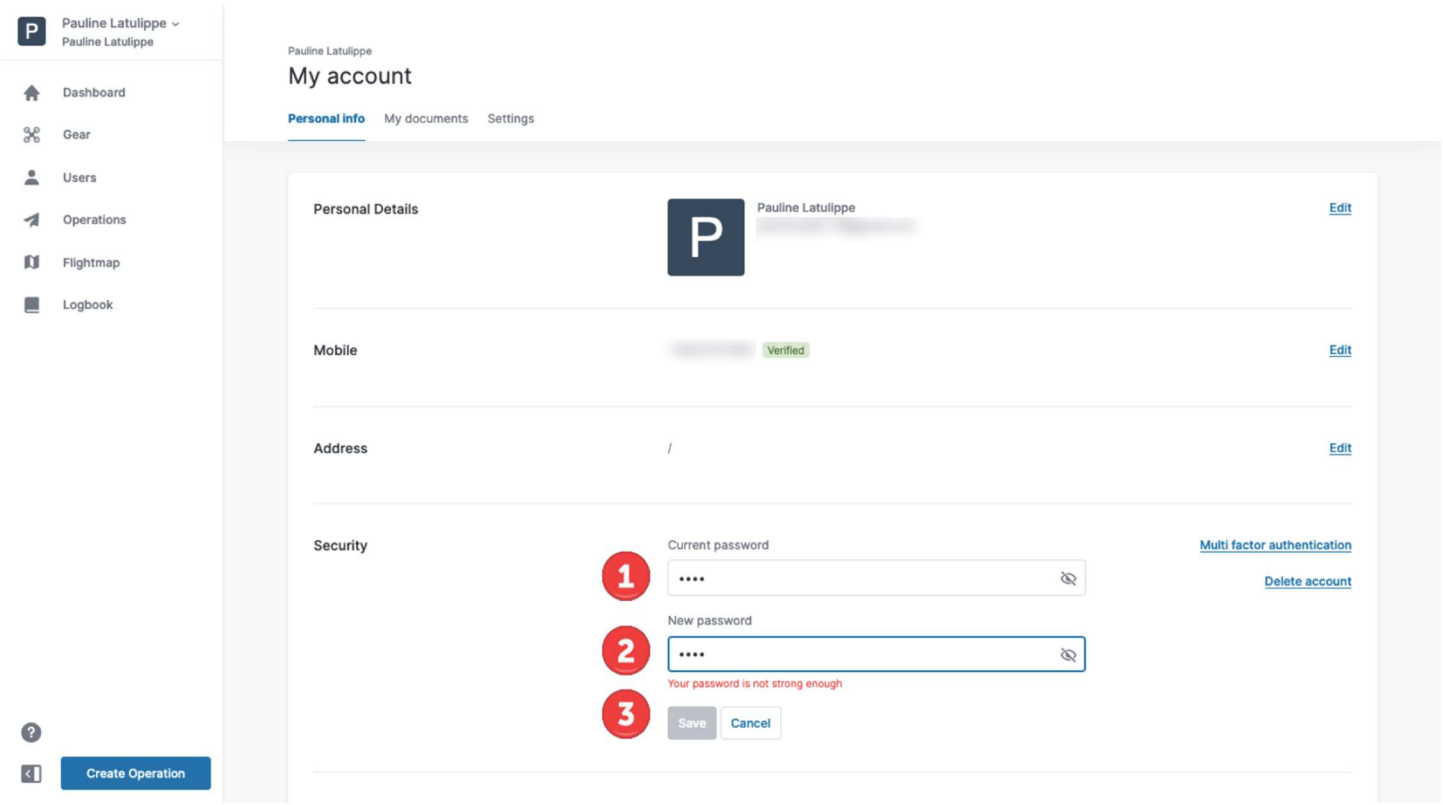
When entering your mobile number in *My account*, click on the **[Send verification code]** button to send a verification code to your mobile phone. Enter the code received in *My account* and click on the **[Verify phone number]** button to confirm your mobile number. Mobile number must use the following format: "**+1**-555-555-5555".

Once your mobile number is verified, you can toggle the multi-factor authentication (MFA) switch. Activating MFA will require the user to enter a SMS code at every login.

From the *Personal info* tab, you can also change your password, delete your account, and specify whether you agree to receive optional emails from NAV CANADA.

3.1.2. Change your password

Click on the *Change password* link in the *Personal info* tab of *My account*.



① Enter your current password.

② Enter your new password.

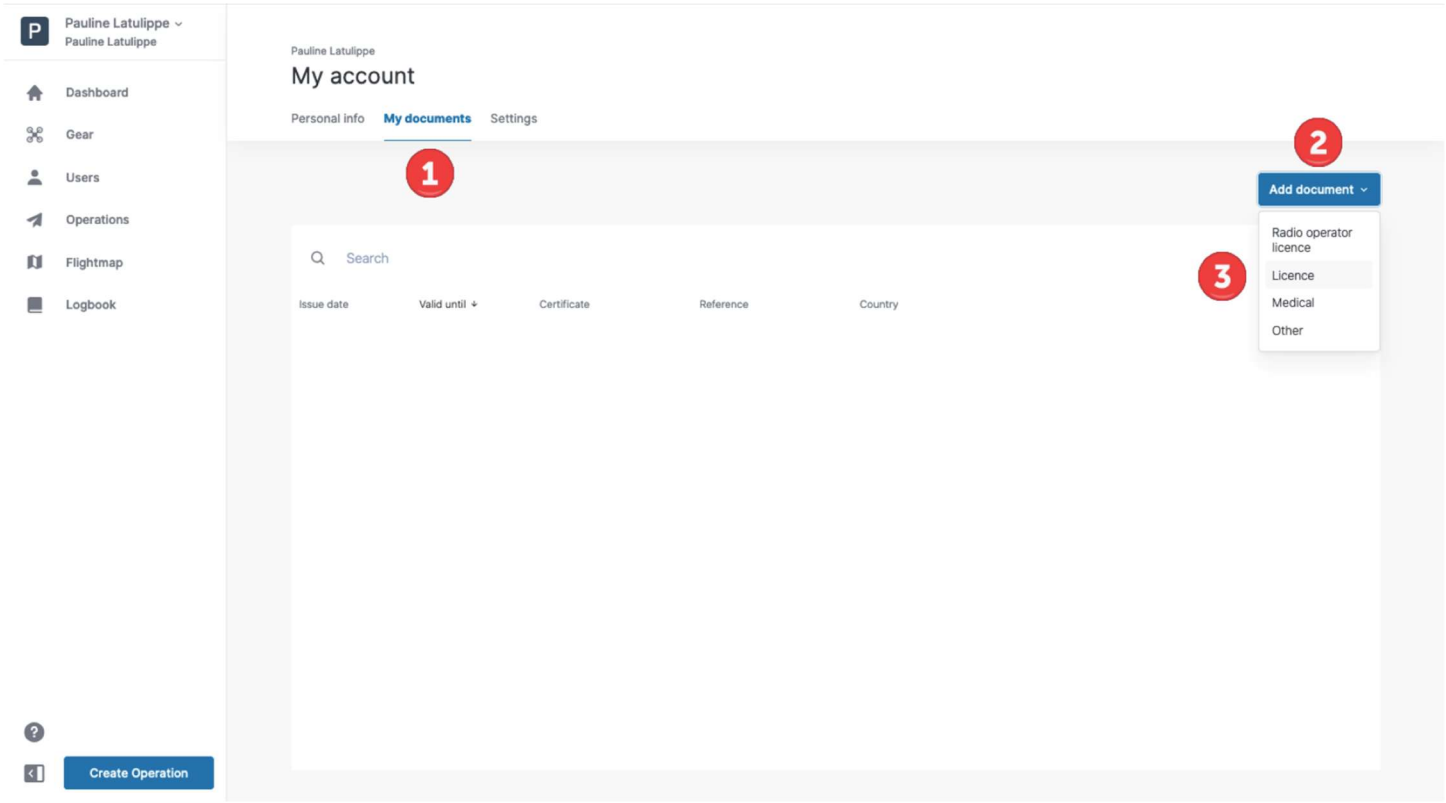
③ Click on the **[Save]** button.

You have now changed your password.

Make sure to choose a strong password as indicated by the password strength indicator.

3.1.3. Add user documents

The *My documents* tab in *My account* allows you to add documents and certificates related to your account:



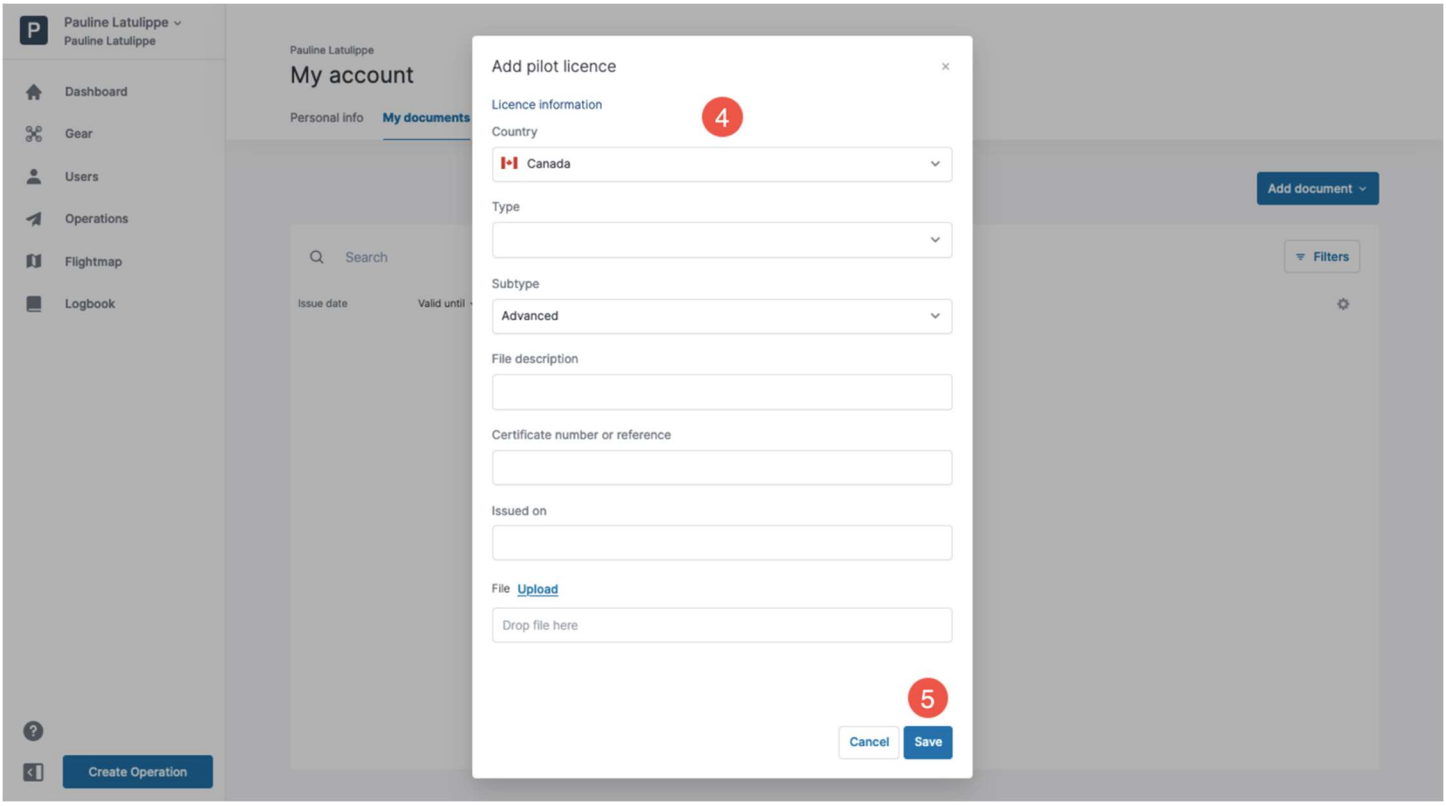
① Click on the *My documents* link to activate the tab.

② Click on the **[Add document]** button.

③ Select the type of document from the popup menu.

④ Enter the required data.

⑤ Click on the **[Cancel]** or **[Save]** button to finish the operation.


Pauline Latulippe
Pauline Latulippe
Dashboard
Gear
Users
Operations
Flightmap
Logbook
Create Operation
Pauline Latulippe
My account
Personal info
My documents
Add document
Search
Filters
Issue date
Valid until
Add pilot licence
Licence information
4
Country
Canada
Type
Subtype
Advanced
File description
Certificate number or reference
Issued on
File Upload
Drop file here
5
Cancel
Save

Optionally, you can upload one or more files such as a PDF document, pictures, or a scan of the original document.

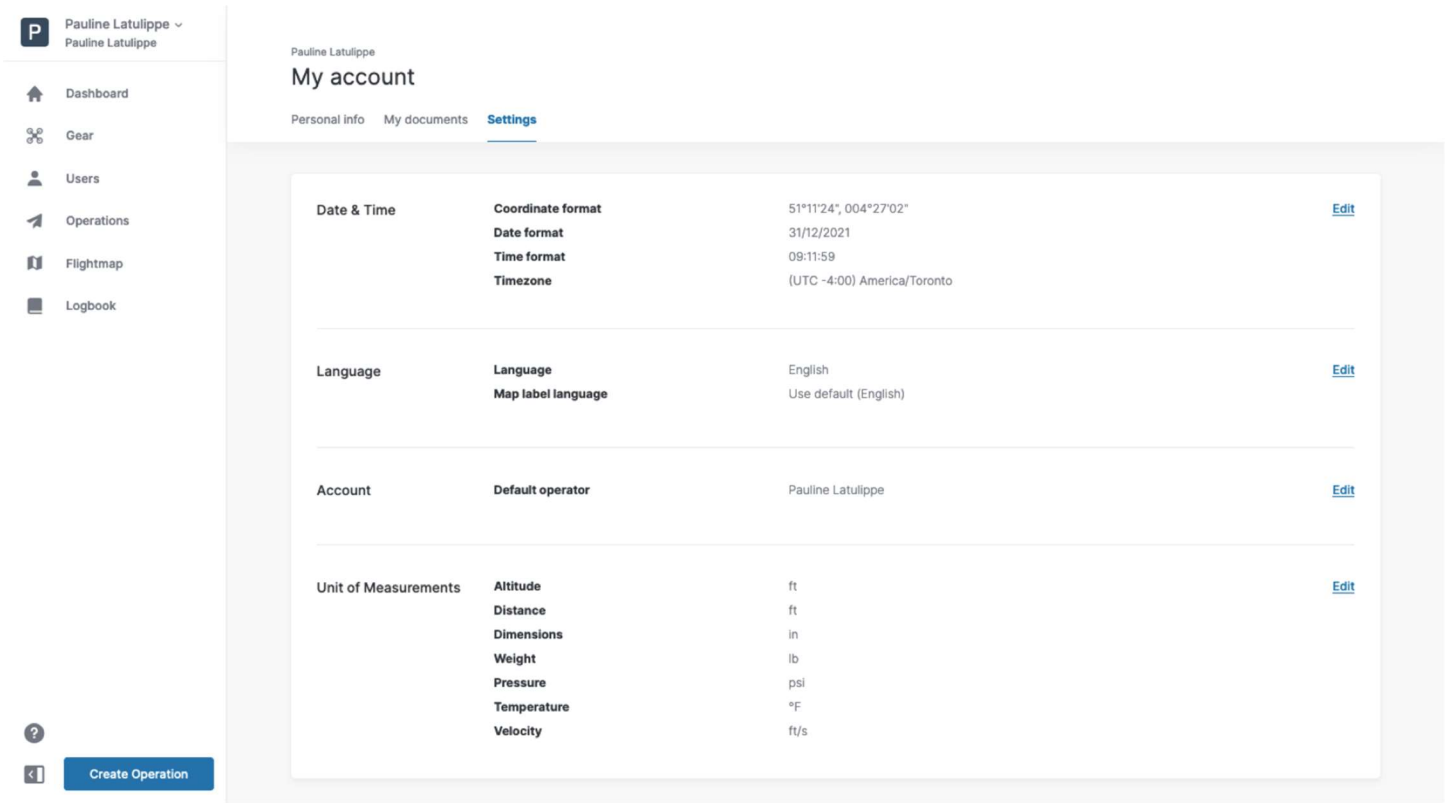
You must enter a valid Certificate number for Advanced operations in the NAV Drone Web application in order to create advanced operations in the system. To add your Certificate number, follow the procedure described above and select *Licence* for the type of documents.

The registered documents are displayed in a table offering generic search, filtering, grouping, sorting and column hiding functionalities. See section Table functionalities for more information on table functionalities.

3.1.4. Settings

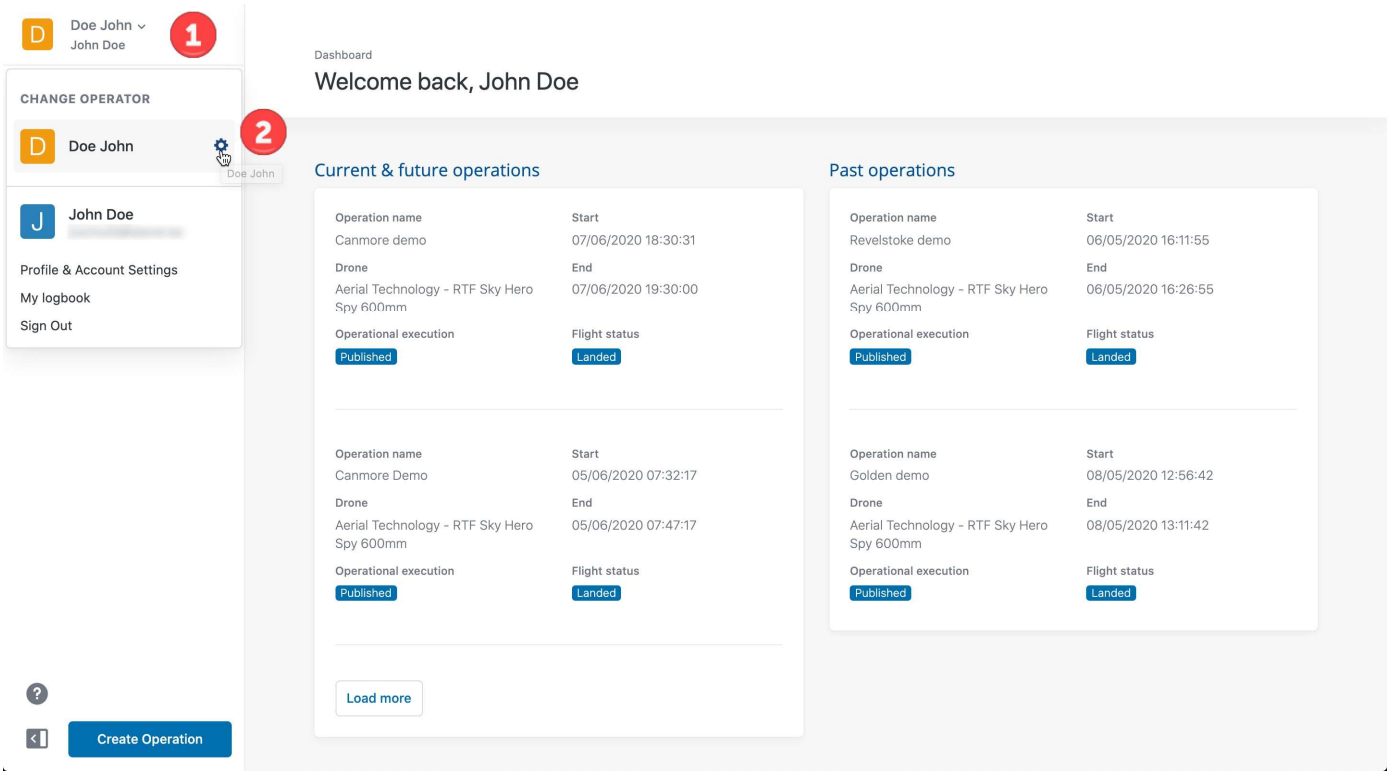
The *Settings* tab allows you to set your preference for the following settings:

- Date format
- Coordinates format
- Time format
- Time zone (expressed in Coordinated Universal Time)
- Language (of the user interface)
- Map label language: the option *Inherit from language* in the drop-down list means that the labels displayed on the maps will be in the same language as selected for the parameter *Language* above.
- Default operator: in case your personal account is associated with multiple operators (e.g. if you are a freelance pilot contracted by multiple operators), you can select which operator is displayed by default when opening NAV Drone.
- Units of measurements: you can select between imperial and metric systems.

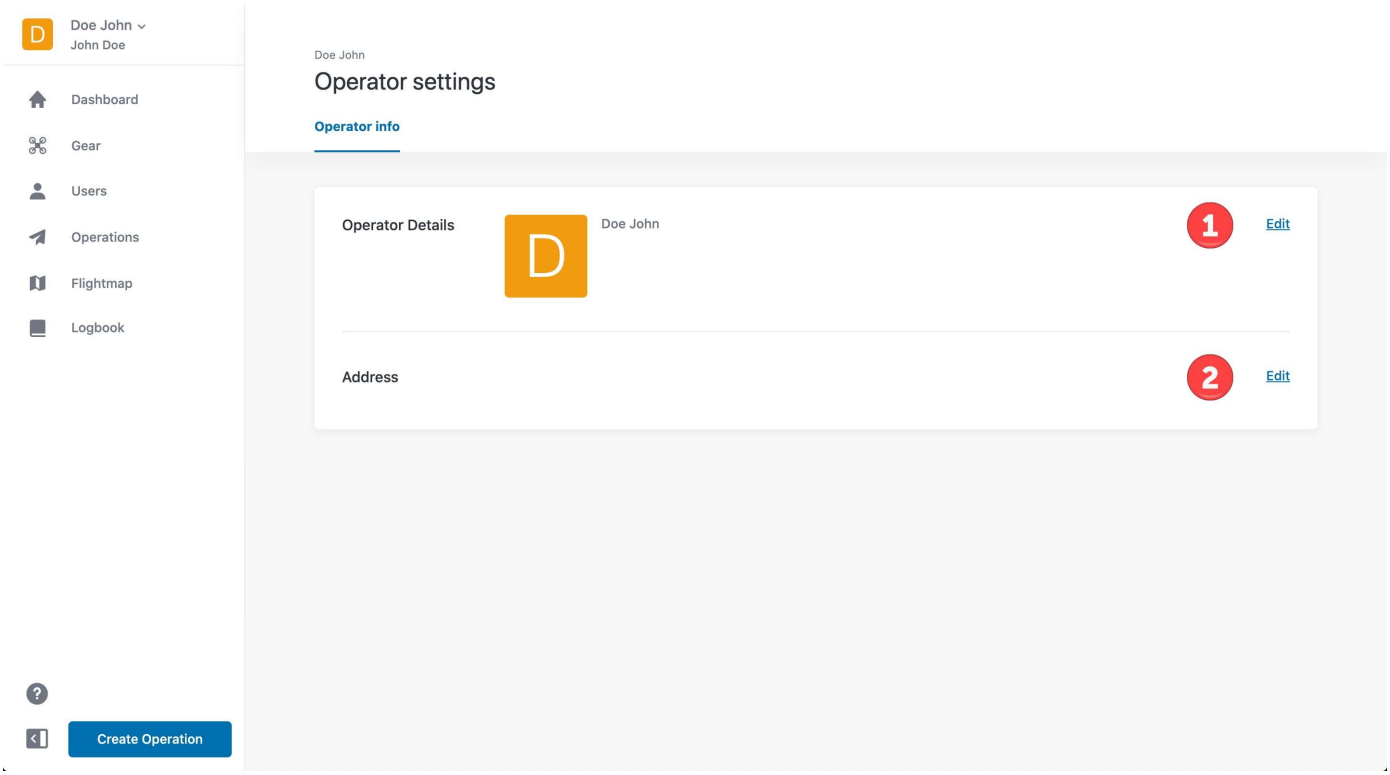


3.2. Complete your operator profile

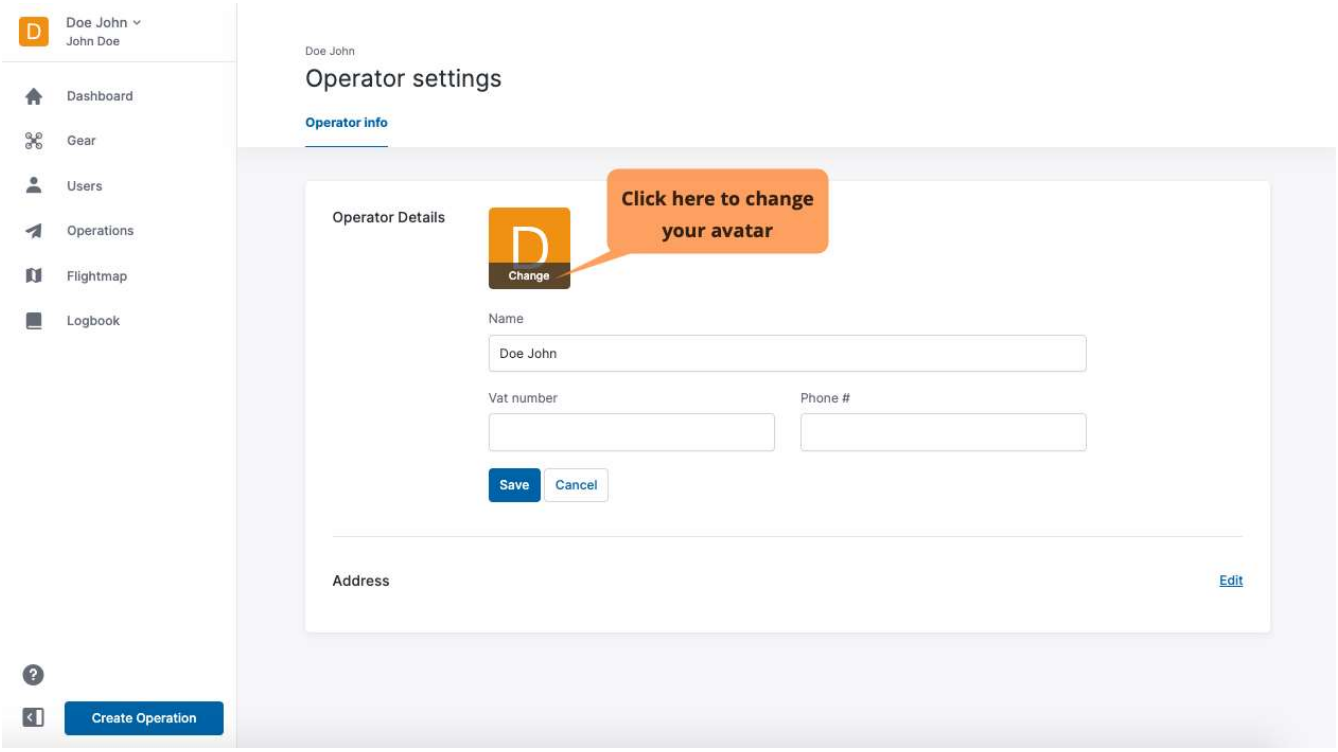
Commercial drone operators intending to offer services as a company can also complete their profile at the operator level.



① Click on the r nu button at the top left of the screen.
② Click on the icon to the right of your current company name (*last name, first name* by default) in the menu to display the *Operator settings*.

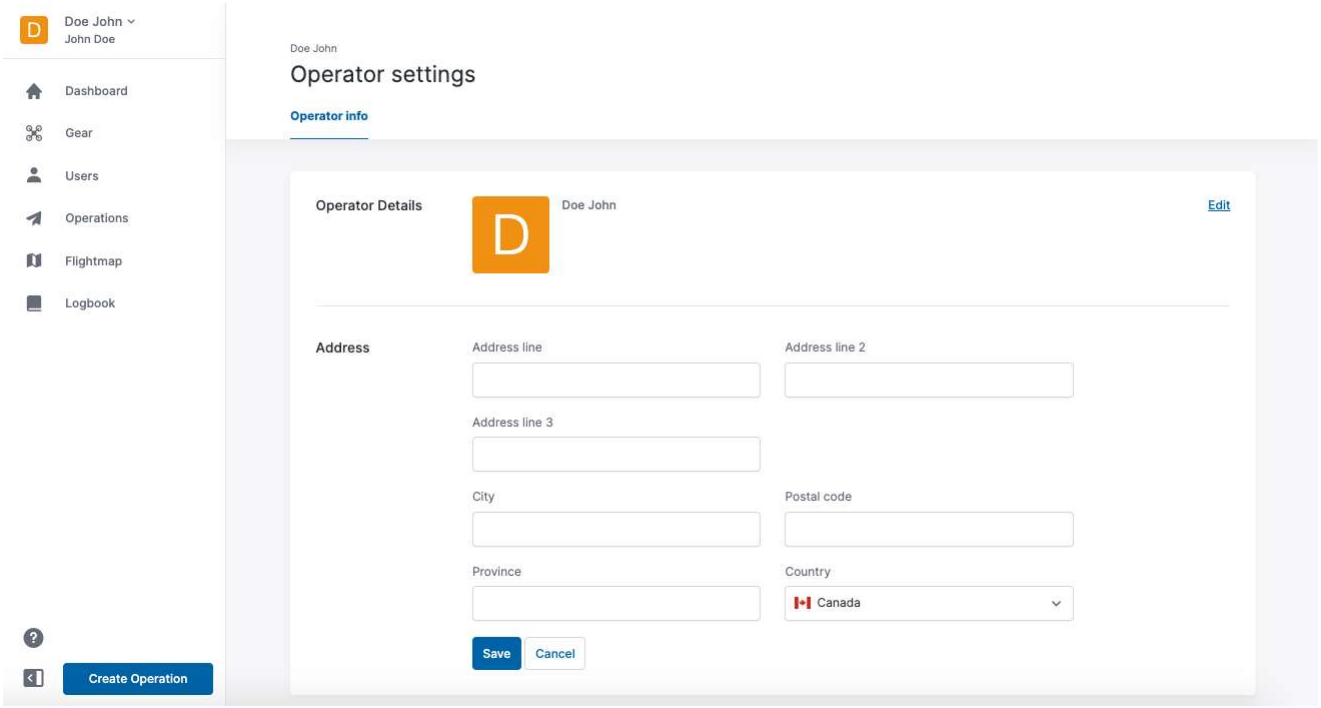


① Click on the top *Edit* link to enter your drone operator details.



Vat number : Field not in use.

② Click on the bottom *Edit* link to enter your drone operator address information.

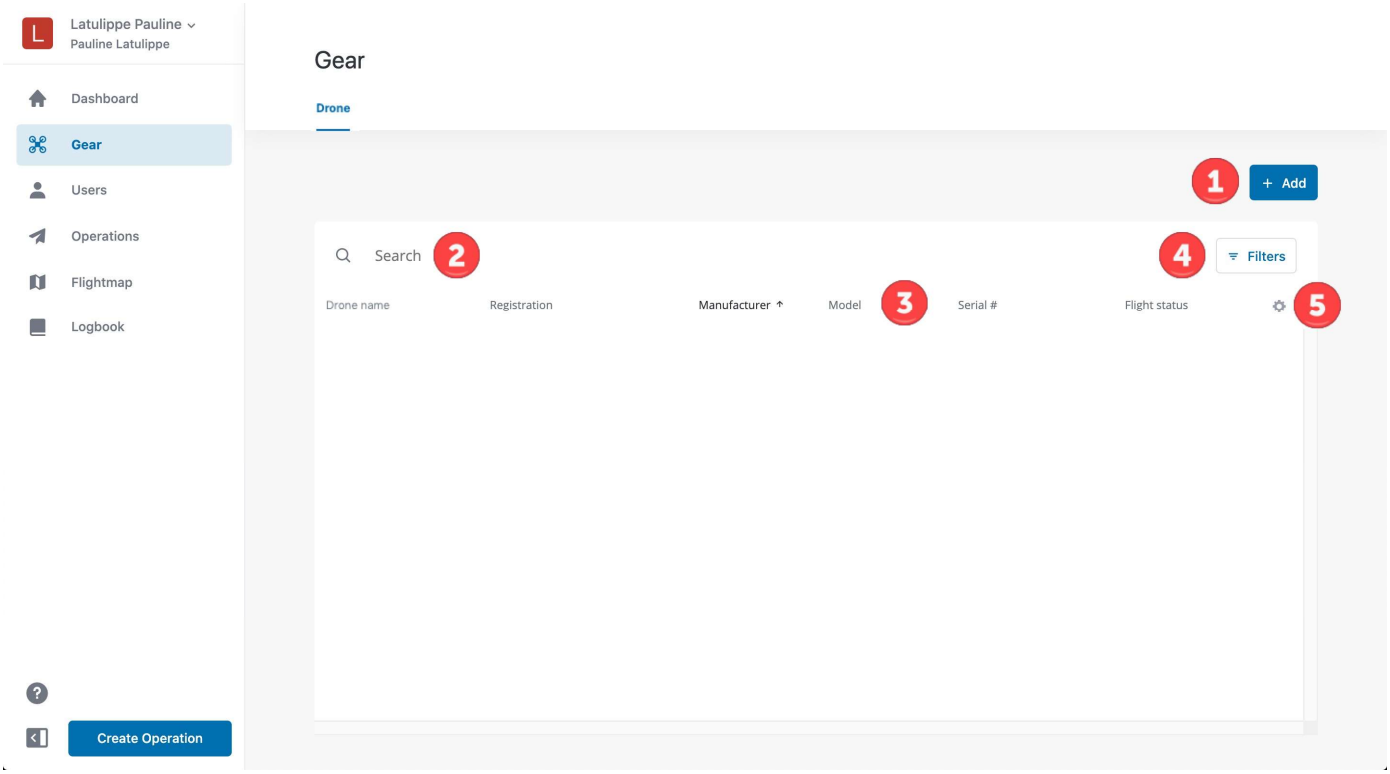


Chapter 4. Gear

The NAV Drone Web application makes it easy to keep track of your drones, including their administrative and technical details. The NAV Drone Mobile app provides similar drone information management functionalities.

Providing the administrative and technical details of your drones is required in order to display drone-related information in the NAV Drone logbooks and for the drone operation validation process.

Click on *Gear* in the left sidebar to access the module that allows you to manage your drone fleet. The (initially empty) *Drone* tab consists of the following elements:



① The **[+ Add]** button allows you to add a new drone to the list. See section Add a drone for more details.

② The search field can be used to search for information in the table. Click on the field and enter your search string. The search is performed as you type.

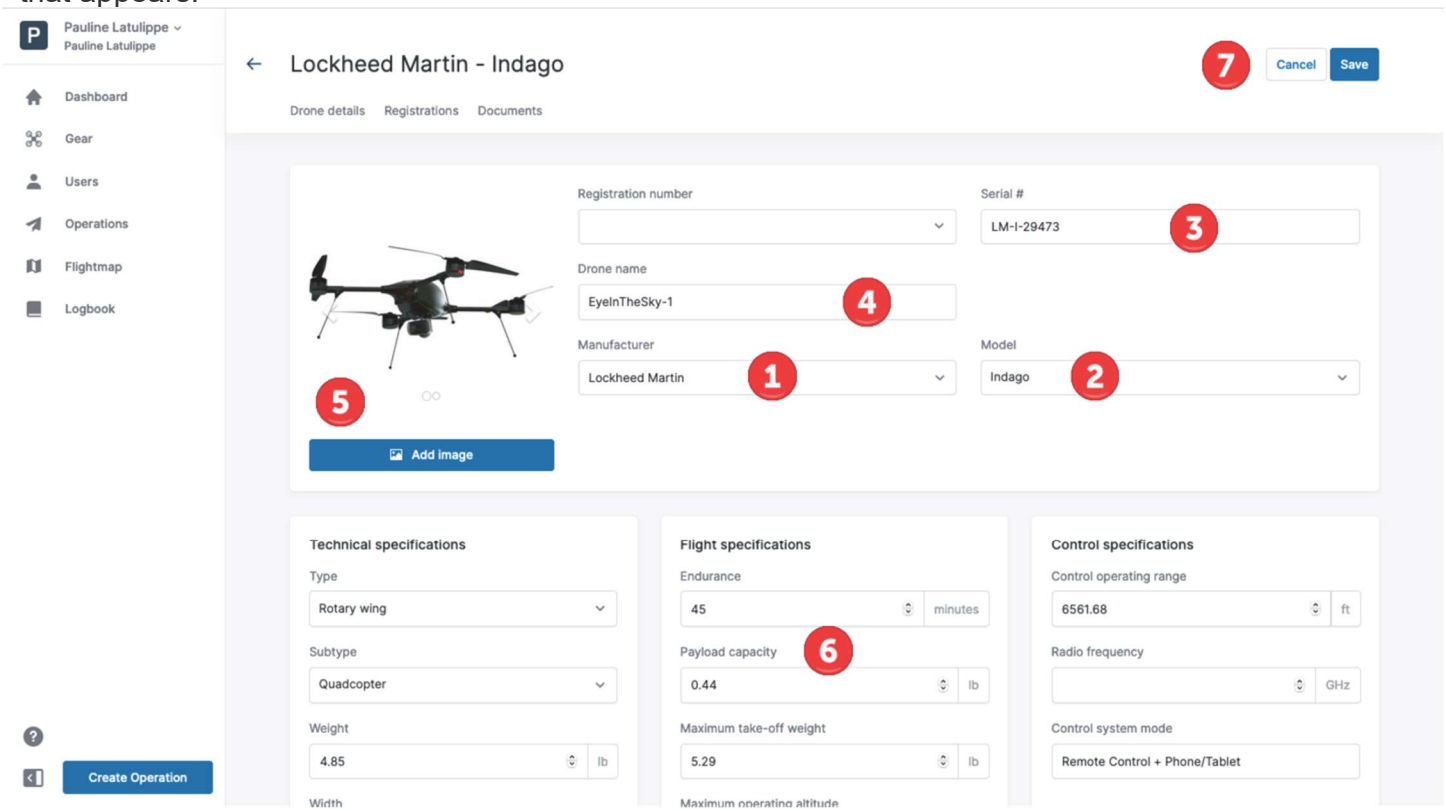
③ The column headers represent the drone data being displayed. The headers also support the generic table functionalities as explained in section Table functionalities.

④ The **[Filters]** button allows you to filter the information in the table.

⑤ The ⚙ icon allows you to configure which columns to display/hide.

4.1. Add a drone

To add a new drone, click on the **[+ Add]** button and follow the steps below in the *New drone* screen that appears:



① Enter the drone *Manufacturer* or select one from the drop-down list.

② Enter the drone *Model* or select one from the drop-down list.

③ Enter the drone *Serial number*.

④ Enter a *Drone name*. This field is mandatory as long as no *Registration number* is available for this drone.

⑤ Add a picture of your drone by clicking on the **[Change]** button or use one of the pictures provided for drones selected from the drop-down list.

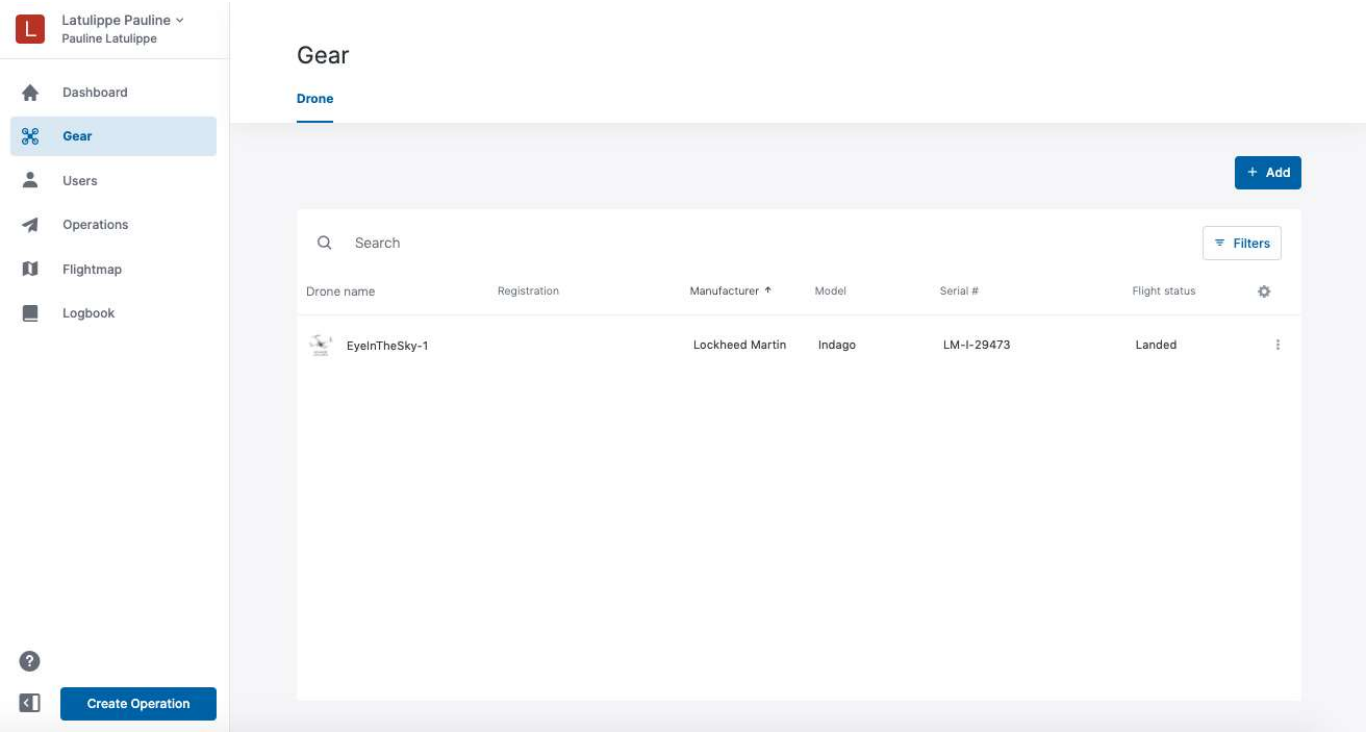
⑥ Check and complete as many other fields as possible to provide the drone's technical, flight, and control specifications. If you selected a drone manufacturer and model from the list, certain fields might be pre-filled.

⑦ Finally, click on the **[Save]** button at the top right of the screen to add your drone.

A registration number must be added for drones weighting 250 grams or more and for *Advanced* operations in airspace controlled by NAV CANADA. See section Associate a registration number with a drone for more information.

Make sure you enter accurate data in the technical, flight, and control specifications as this information will be used during the drone operation validation process.

Once saved, the drone appears in the table:

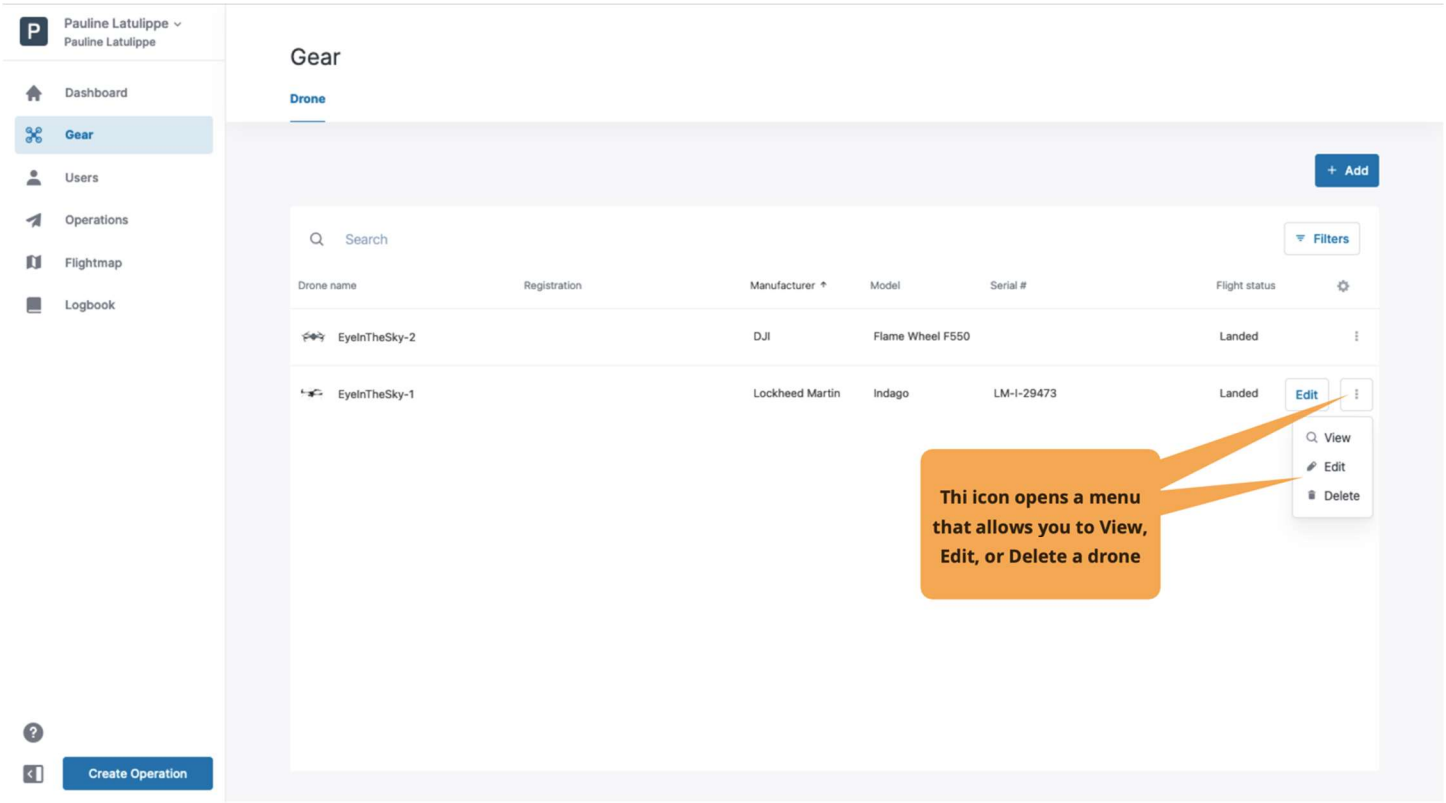


4.2. Edit or delete a drone

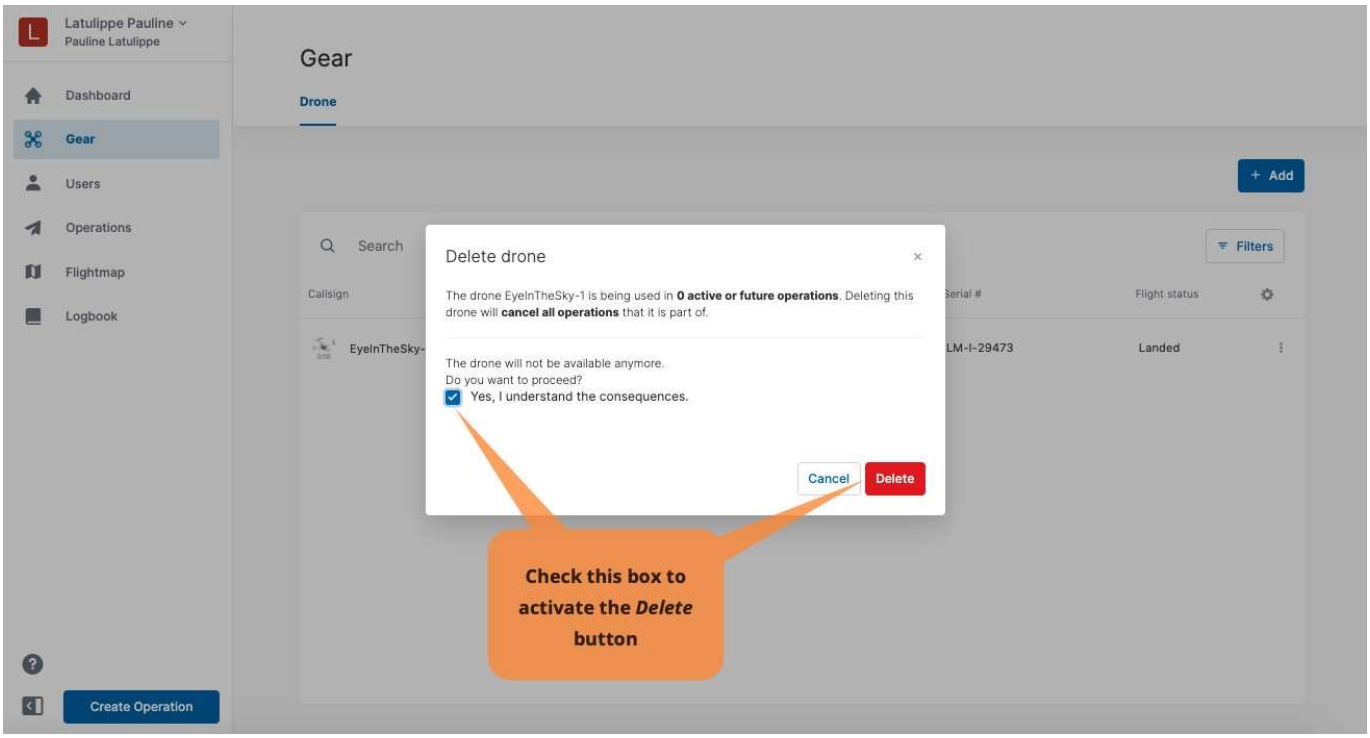
Hovering the pointer over a drone entry in the table will display an **[Edit]** button. Click on this button to edit the drone characteristics.

Alternatively, the drone characteristics can also be edited by clicking on the drone entry in the table and then on the **[Edit]** button at the top right of the screen.

A third option is to click on the menu icon (⋮) on the right side of the drone entry in the table and to select the menu item *Edit*. The menu also allows you to *View* the drone characteristics or to *Delete* the selected drone.



Deleting a drone will cancel all operations that the drone is part of. Be sure before performing this action.



4.3. Associate a registration number with a drone

A registration number must be added for drones weighting 250 grams or more and for *Advanced* operations in airspace controlled by NAV CANADA.

To associate a Canada *registration number* with a drone, proceed as follows:

① Click on the drone entry in the table.

② Click on the *Registrations* tab.

③ Click on the **[+ Add]** button.

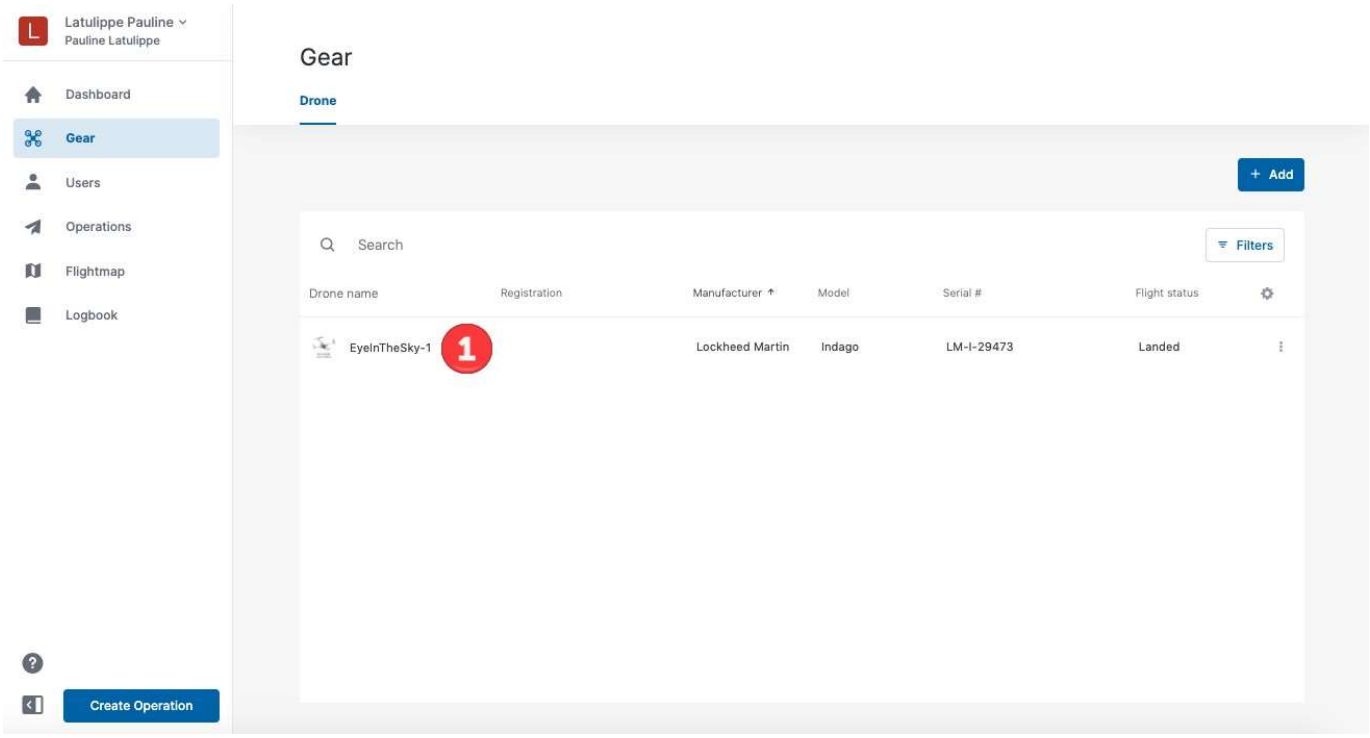
④ In the dialog box, select the Country (Canada is selected by default) and fill in the *Registration number*.

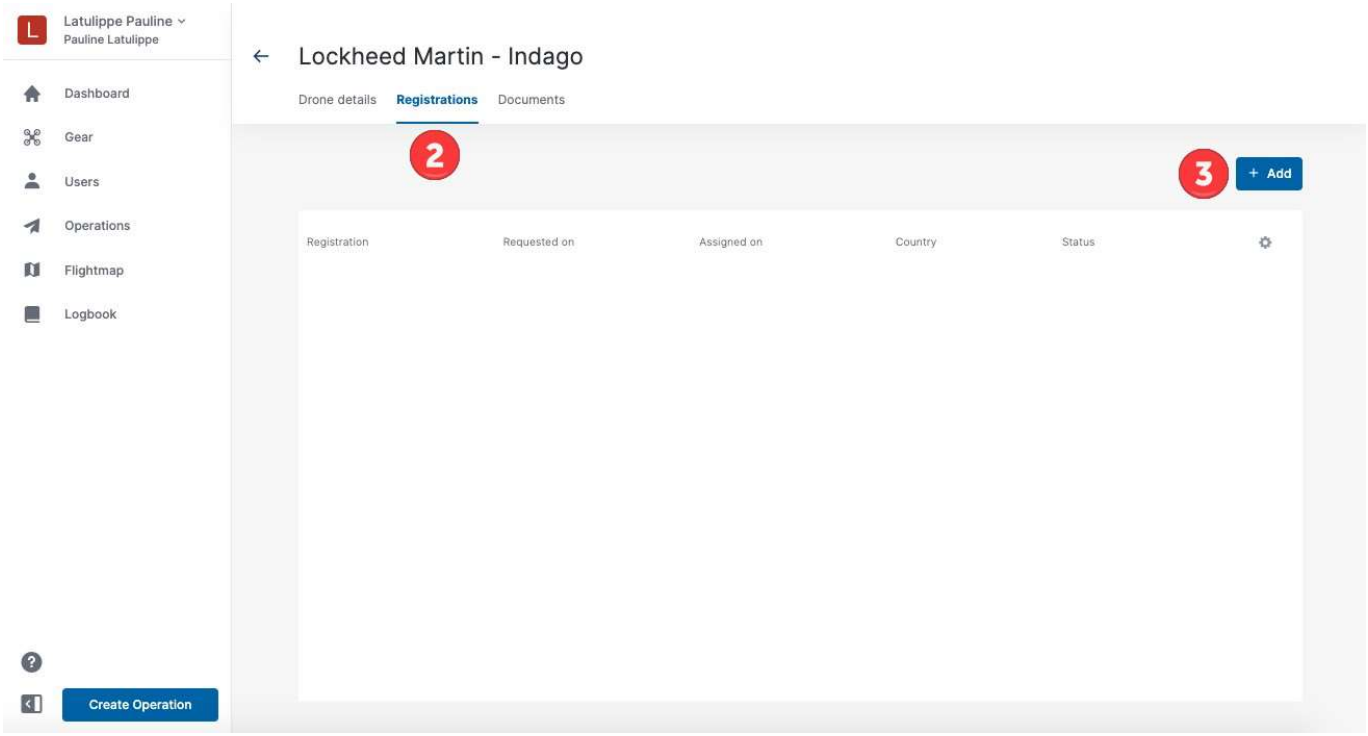
⑤ Click on the **[Add]** button. The new *Registration number* is added in the table.

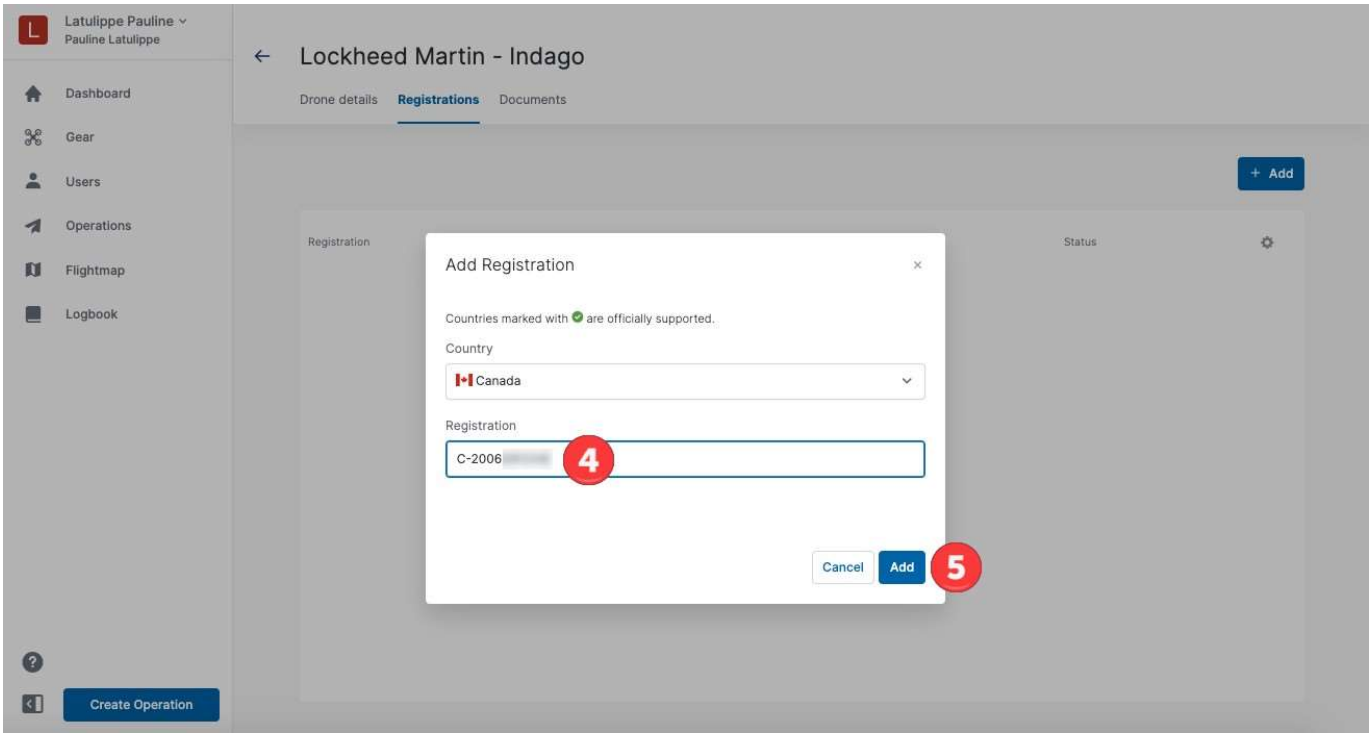
⑥ Click on *Drone details* to open the drone's characteristics.

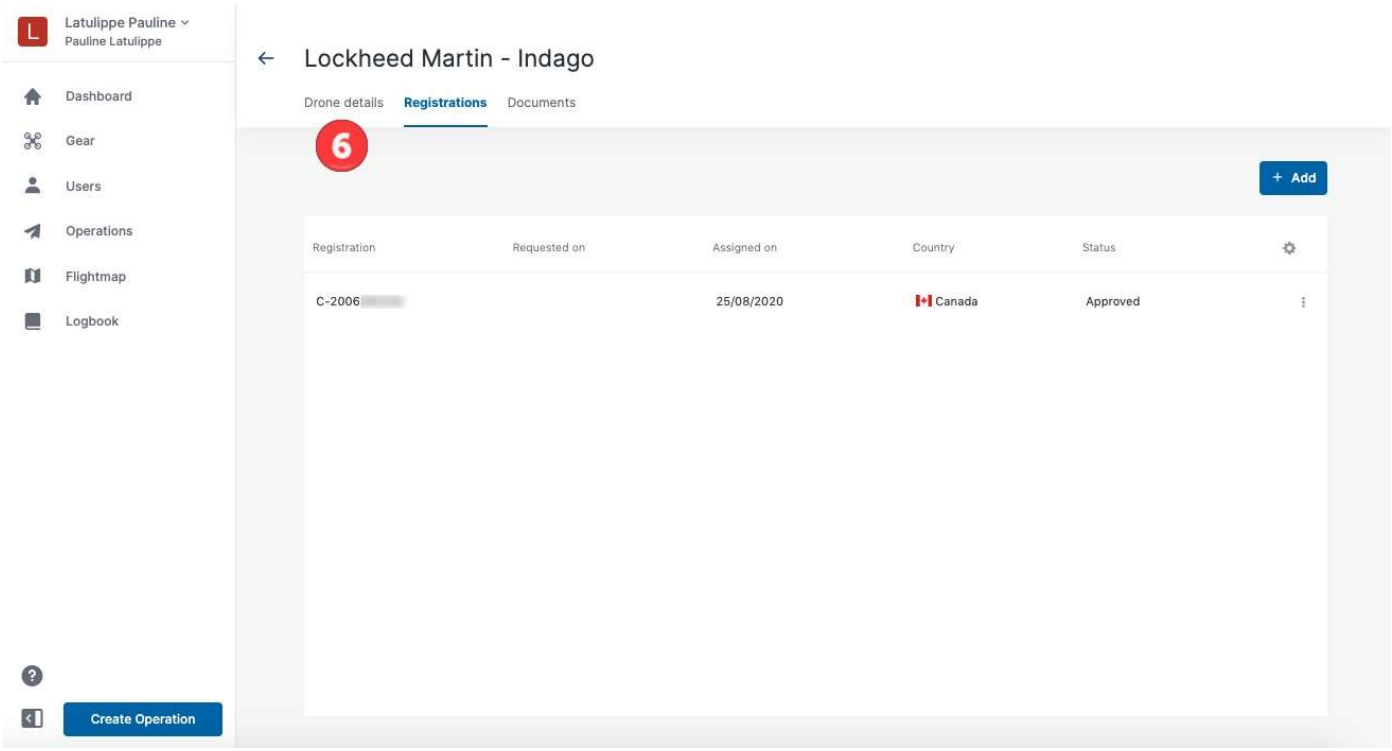
⑦ Click on the **[add registration]** link on the right of the screen. A dialog box opens.

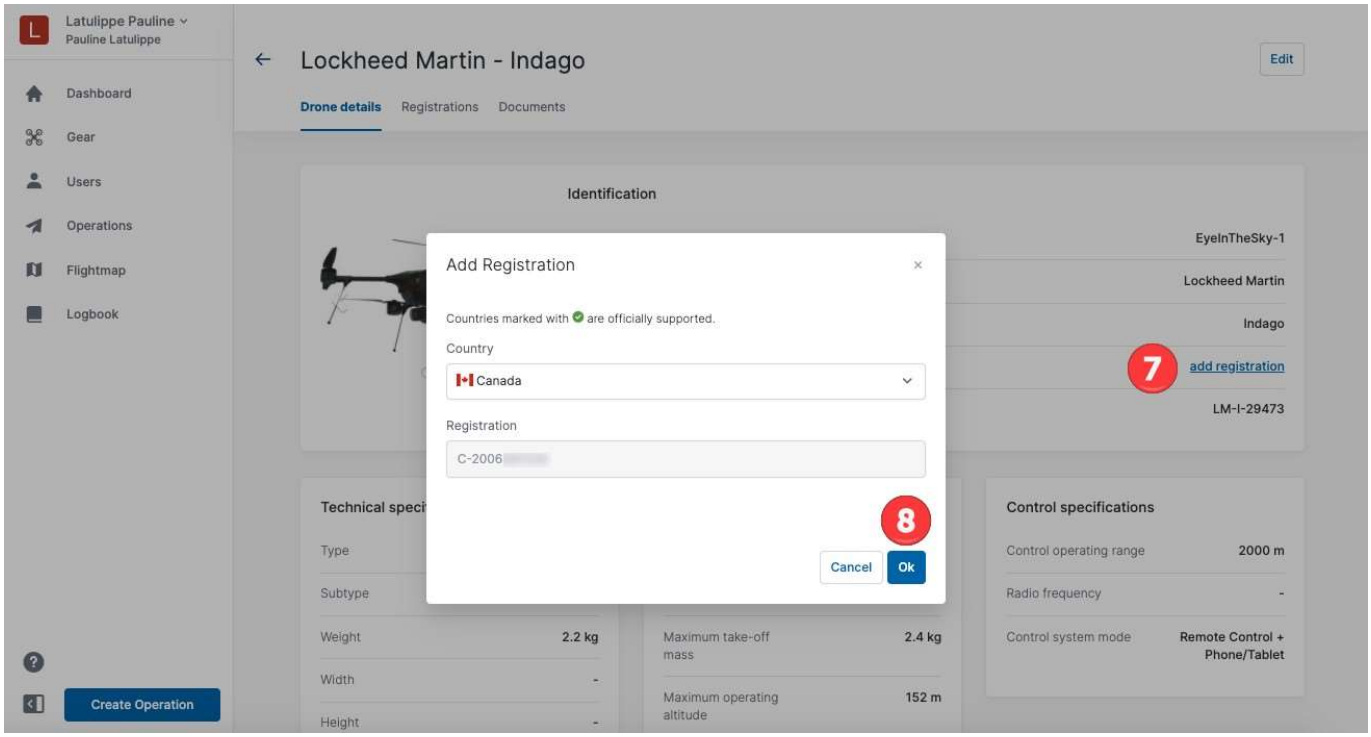
⑧ Check the retrieved information and click on the **[Ok]** button to associate the *Registration number* with that drone.




Latulippe Pauline
Pauline Latulippe
Dashboard
Gear
Users
Operations
Flightmap
Logbook
Create Operation
Lockheed Martin - Indago
Drone details
Registrations
Documents
2
3
+ Add
Registration
Requested on
Assigned on
Country
Status


Latulippe Pauline
Pauline Latulippe
Dashboard
Gear
Users
Operations
Flightmap
Logbook
Create Operation
Lockheed Martin - Indago
Drone details
Registrations
Documents
+ Add
Registration
Status
Add Registration
Countries marked with are officially supported.
Country
Canada
Registration
C-2006
4
Cancel
Add
5


Latulippe Pauline
Pauline Latulippe
Dashboard
Gear
Users
Operations
Flightmap
Logbook
Create Operation
Lockheed Martin - Indago
Drone details
Registrations
Documents
6
+ Add
Registration
Requested on
Assigned on
Country
Status
C-2006
25/08/2020
Canada
Approved


Latulippe Pauline
Pauline Latulippe
Dashboard
Gear
Users
Operations
Flightmap
Logbook
Create Operation
Lockheed Martin - Indago
Edit
Drone details
Registrations
Documents
Identification
EyeInTheSky-1
Lockheed Martin
Indago
7
add registration
LM-I-29473
Add Registration
Countries marked with are officially supported.
Country
Canada
Registration
C-2006
8
Cancel
Ok
Technical speci
Type
Subtype
Weight
2.2 kg
Width
Height
Maximum take-off mass
2.4 kg
Maximum operating altitude
152 m
Control specifications
Control operating range
2000 m
Radio frequency
Control system mode
Remote Control + Phone/Tablet

4.4. Associate documents with a drone

To associate a document with a drone, proceed as follows:

① Click on the drone entry in the table.

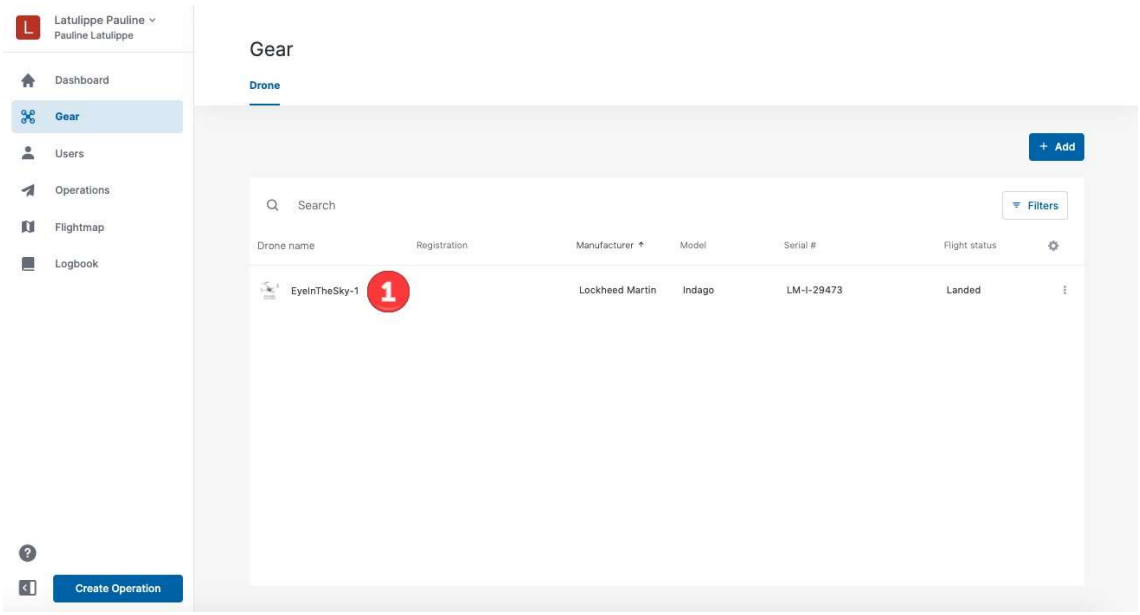
② Click on the *Documents* tab.

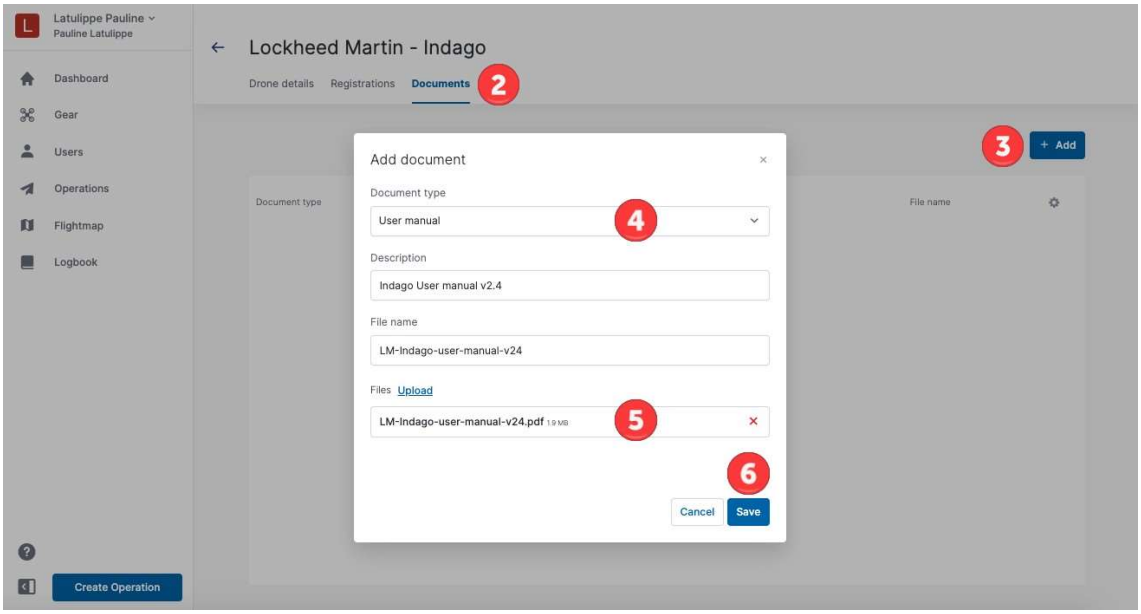
③ Click on the **[+ Add]** button.

④ In the dialog box, fill in the *Document type*, *Description* and *File name*.

⑤ Optionally, you can upload one or more files such as a PDF document, pictures, or a scan of the original document.

⑥ Click on the **[Save]** button to add the document to be associated with the selected drone.





Chapter 5. Users

The NAV Drone Web application allows an operator to invite multiple users to join their crew, such as drone pilots, observers, and payload specialists. Crew members are associated with the drone operator via an email-based invitation.

Click on *Users* in the left sidebar to access the module that allows you to manage your crew of users.

The drone operator can plan drone operations to be executed by one of their crew members.

In the NAV Drone Mobile app, the drone pilot can select an operation assigned to them by the drone operator and execute the planned operation.

A user (crew member) can be associated with multiple drone operators. As described in Settings, the user can select in their user profile which drone operator to perform a drone operation for.

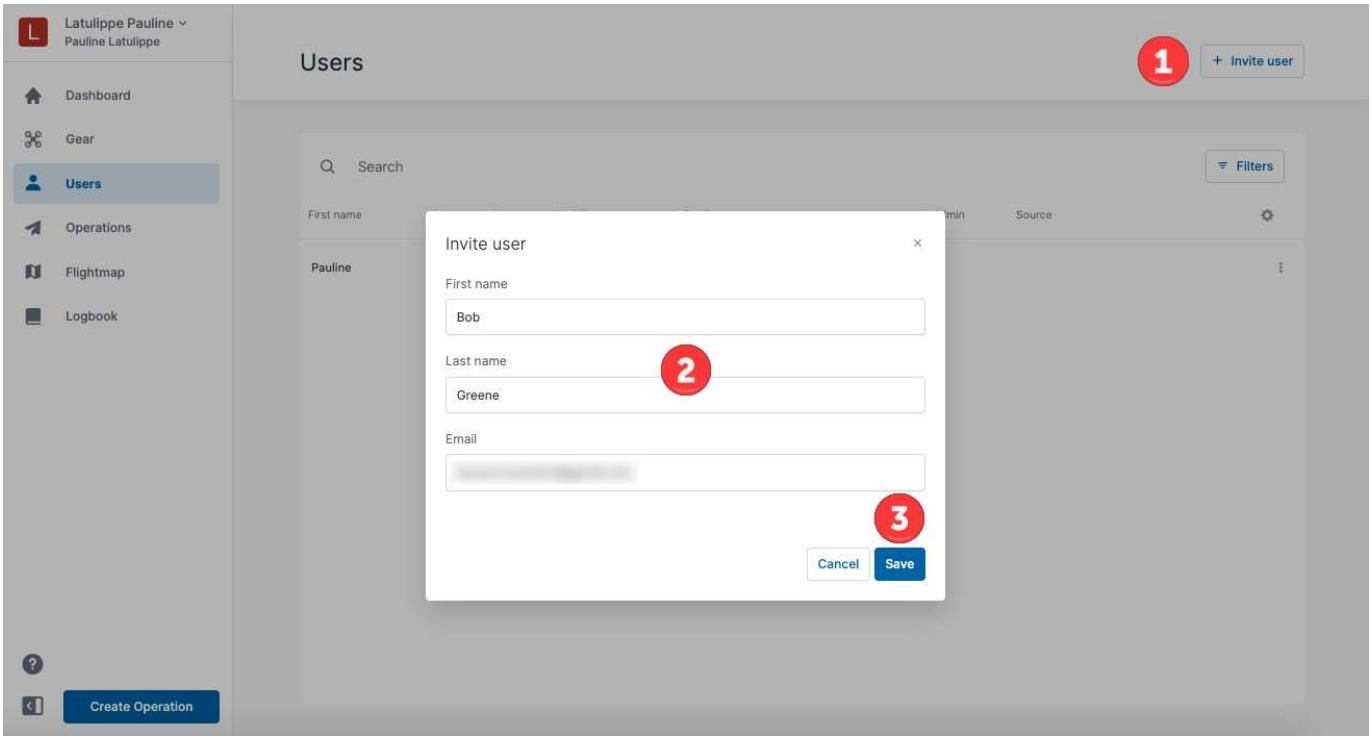
5.1. Add a user

To invite another user to join your crew in NAV Drone:

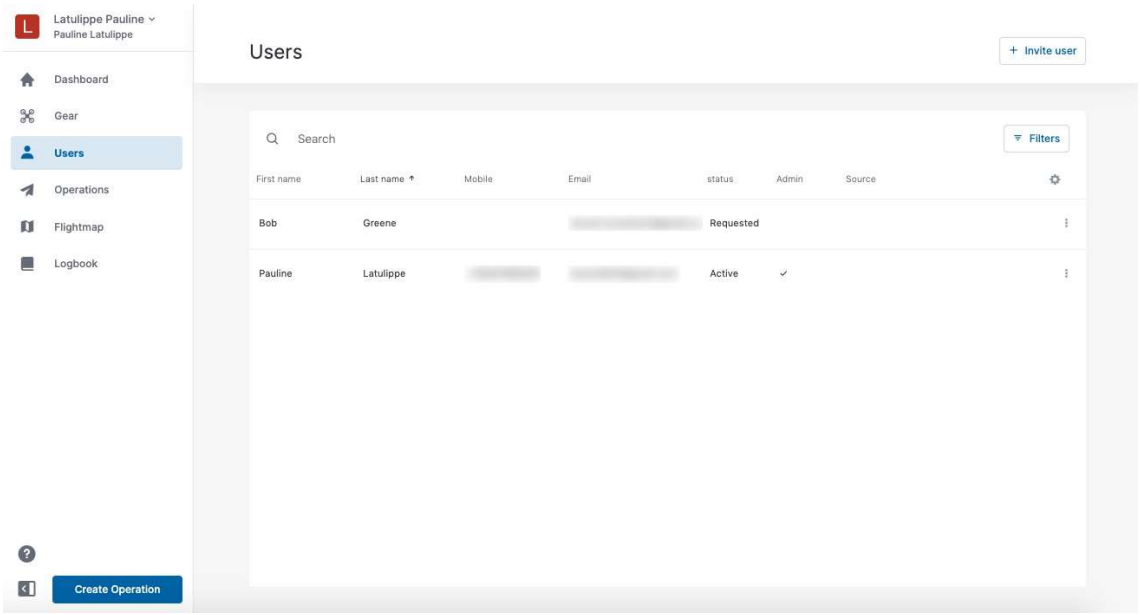
① Click on the **[+ Invite user]** button.

② In the dialog box, fill the *First name*, *Last name* and *Email* address.

③ Click on the **[Save]** button to send the invitation.



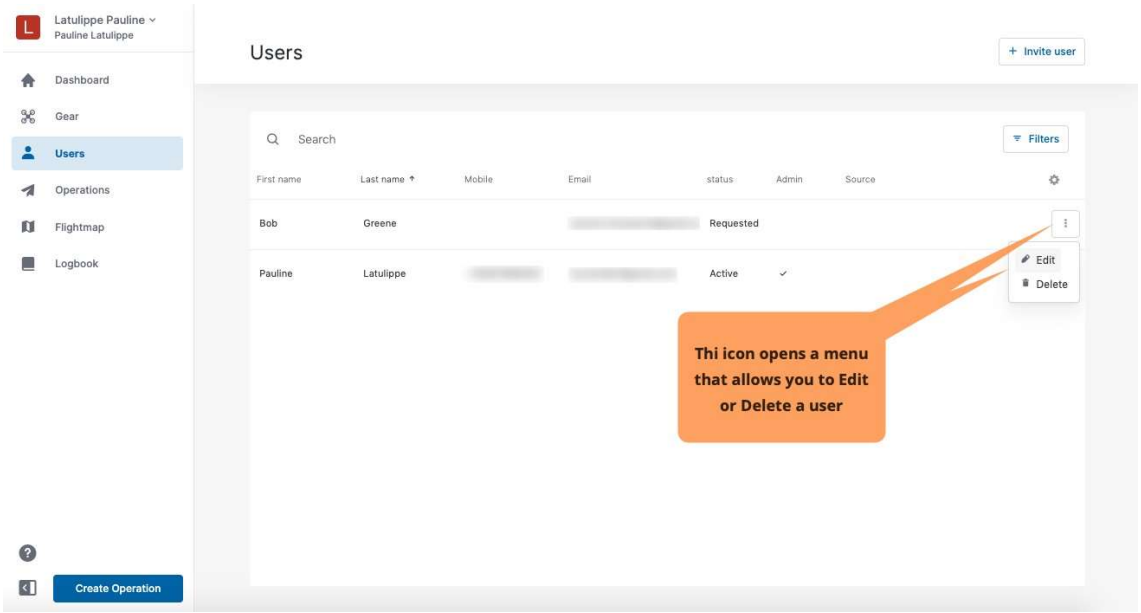
The user will receive an email from NAV Drone inviting them to join your crew. The newly added user will be listed in the user table with the status *Requested*. Accepting the invitation will redirect them to create and activate a NAV Drone account, while an existing user will be redirected to his or her active account.

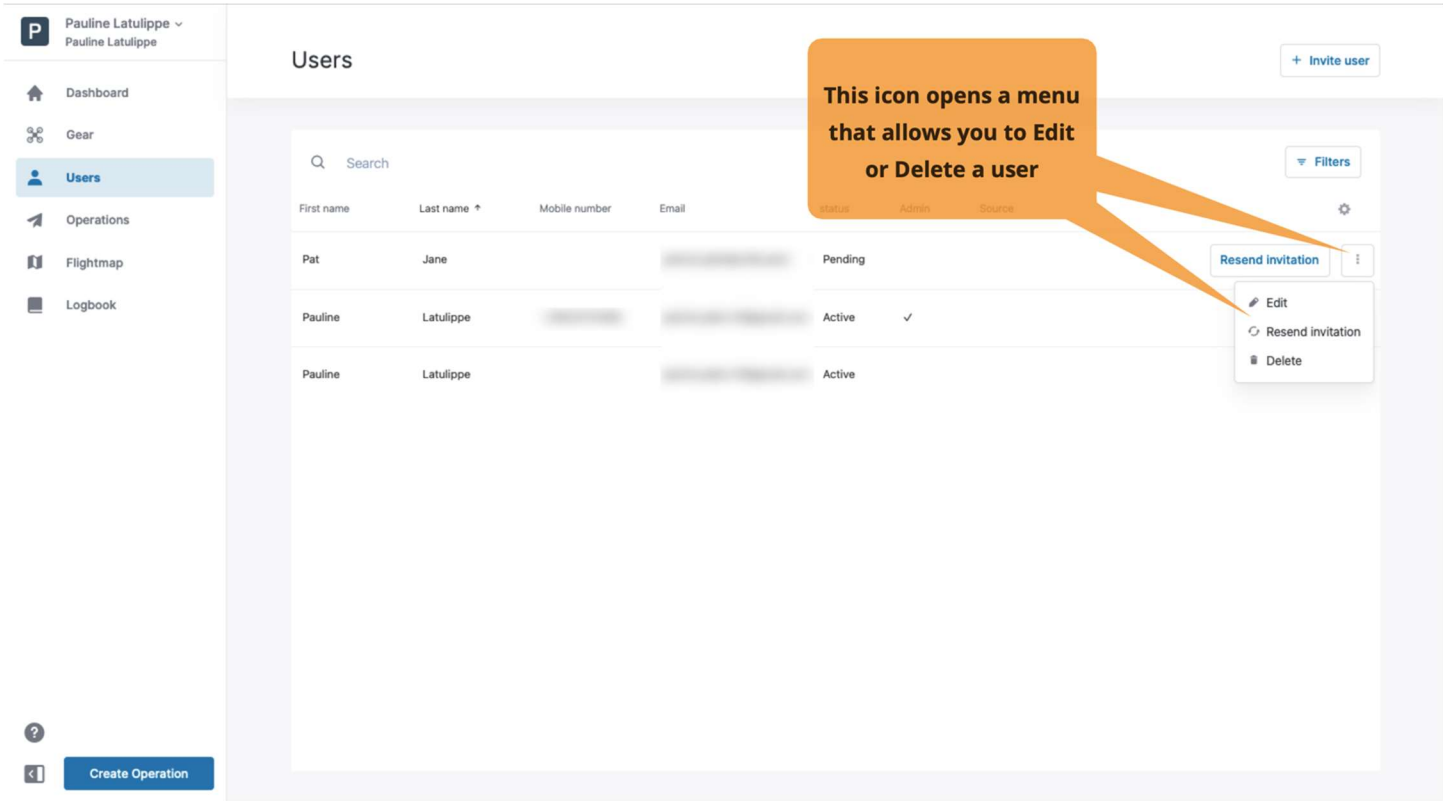


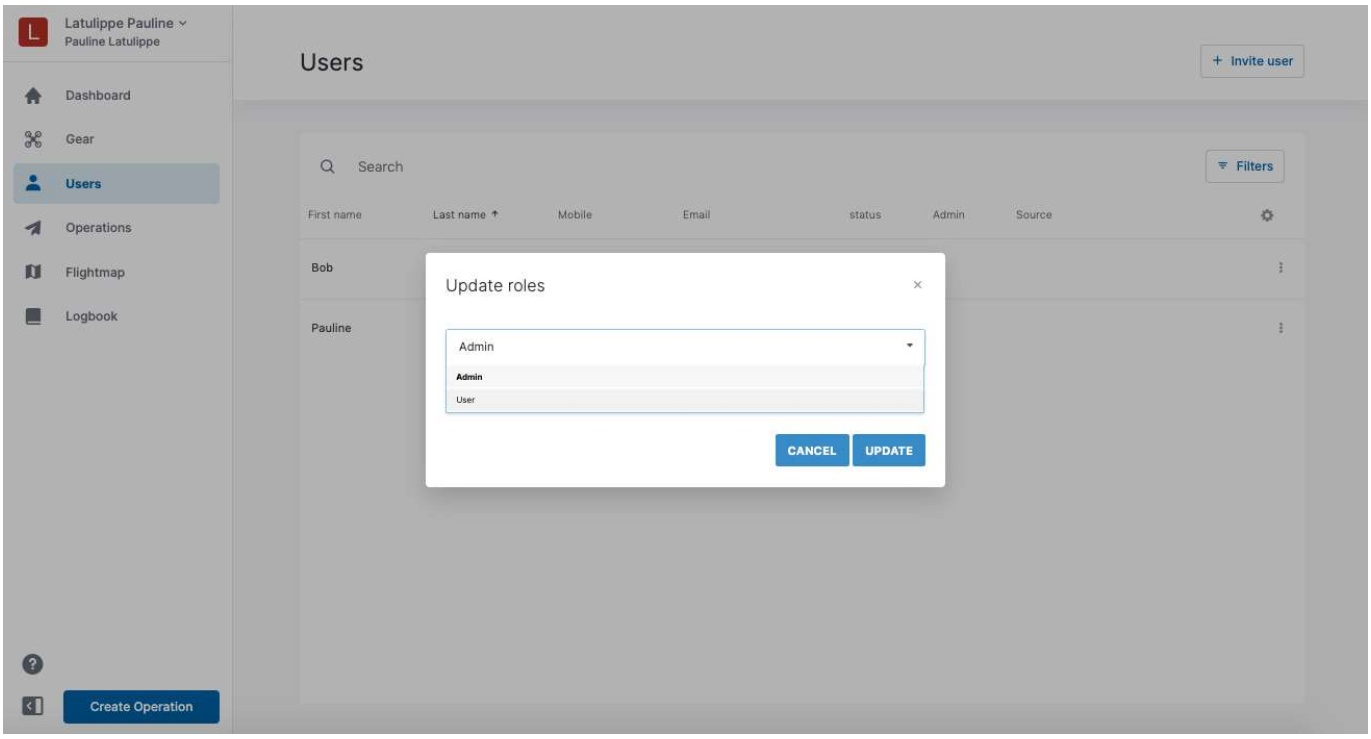
5.2. Edit or delete a user

To edit the role of a user, click on the menu icon (⋮) on the right side of the user entry in the table and select the menu item *Edit*. The menu also allows you to *Delete* the selected user.

In *Edit*, you can switch the role of active users between *Admin* and *User*. Unlike normal users, an *Admin* can invite other users to join the operator's crew.



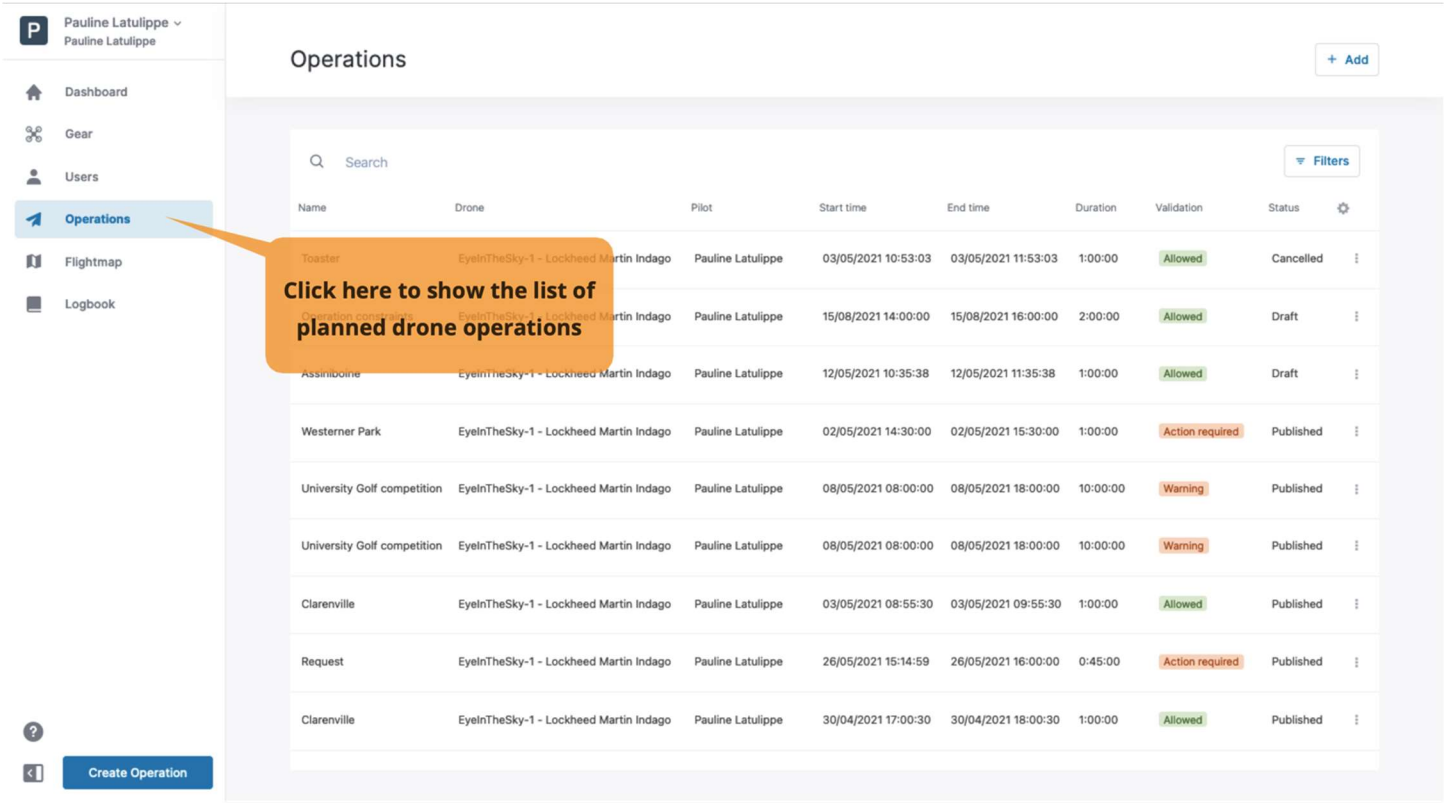

Pauline Latulippe
Pauline Latulippe
Dashboard
Gear
Users
Operations
Flightmap
Logbook
Create Operation
Users
+ Invite user
This icon opens a menu that allows you to Edit or Delete a user
Search
Filters
First name
Last name
Mobile number
Email
status
Admin
Source
Pat
Jane
Pending
Resend invitation
Pauline
Latulippe
Active
Edit
Resend invitation
Delete


Latulippe Pauline
Pauline Latulippe
Dashboard
Gear
Users
Operations
Flightmap
Logbook
Create Operation
Users
+ Invite user
Search
Filters
First name
Last name
Mobile
Email
status
Admin
Source
Bob
Pauline
Update roles
Admin
Admin
User
CANCEL
UPDATE

Chapter 6. Operations

The NAV Drone Web application supports the planning of drone operations.

Clicking on *Operations* in the left sidebar will bring up the table, listing all planned operations as shown below.



6.1. Procedure for creating a new operation

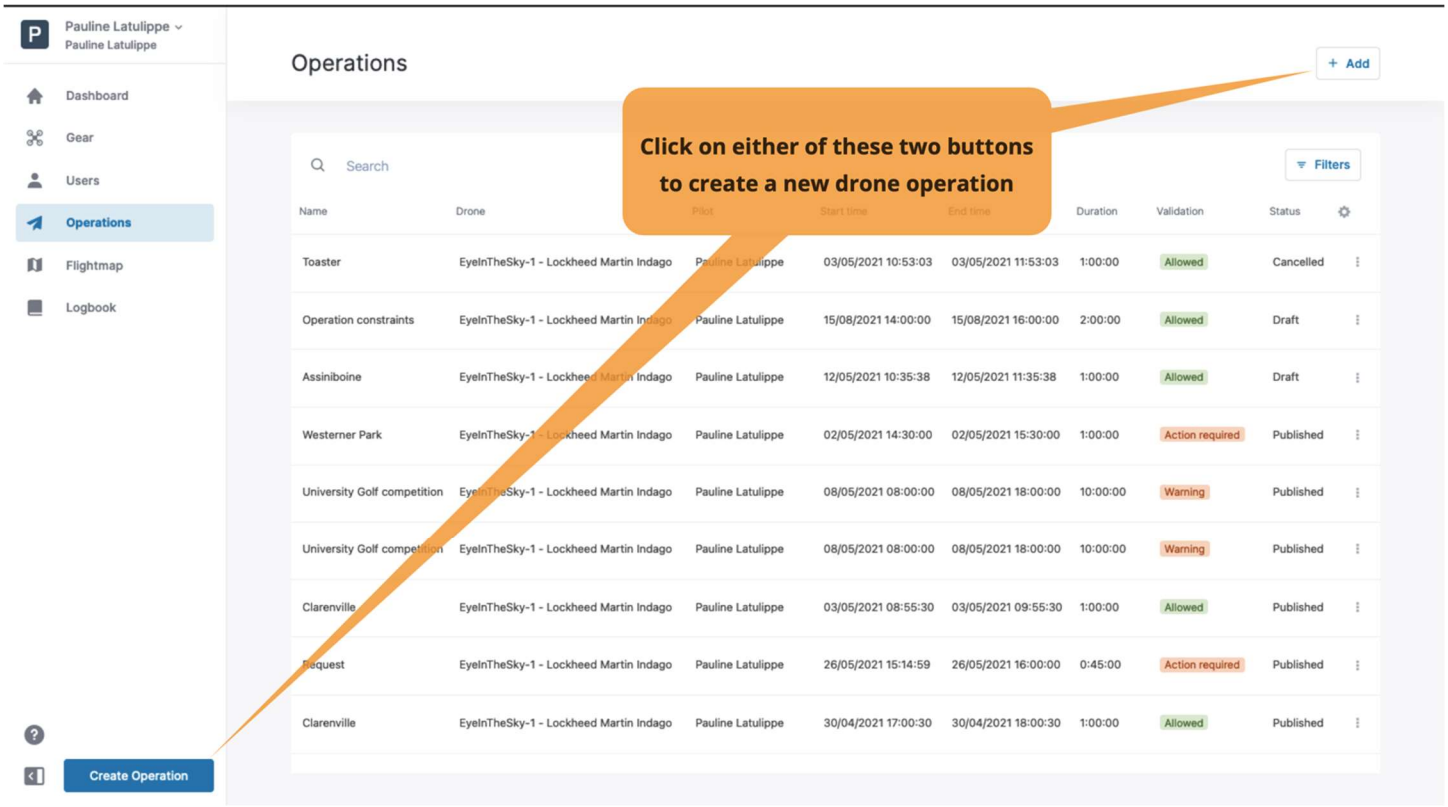
Creating a new operation consists of five main steps:

1. Planning an operation, including the creation of a flight zone and the definition of the operation parameters.
2. Validating the operation against applicable rules and regulations.
3. Saving the operation as *Draft*.
4. Publishing the operation.
5. Managing the operation's tasks, to receive the permissions required to conduct the operation, when applicable.

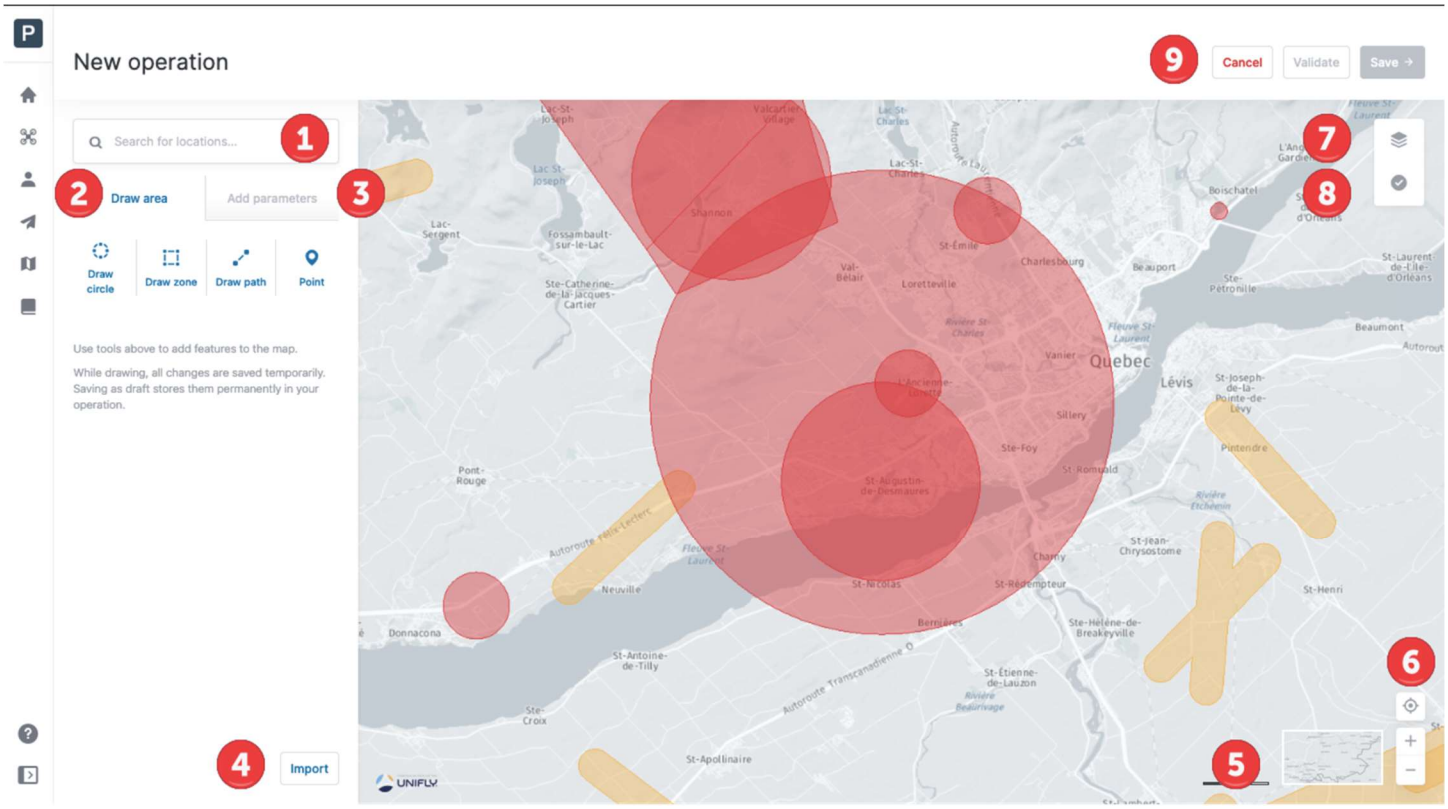
Each of these steps is detailed in the sections below, after a short description of the user interface.

6.2. User interface overview

An operation can be planned by clicking on the **[Create Operation]** button in the expanded left sidebar or by clicking on the **[+ Add]** button at the top right of the screen.



Clicking on either of these two buttons will open the *New operation* screen where you can define the new drone operation as shown below.



The *New operation* screen includes the following user interface elements:

① The **[Search]** field, to search for locations. Click on the field, start typing an address or latitude/longitude coordinates. Selecting one of the search results will reposition and zoom the map, and put a blue marker on the location.

② The *Draw area* tab, to draw the operation flight zone on the map. Cylindrical (*Draw circle*), polygonal (*Draw Zone*) and path-like (*Draw Path*) operation flight zones are supported. In addition, *Point* allows you to mark the intended takeoff, landing and emergency landing locations on the map.

③ The *Add parameters* tab, to define the essential drone operation parameters used for validating the drone operation.

④ The **[Import]** button, to import a file describing the operation flight zone. See section Import a geometry for more details.

⑤ The **[Display Mode]** button allows you to select the map's display mode. See section Change the display mode for more details.

⑥ The "move to current location" (⌖) and zoom (**+** and **−**) buttons allow you to navigate the map. You can also move the map by dragging it with the left mouse button and zoom the map in or out using the mouse scroll wheel or by double clicking on a location on the map (left mouse button = zoom in, right mouse button = zoom out).

⑦ The button allows you to configure which layers should be visible on the map. See section Hide/display map layers for more details.

⑧ The button allows you to validate the operation against the applicable rules and regulations. See next section for more details.

⑨ The three buttons at the top right corner of the screen:

- The **[Cancel]** button, to cancel the creation of the operation.
- The **[Validate]** button, to validate the drone operation against the applicable rules and regulations. See next section for more details.
- The **[Save]** button, to save the operation as a draft until it is published. See section Step 4: Publish an operation for more details.

More details about the map layers and how to display airspace information are provided in section Flightmap.

6.3. Step 1: Plan an operation

6.3.1. Cylindrical flight zone

To plan an operation with a cylindrical flight zone:

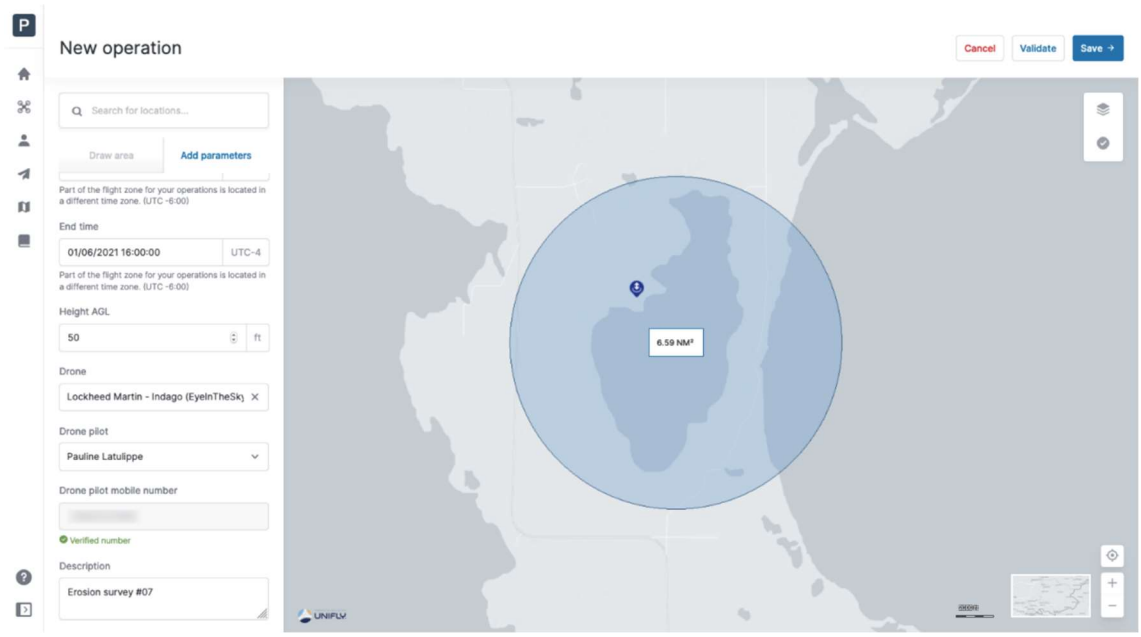
1. Select a location by either using the search button or by moving the map and using the map controls.
2. In the *Draw area* tab, click on the **[Draw circle]** button. The standard mouse pointer ( ) will change to a crosshair pointer (+).
3. On the map, select a location for the centre of the cylindrical flight zone. By clicking on that location, a circle is drawn on the map. The cylindrical flight zone is represented by that circle and the operation's maximum height, which will be defined later.

4. To modify the flight zone:
    - Move the flight zone by dragging and dropping the circle.
    - Drag and drop the circle handle to resize the flight zone.

5. Optionally, *Points* can be defined for the operation. Click on the **[← Circle]** button to go back and then click on the **[Point]** button. In the *Draw area*, select the type of point to add (Takeoff, Landing, Takeoff & landing, Emergency landing) and click on the desired location on the map. Multiple points can be defined for an operation.

6. Click on the *Add parameters* tab and complete the following fields:
    - *Operation name*
    - *Certification Level*: Basic or Advanced
    - *Activity*: select a type of activity from the list
    - *Operation type*: VLOS, VLOS with observers or Beyond VLOS

- *Start time*: enter the planned start date and time
- *End time*: enter the planned end date and time
- *Height AGL [m]* or *Height AGL [ft]*: enter the maximum flight height either in meter or feet (feet is the aviation standard in Canada). The height expressed in the other unit will be calculated.
- *Drone*: select a drone from the list. The list of drones is retrieved from the crew members previously defined in *Gear*.
- *Drone pilot*: select a pilot from the list. The list of pilots is retrieved from the crew members previously defined in *Users*.
- *Drone pilot mobile number*: the pilot's mobile number will be retrieved from the user's details but can be modified if needed.
- *Description*: optionally, add a short description of your operation.



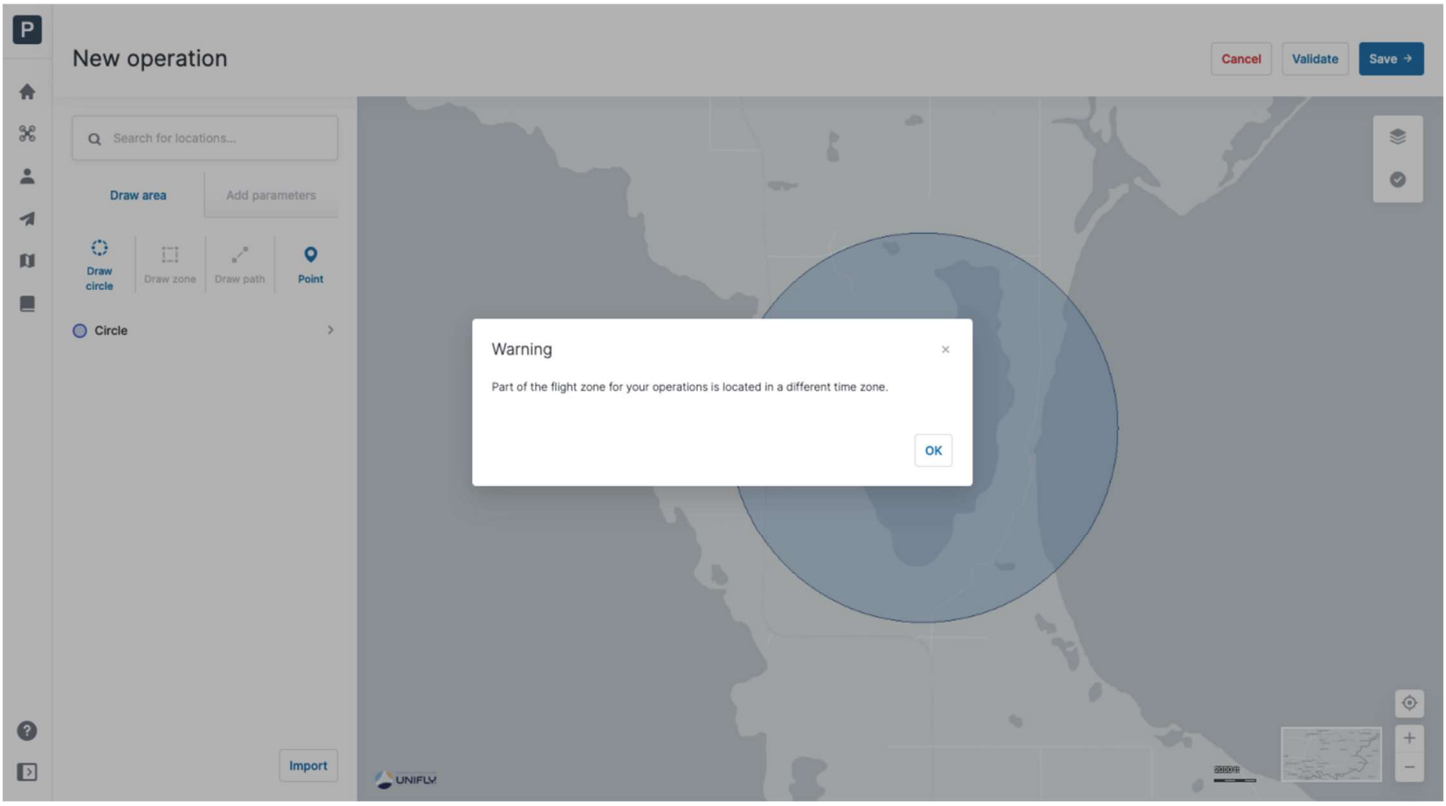
Make sure to select a drone with a valid registration number. See section Associate a registration number with a drone.

Two-way communication capability is required when operating in NAV CANADA control zones. Therefore, make sure to select a pilot with a verified mobile phone number in order to publish the operation (see section User information for more details). Also, make sure to have your phone with you when flying.

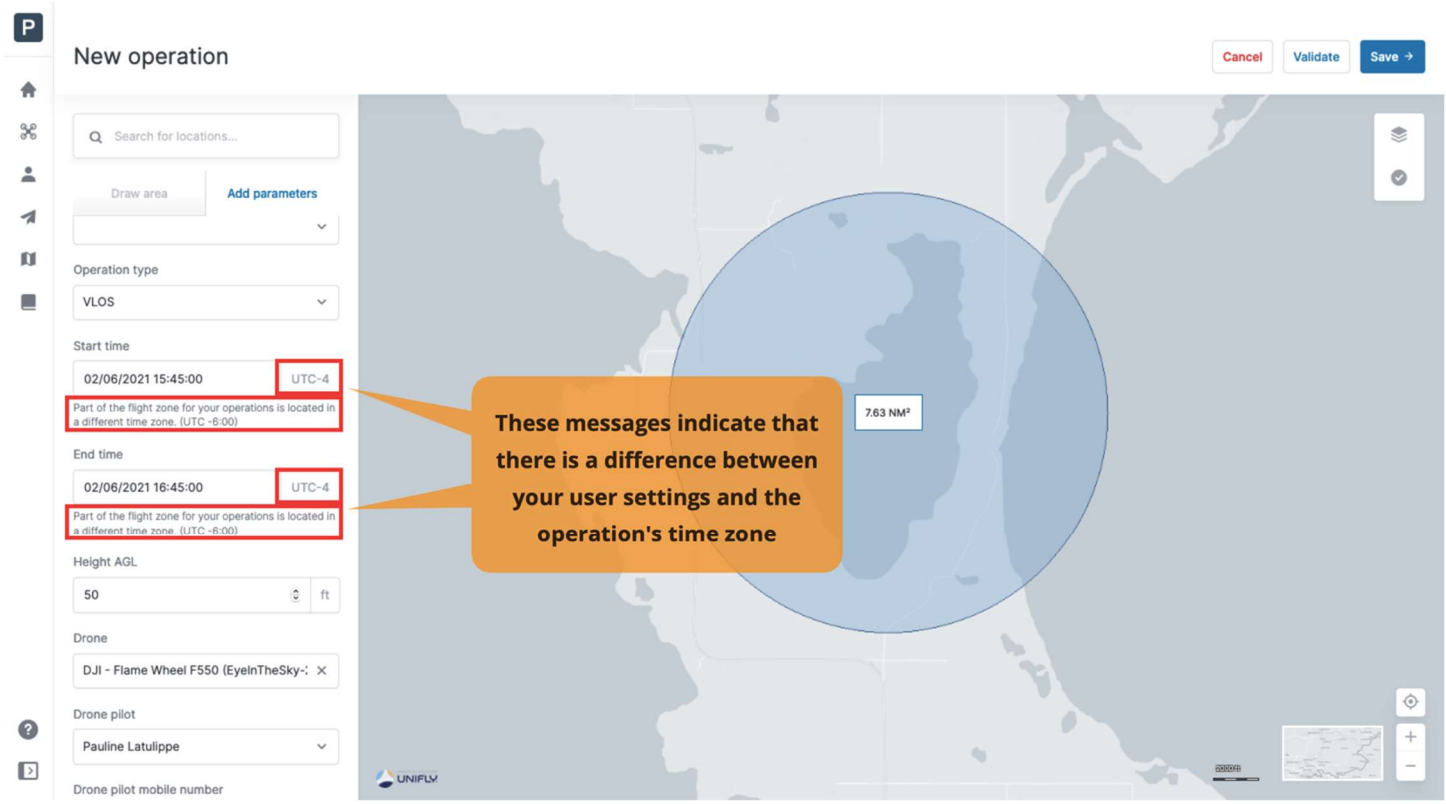
Advanced operations require a pilot with a certificate for advanced operations. See section Add user documents.

Note about time zones

When drawing an operation in a different time zone than the one defined in your user settings, a dialog box with a warning will appear.



In the operation parameters, a message also indicates that there is a difference between your user settings and the operation's time zone (expressed in Coordinated Universal Time):



6.3.2. Polygonal flight zone

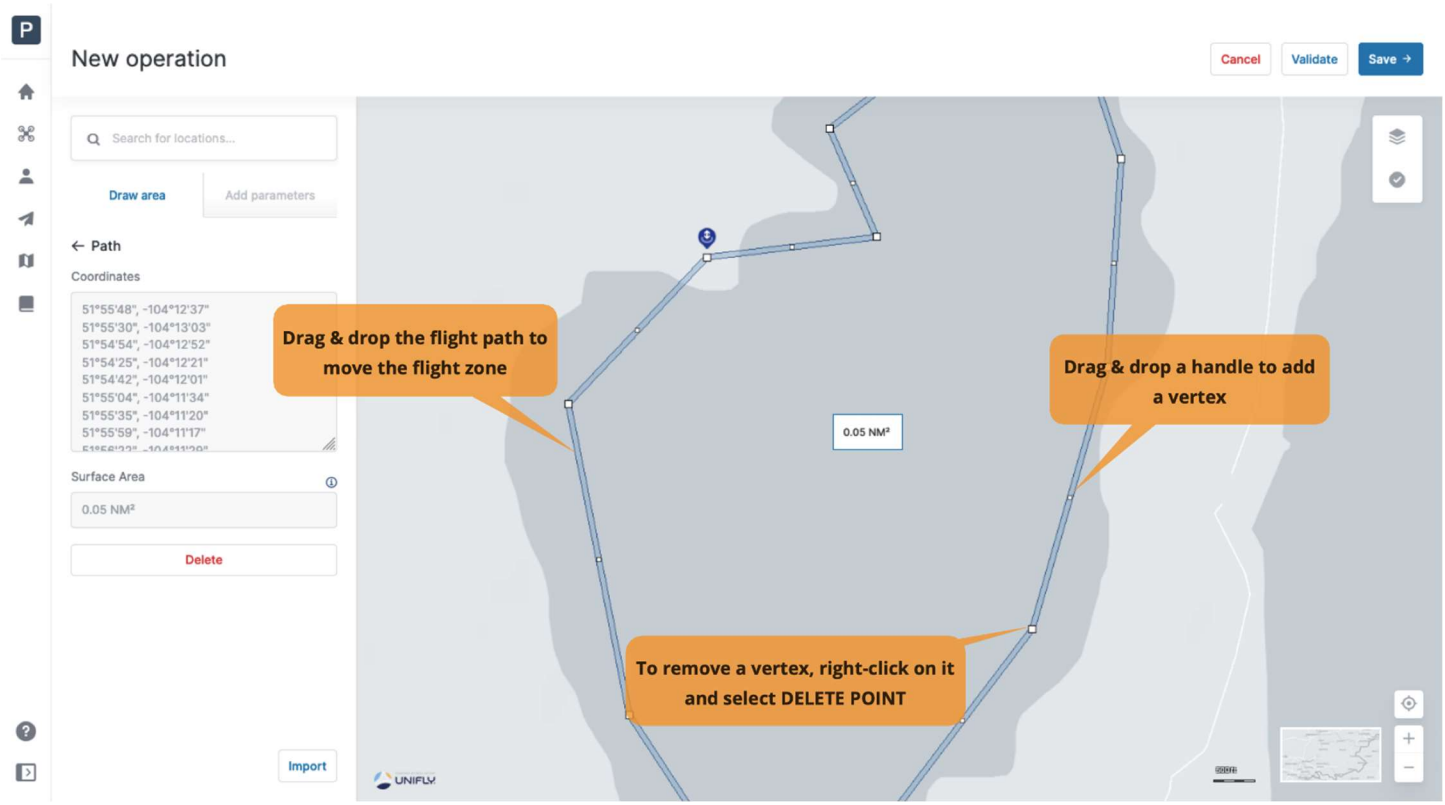
To plan an operation with a polygonal flight zone:

1. Select a location by either using the search button or by moving the map and using the map controls.
2. In the *Draw area* tab, click on the **[Draw Zone]** button. The standard mouse pointer (↖) will change to a crosshair pointer (+).
3. On the map, select a location for the first polygon vertex (the corner point between two edges). Click once to create a new corner point, double click to close the polygon.
4. To modify the flight zone:
   - Move the flight zone by dragging and dropping the polygon.
   - Drag and drop any vertex to move it.
   - Add new vertices by dragging and dropping a shape handle (the smaller point in the middle of an edge).
   - Delete a vertex by right-clicking on it and selecting **[DELETE POINT]** in the dialog box.
5. Optionally, takeoff, landing, takeoff & landing, and emergency landing *Points* can be defined for the operation, as described in section Cylindrical flight zone.
6. Click on the *Add parameters* tab and complete the fields, as described in section Cylindrical flight zone.

6.3.3. Flight path

To plan an operation with a flight path:

1. Select a location by either using the search button or by moving the map and using the map controls.
2. In the *Draw area* tab, click on the **[Draw Path]** button. The standard mouse pointer (↖) will change to a crosshair pointer (+).
3. On the map, select a location for the starting point. Click once to create a new segment, double click to select the location of the end point.
4. To modify the flight zone:
   - Move the flight zone by dragging and dropping the flight path.
   - Drag and drop any point to move it.
   - Add new segments by dragging and dropping a shape handle (the smaller point in the middle of a segment).
   - Delete a point by right-clicking on it and selecting **[DELETE POINT]** in the dialog box.
5. Optionally, takeoff, landing, takeoff & landing, and emergency landing *Points* can be defined for the operation, as described in section Cylindrical flight zone.
6. Click on the *Add parameters* tab and complete the fields, as described in section Cylindrical flight zone.

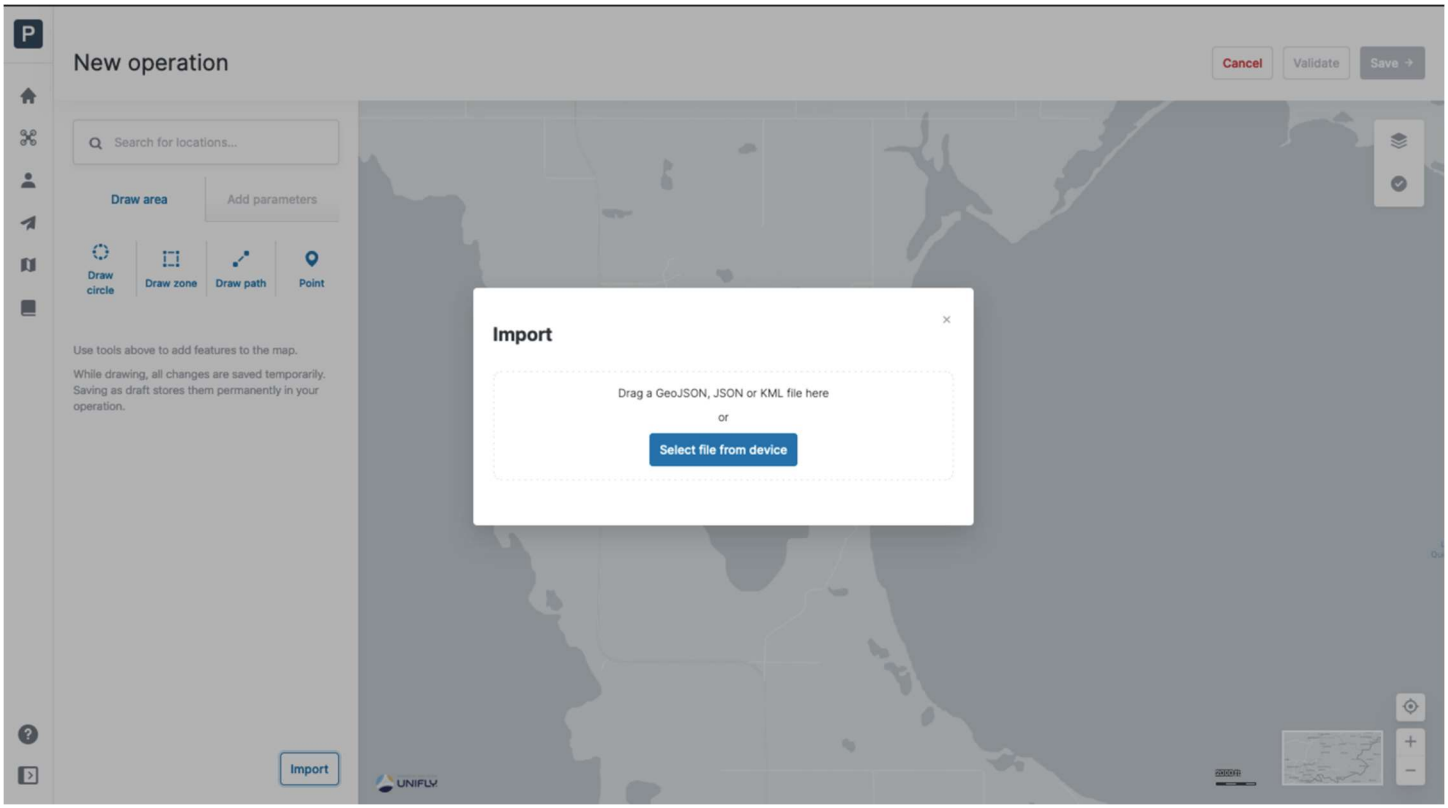


6.3.4. Import a geometry

To import an operation geometry:

1. In the *Draw area* tab, click on the **[Import]** button.
2. Drag and drop a file to the dialog box, or select a file from your device.

> The following file formats are supported for importing an operation geometry: GeoJSON, JSON or KML.



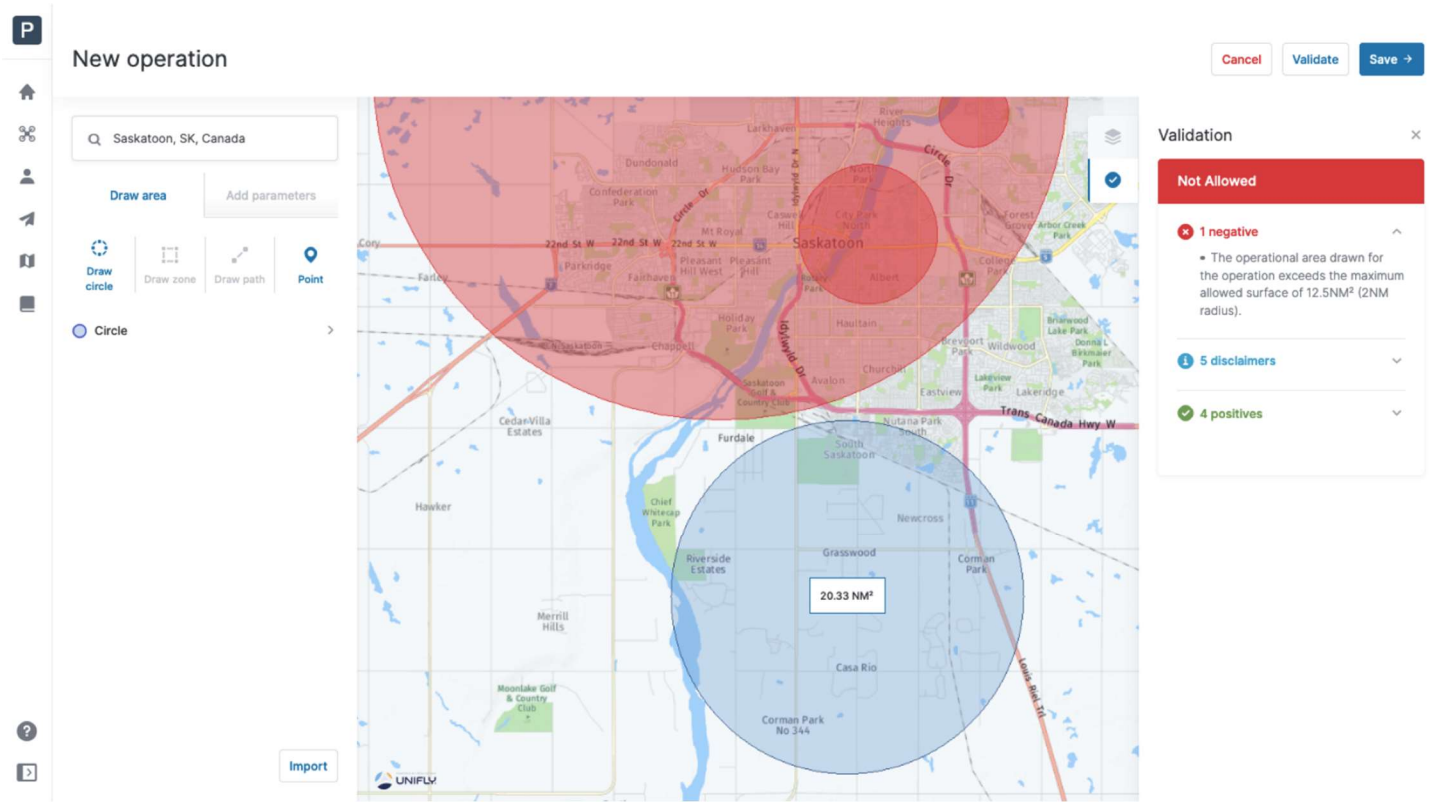
6.3.5 Operation constraints

6.3.5.1 Size constraints

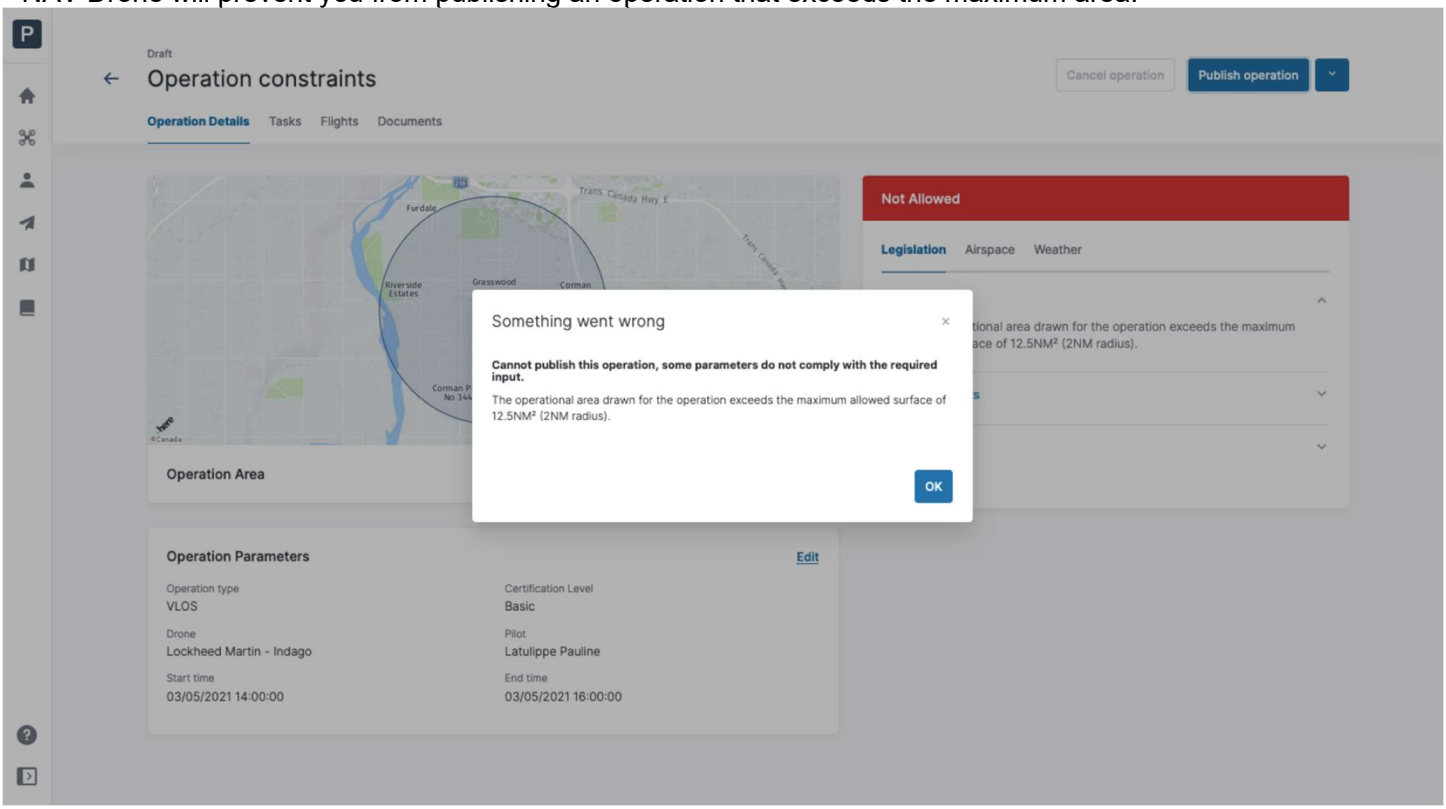
The maximum area of a flight zone is limited. Depending on the shape of the operation, the constraints are:

- Polygon: 10 sq.NM
- Circle: 12.5 sq.NM (2 NM radius)
- Path: 0.054 sq.NM (10 NM length by 32 feet width)

These values are subject to change by NAV CANADA.



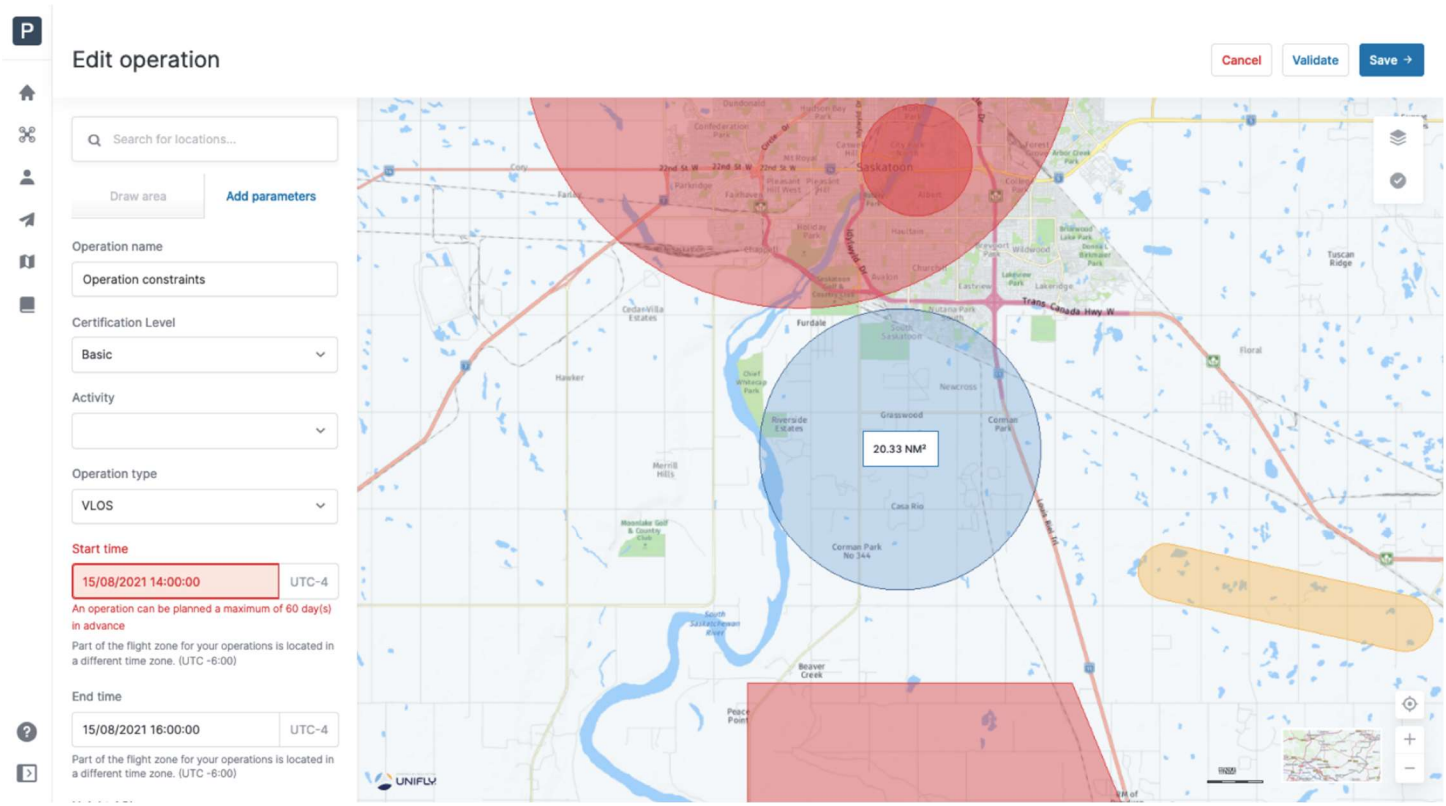
NAV Drone will prevent you from publishing an operation that exceeds the maximum area.

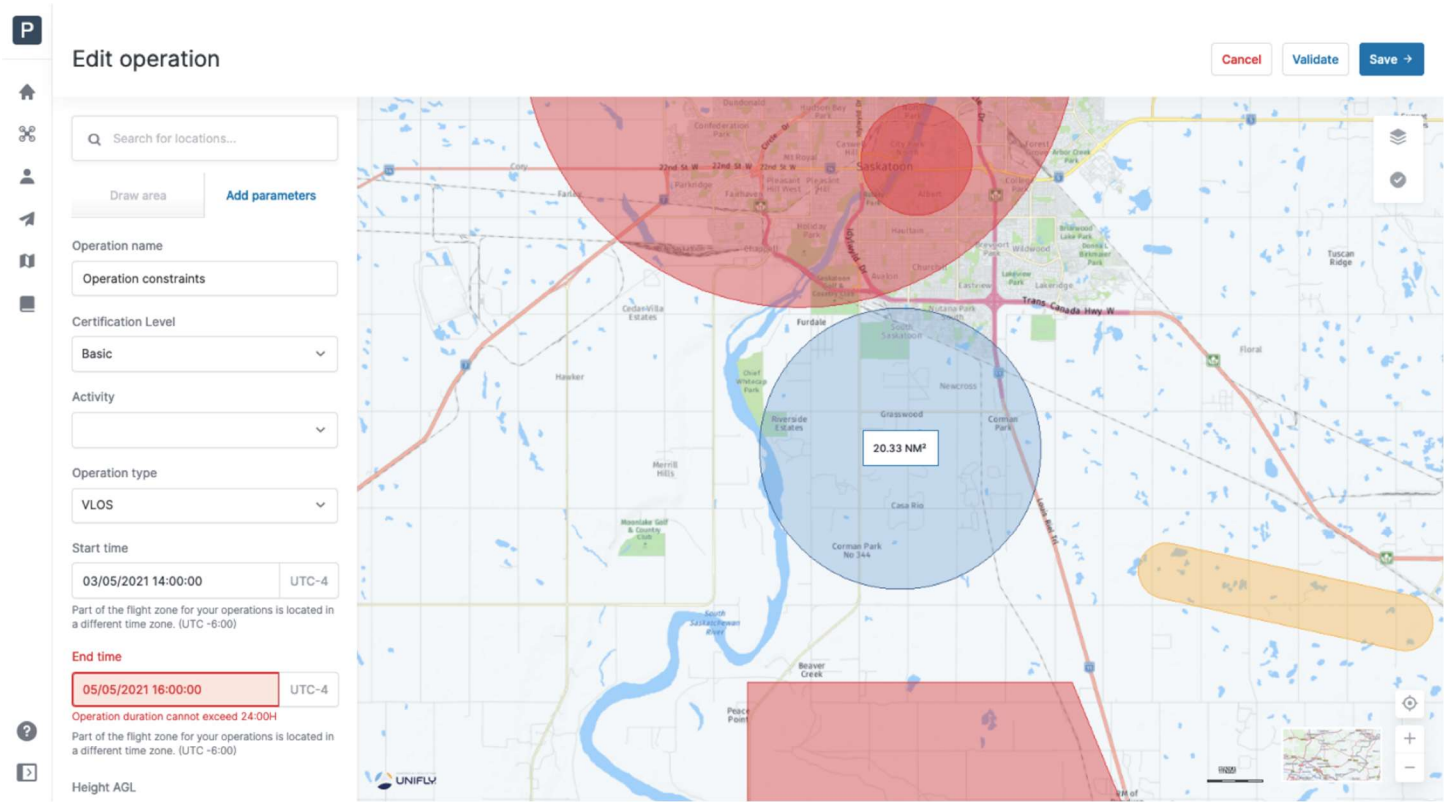


6.3.5.2 Time constraints

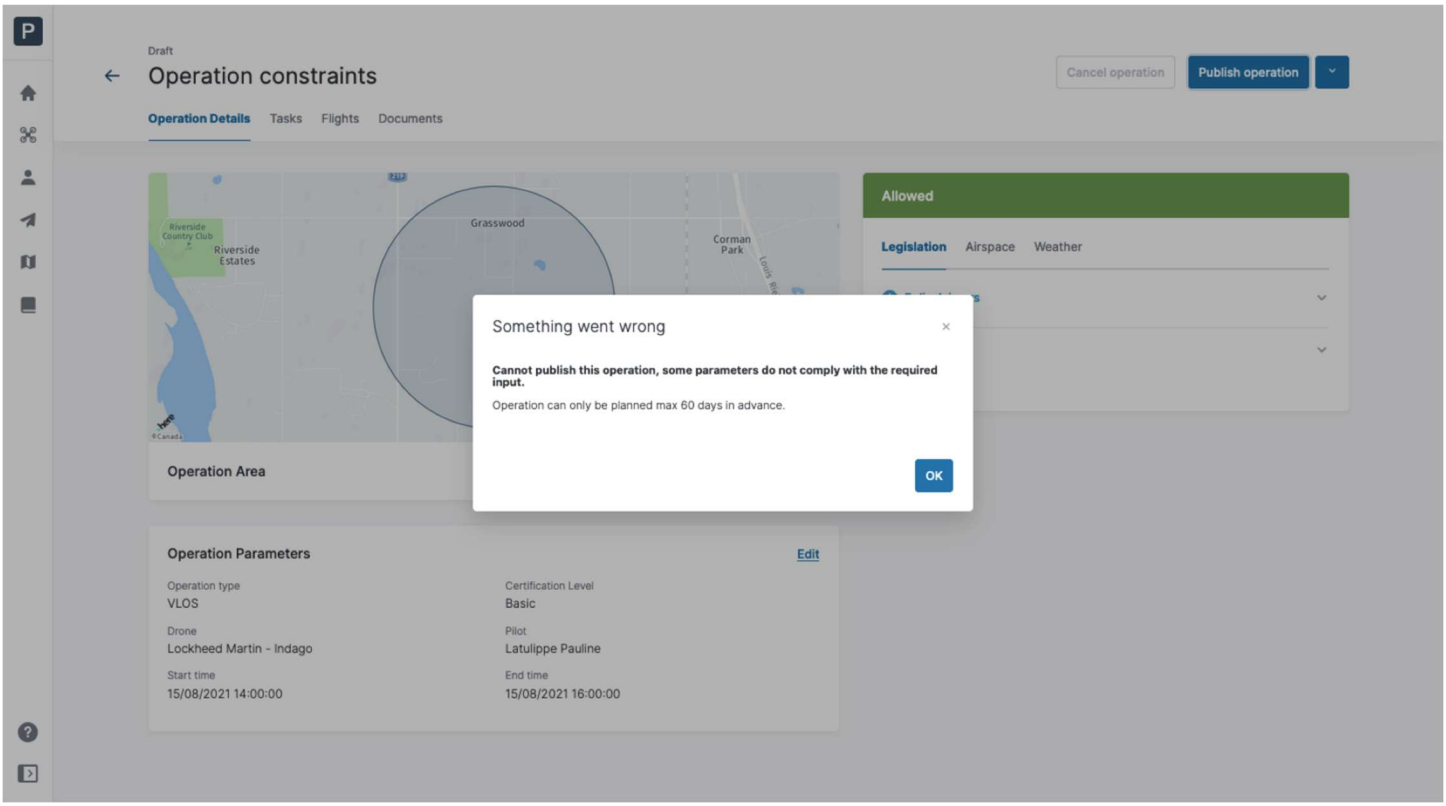
An operation can only be planned up to 60 days in advance, and its maximum duration is limited to 24 hours.

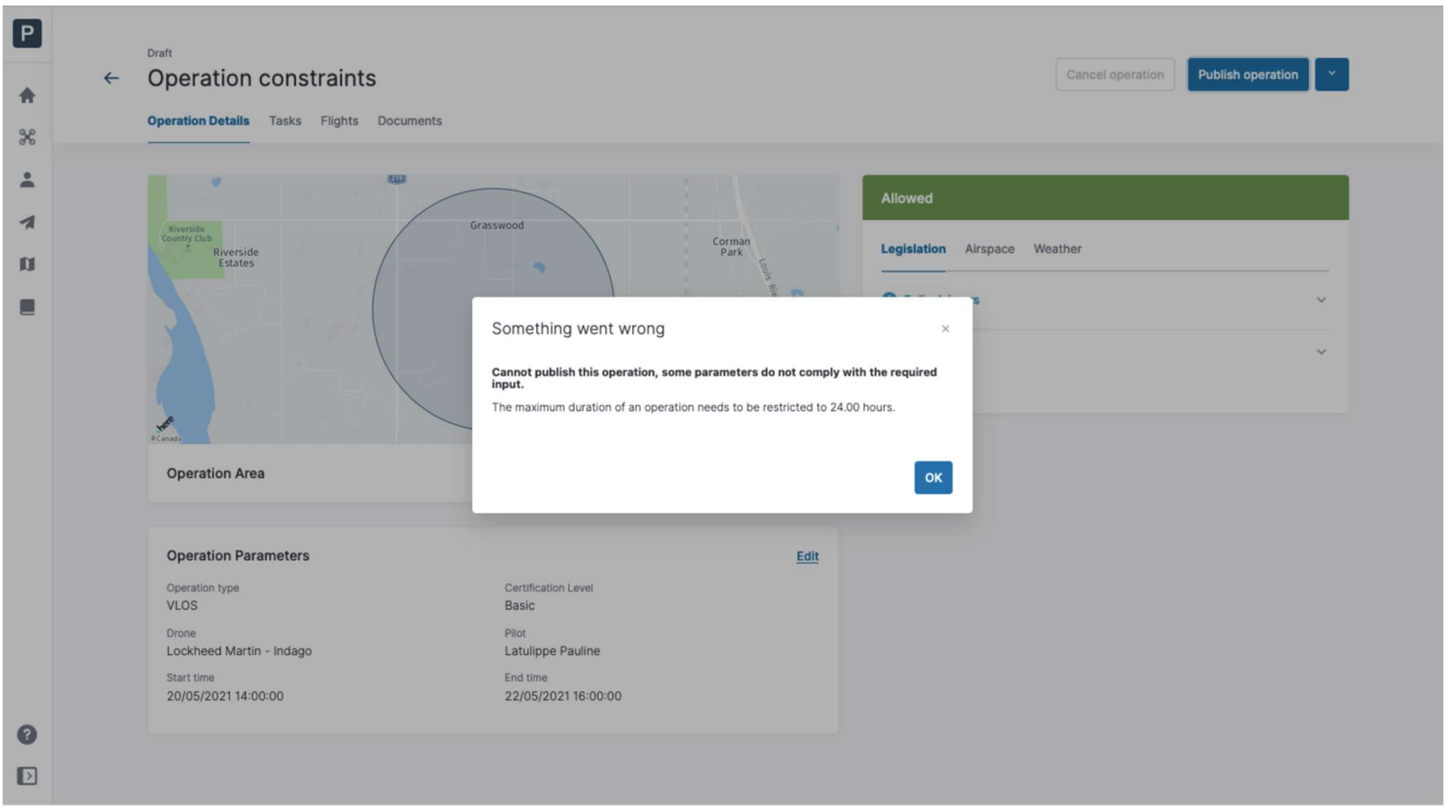
These values are subject to change by NAV CANADA.





NAV Drone will prevent you from publishing an operation that exceeds either of the time constraints.




Draft
Operation constraints
Cancel operation
Publish operation
Operation Details
Tasks
Flights
Documents
Riverside Country Club
Riverside Estates
Grasswood
Corman Park
Allowed
Legislation
Airspace
Weather
Something went wrong
Cannot publish this operation, some parameters do not comply with the required input.
The maximum duration of an operation needs to be restricted to 24.00 hours.
OK
Operation Area
Operation Parameters
Edit
Operation type
VLOS
Certification Level
Basic
Drone
Lockheed Martin - Indago
Pilot
Latulippe Pauline
Start time
20/05/2021 14:00:00
End time
22/05/2021 16:00:00

6.4. Step 2: Validate an operation

Once the operation flight zone is drawn and the operation parameters have been entered, you can validate the operation by clicking on the **[Validate]** button at the top right of the screen or by clicking on the ✓ button at the top right of the map.

The validation consists in verifying that the operation, as defined by its flight zone and parameters, complies with applicable rules and regulations.

The validation results are displayed in a sidebar at the righthand side of the screen. The validation details are grouped in categories that you can expand (⌄ icon) or collapse (⌃ icon) to display or hide the validation details.

The validation results are provided in two forms:

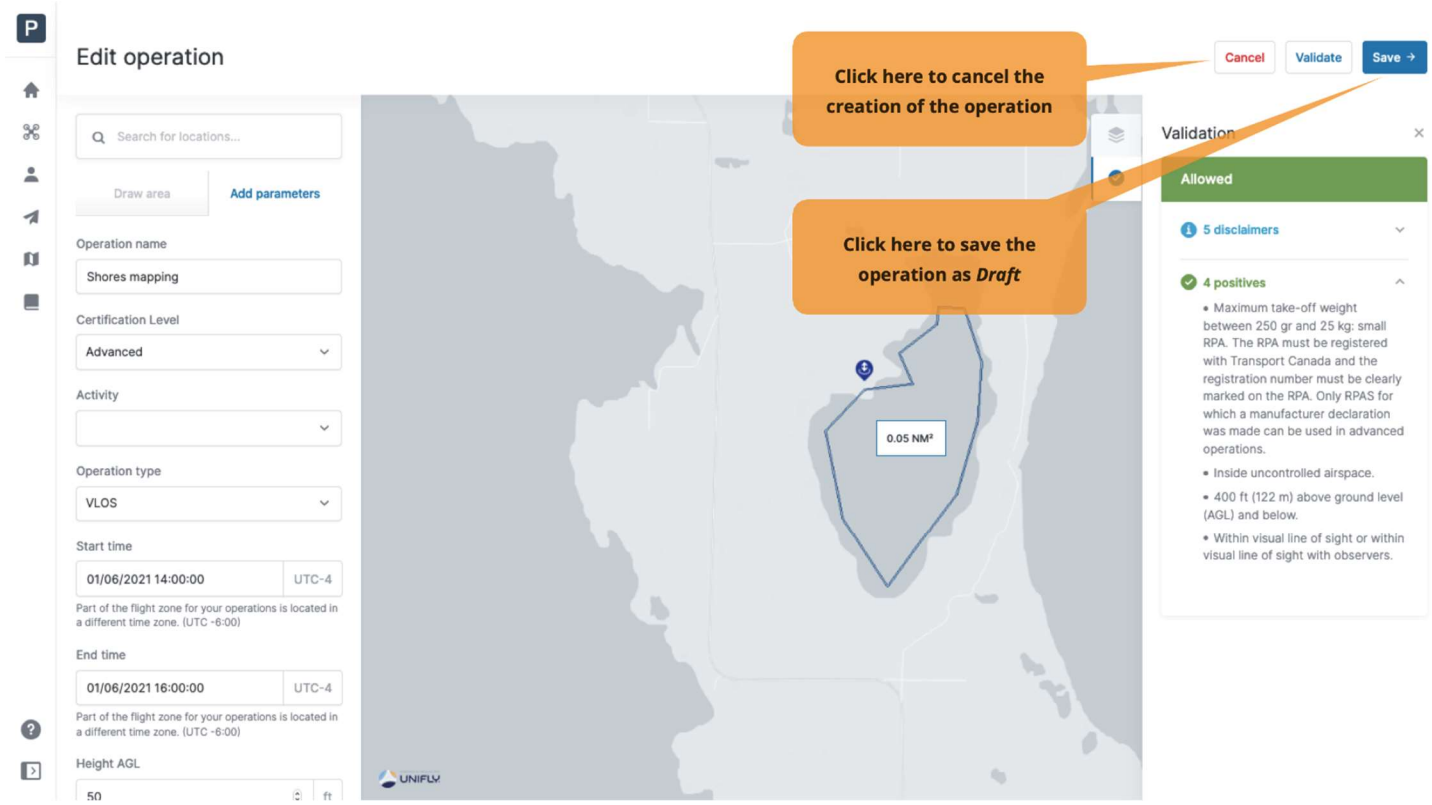
1. The overall validation result: indicates whether the operation is allowed (green colour code), comes with warnings or actions required (orange colour code), or is not allowed (red colour code).
2. The result categories: each category provides detailed information about the rules that the operation is or is not complying with, as well as possible warnings, actions required, and disclaimers that the pilot should keep in mind when conducting the operation.

Make sure to check all validation information provided by scrolling through the full list and reading all validation details.

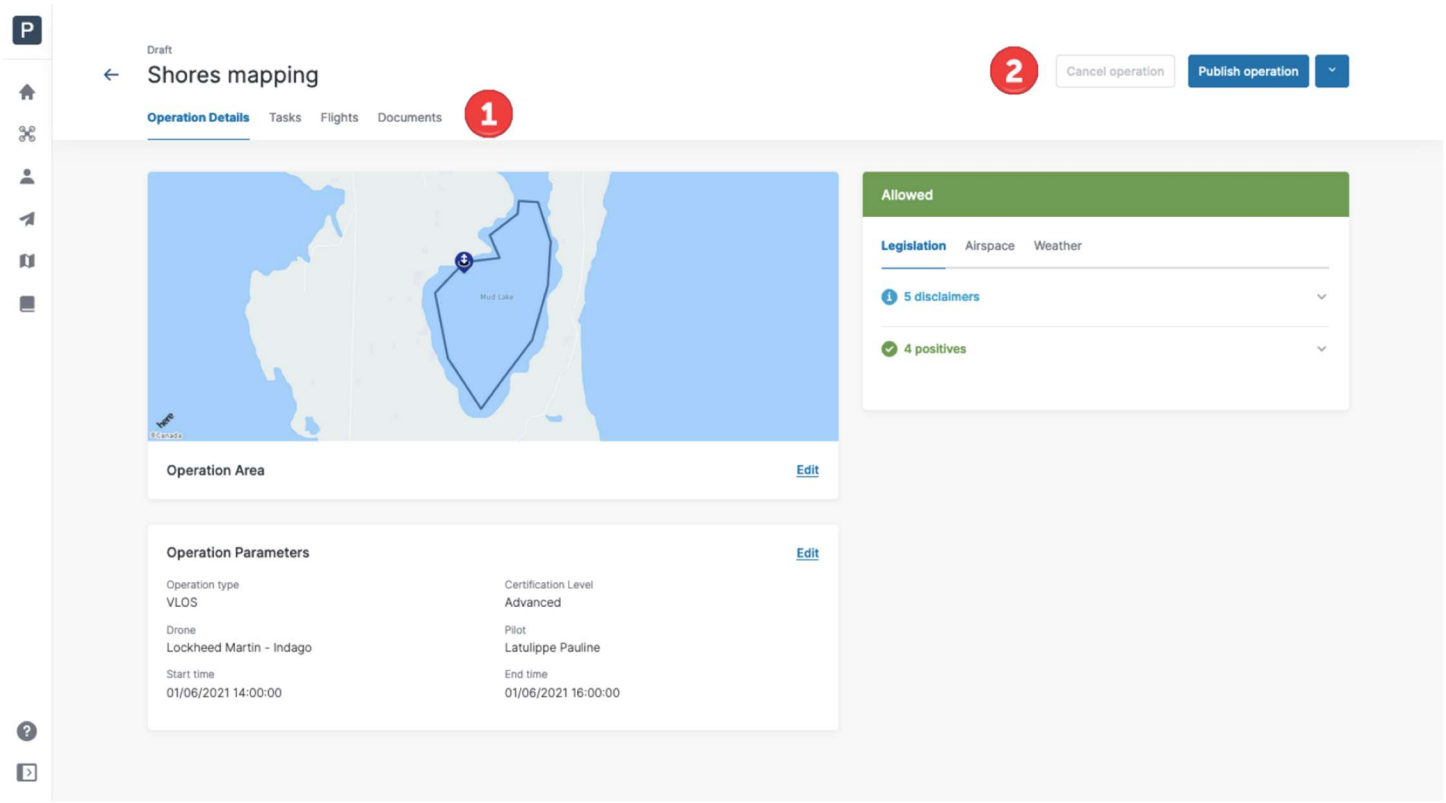
If necessary, adapt the operation flight zone and/or parameters until you get the desired validation result before proceeding.

6.5. Step 3: Save an operation as a *Draft*

Any time during the planning of an operation, you can use the **[Cancel]** button at the top right of the screen to cancel the creation of the operation, or the **[Save →]** button to save the operation as a *Draft*.



After clicking on the **[Save →]** button, the operation screen will be displayed, providing access to the following information:



① Tabs at the top left of the screen:

- The *Operation Details* tab: provides an overview of the operation's characteristics including the flight zone and parameters as previously entered. See section Edit a draft operation for more details.
- The *Tasks* tab: provides information about tasks that need to be completed to perform the operation. An example of a task is a permission request. See section Step 5: Manage tasks and permission requests for more details.
- The *Flights* tab: provides an overview of the drone flights conducted for this drone operation. See section Log a flight for more details.
- The *Documents* tab: to add and manage the documents associated with the operation. See section Associate documents with a drone operation for more details.

② Three buttons at the top right of the screen:

- The **[Cancel operation]** button: to delete a published operation. This button is only active after the operation has been published and is inactive for draft operations.
- The **[Publish operation]** button: to move the operation out of the draft status. Where applicable, publishing an operation also triggers operation-related tasks such as sending permission requests to NAVCANADA.
- The ⌄ button: provides additional functionalities such as the possibility to *Edit*, *Copy*, or *Delete* the operation draft, as well as the creation of a *Flight report*.

6.5.1. Edit a draft operation

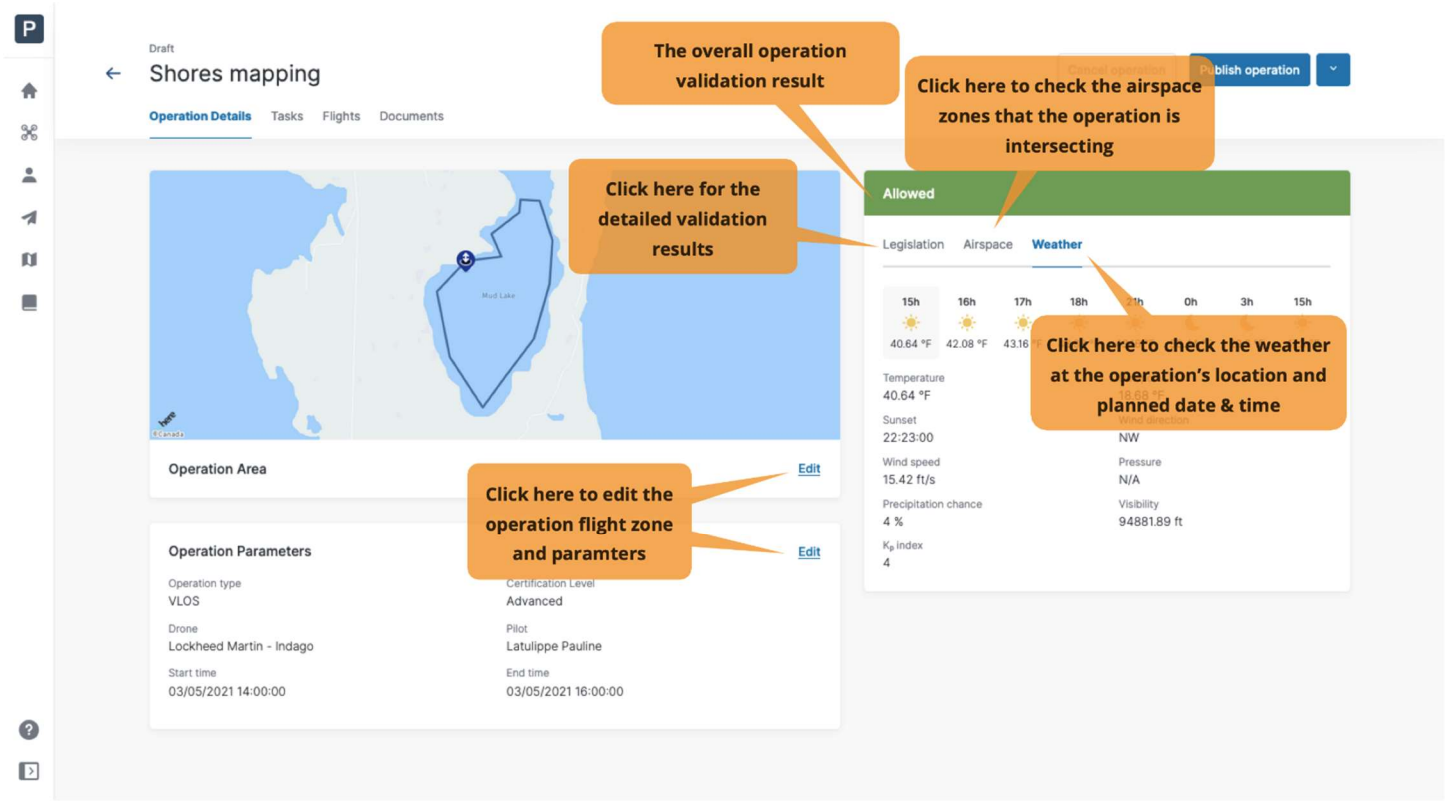
The *Operation Details* tab provides a complete overview of the operation's characteristics, including the flight zone and the operation parameters. This tab can be accessed when saving a new operation as a draft, or by clicking on an existing operation in the operations table.

Two *Edit* links allow you to edit the flight zone and the operation parameters. Clicking on either of these links will bring you back to the operation planning screen as described in section Step 1: Plan an operation.

This tab provides three additional tabs under the overall validation result, on the right of the screen:

- *Legislation*: shows the result categories and the detailed information about the rules that the operation is or is not complying with, as well as possible warnings and disclaimers that the pilot should keep in mind when conducting the operation.
- *Airspace*: shows the geozones that the operation flight zone is intersecting.
- *Weather*: shows the weather forecast for the operation's location and planned date and time.

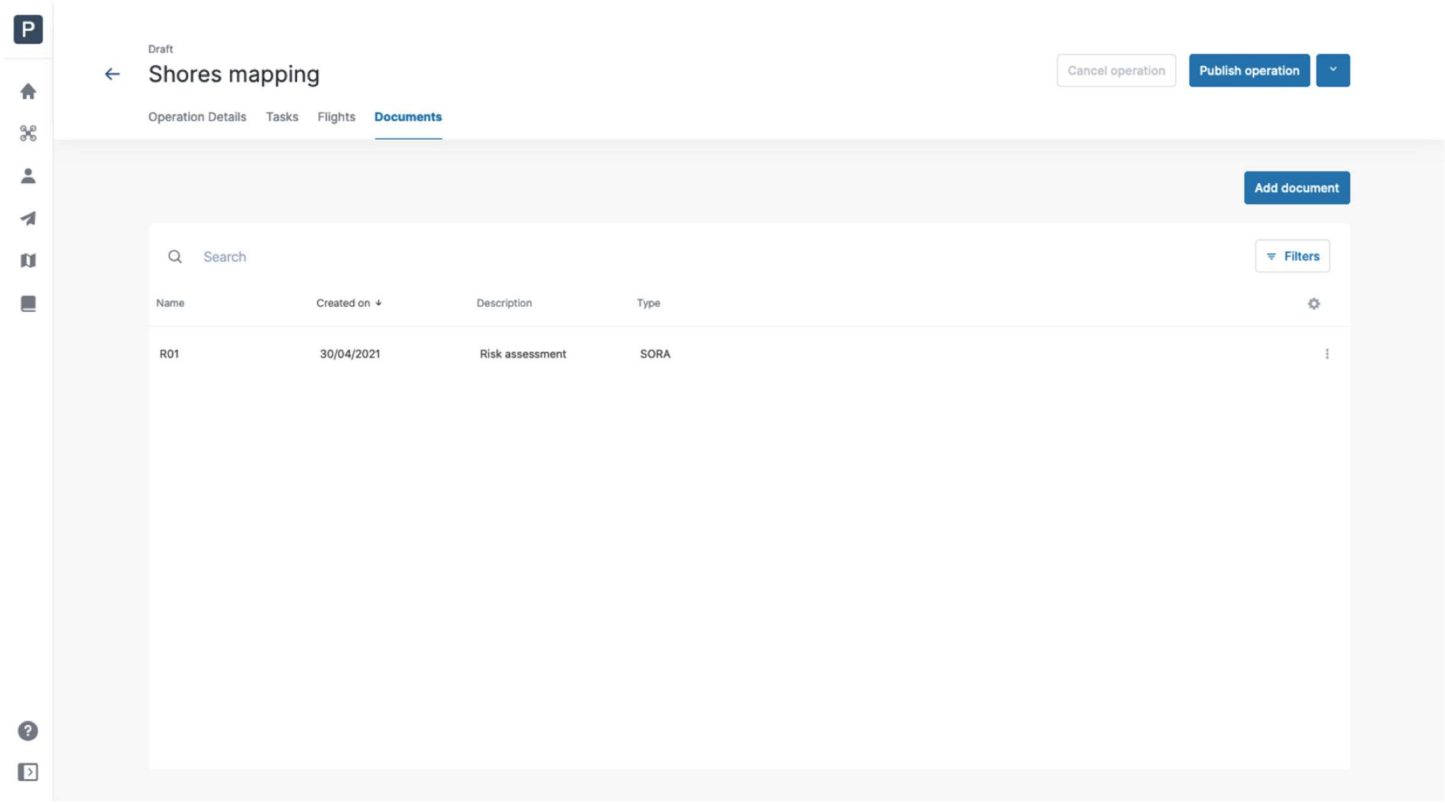
> Weather forecast information is only available for operations planned up to 7 days in advance.



6.5.2. Associate documents with a drone operation

The *Documents* tab lists all documents related to the operation. You can upload as many documents as needed, including Specific Operations Risk Assessment (SORA) documents.

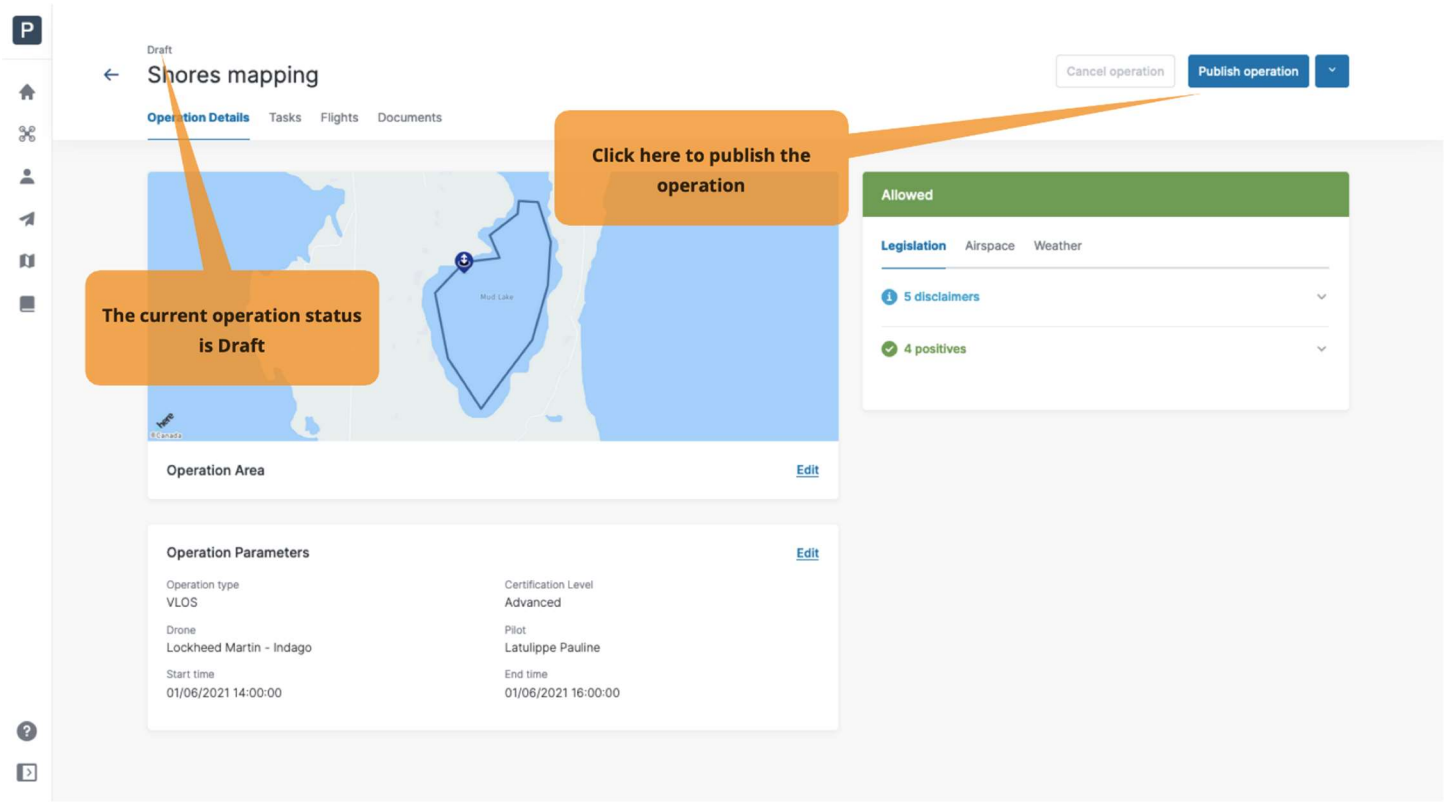
The procedure to upload documents is similar to the procedure described in section Associate documents with a drone.



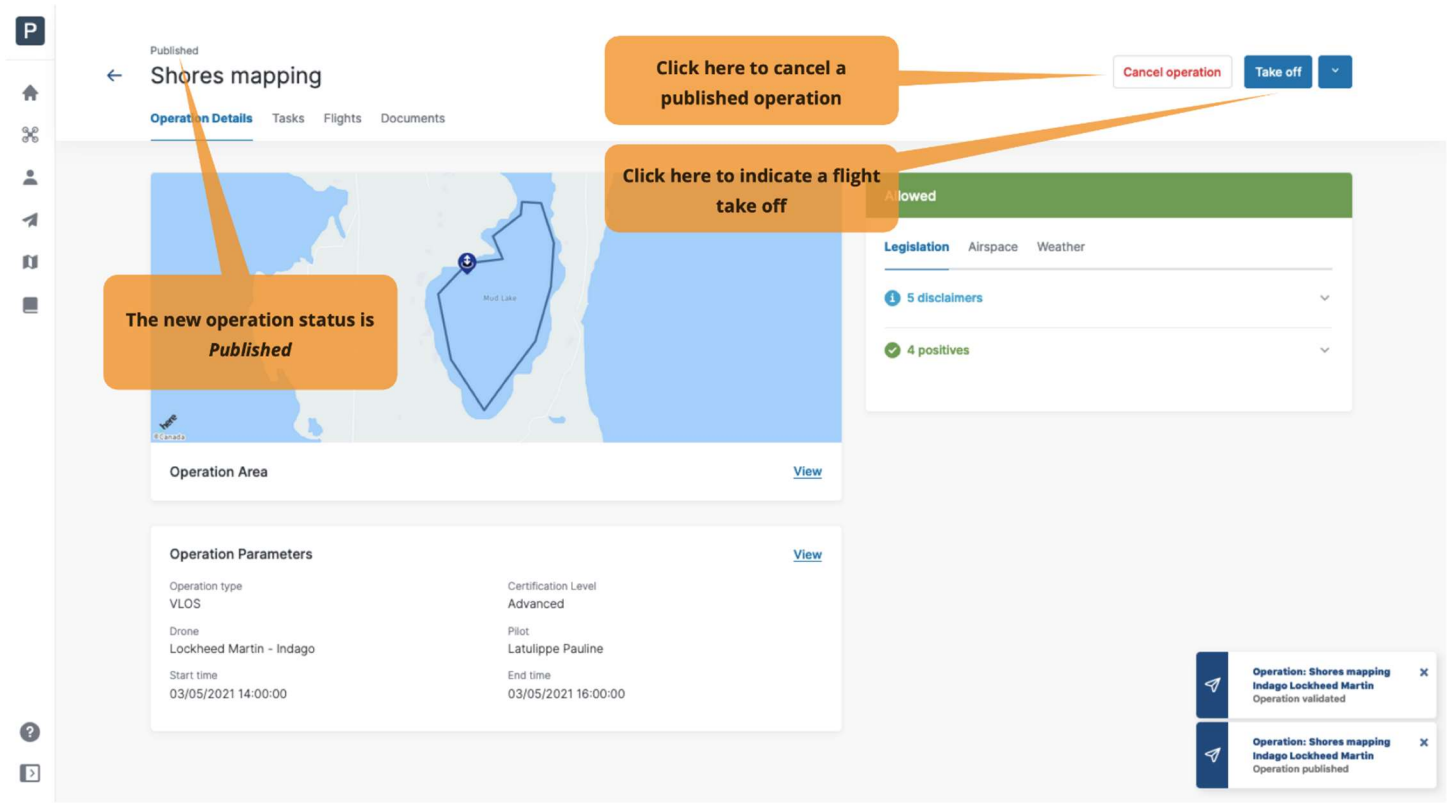
6.6. Step 4: Publish an operation

Once an operation has been defined and validated (see above steps 1 to 3), it must be published. Publishing an operation is required, for example, to submit tasks such as permission required.

When an operation is in *Draft*, the **[Publish operation]** button is displayed at the top right. The operation status is also indicated above the operation's name:



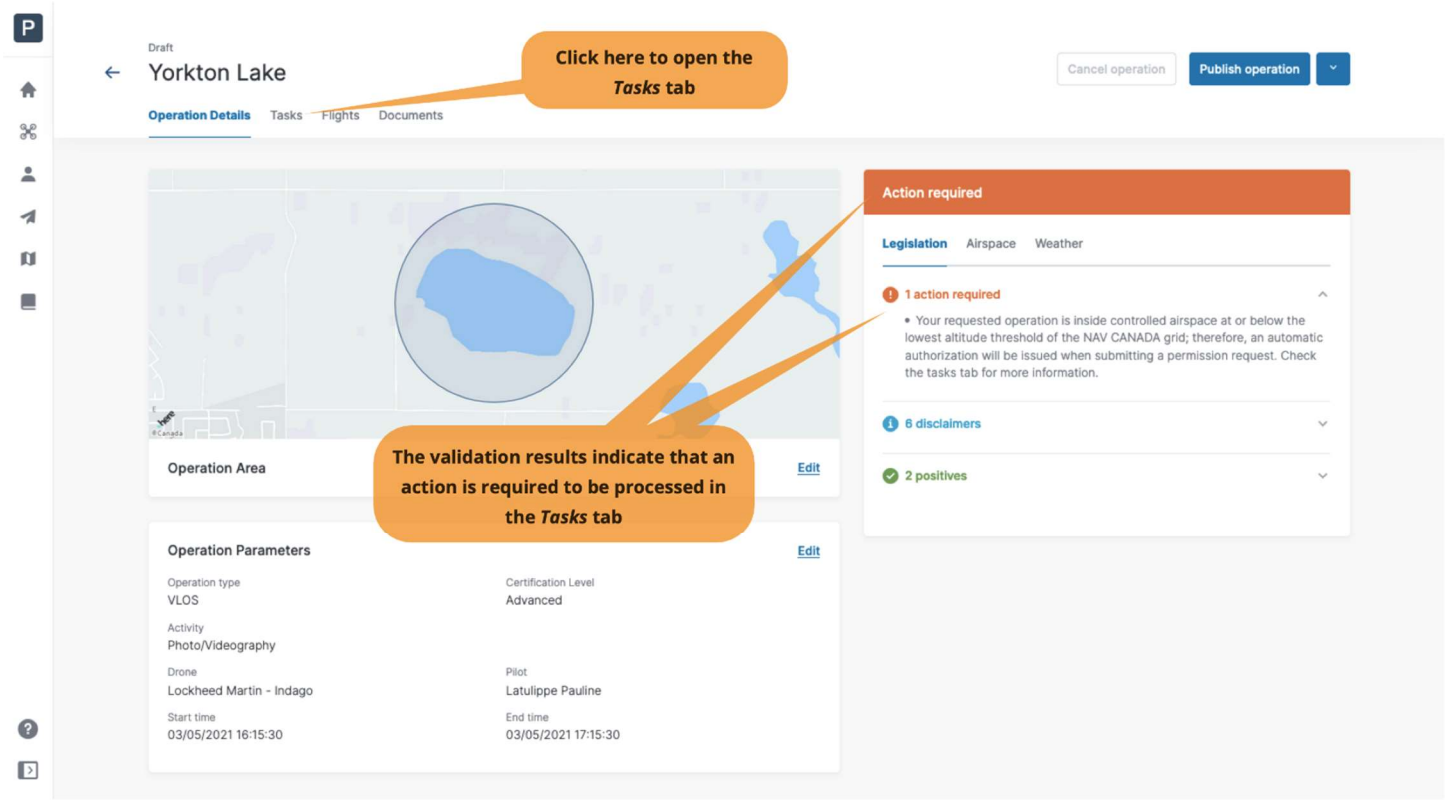
Once an operation is published, its status will change to *Published*. The **[Cancel operation]** button becomes active, the **[Publish operation]** button is replaced by the **[Take off]** button and a notification will pop up at the bottom right of the screen to notify that the operation has been published:



You will not be able to edit a drone operation after its publication. Do not publish an operation before you have finished editing it.

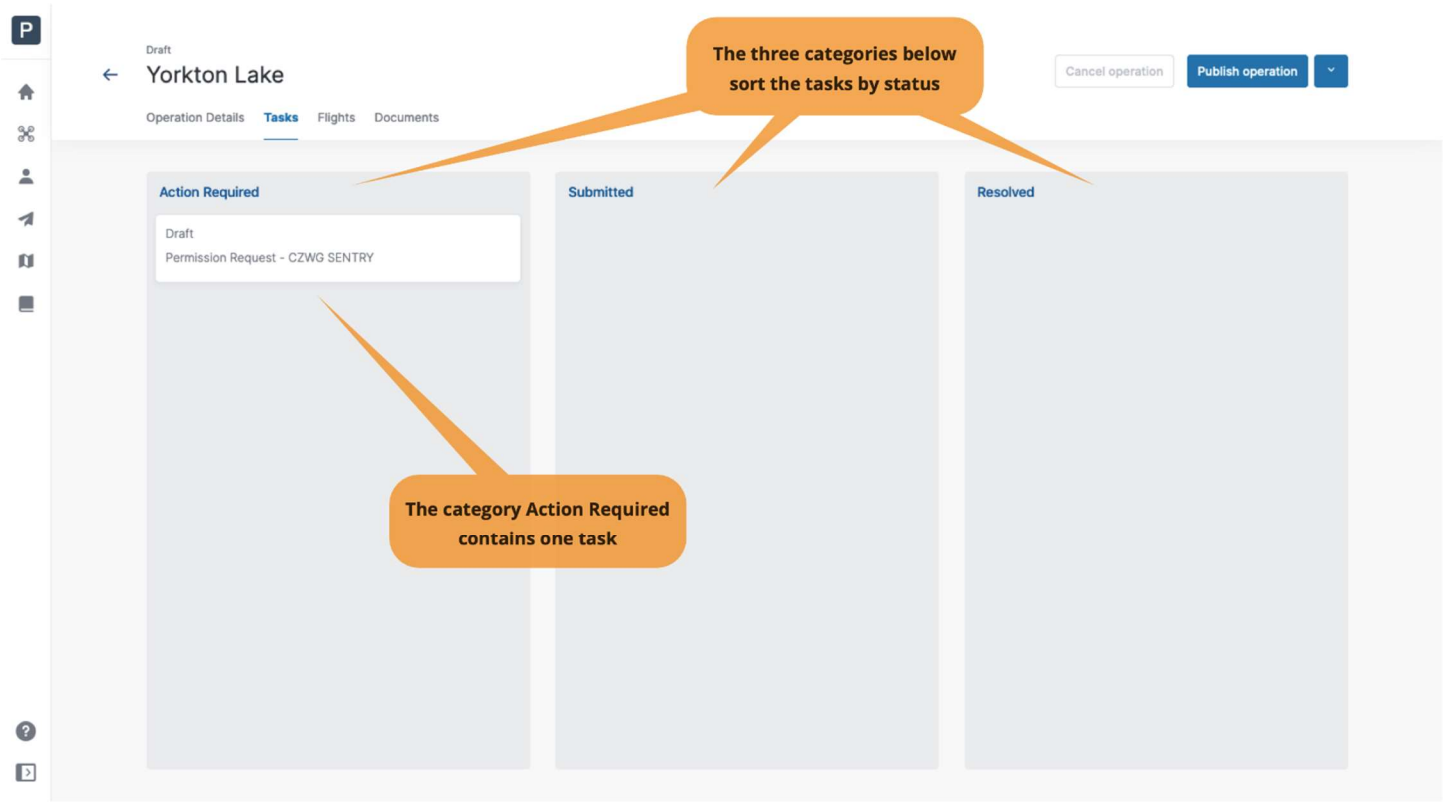
6.7. Step 5: Manage tasks and permission requests

As shown on the example below, the validation results indicate whether actions are required for the operation. Additionally, a red notification icon is displayed to the left of the Tasks tab to indicate there are actions required. The notification icon contains a number which corresponds with the number of actions outstanding. The *Tasks* tab allows the user to process the actions required.



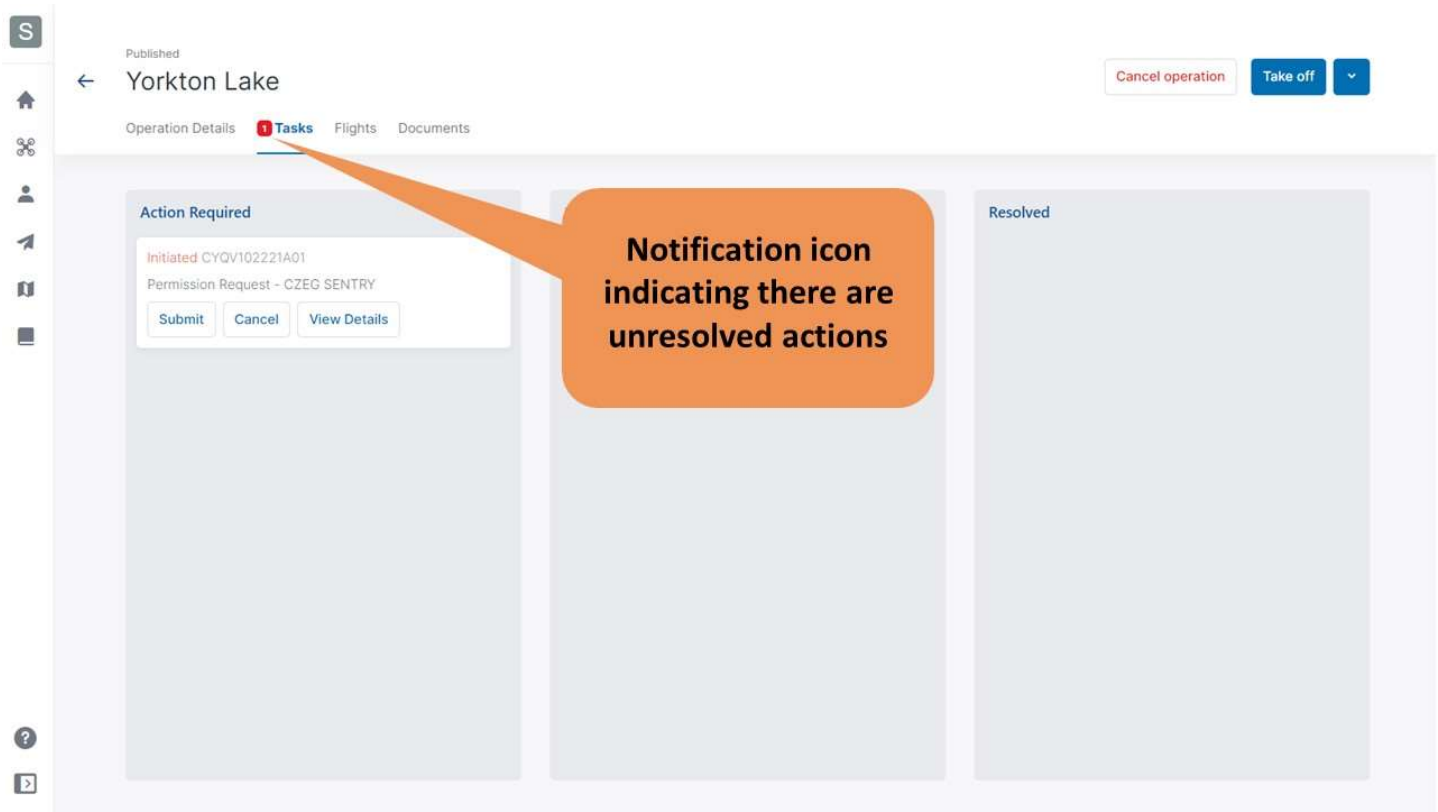
The *Tasks* tab lists the *permission requests* related to the operation and displayed in the following categories based on their status:

- Action Required: permission requests that need to be processed.
- Submitted: permission requests that have been submitted to NAV CANADA.
- Resolved: permission requests that have been resolved.



The validation results will indicate when you must obtain a permission to conduct the drone operation.

A red notification icon will also appear to the left of the Task tab when there are unresolved actions applicable to your operation.



6.7.1. Why do you need permissions?

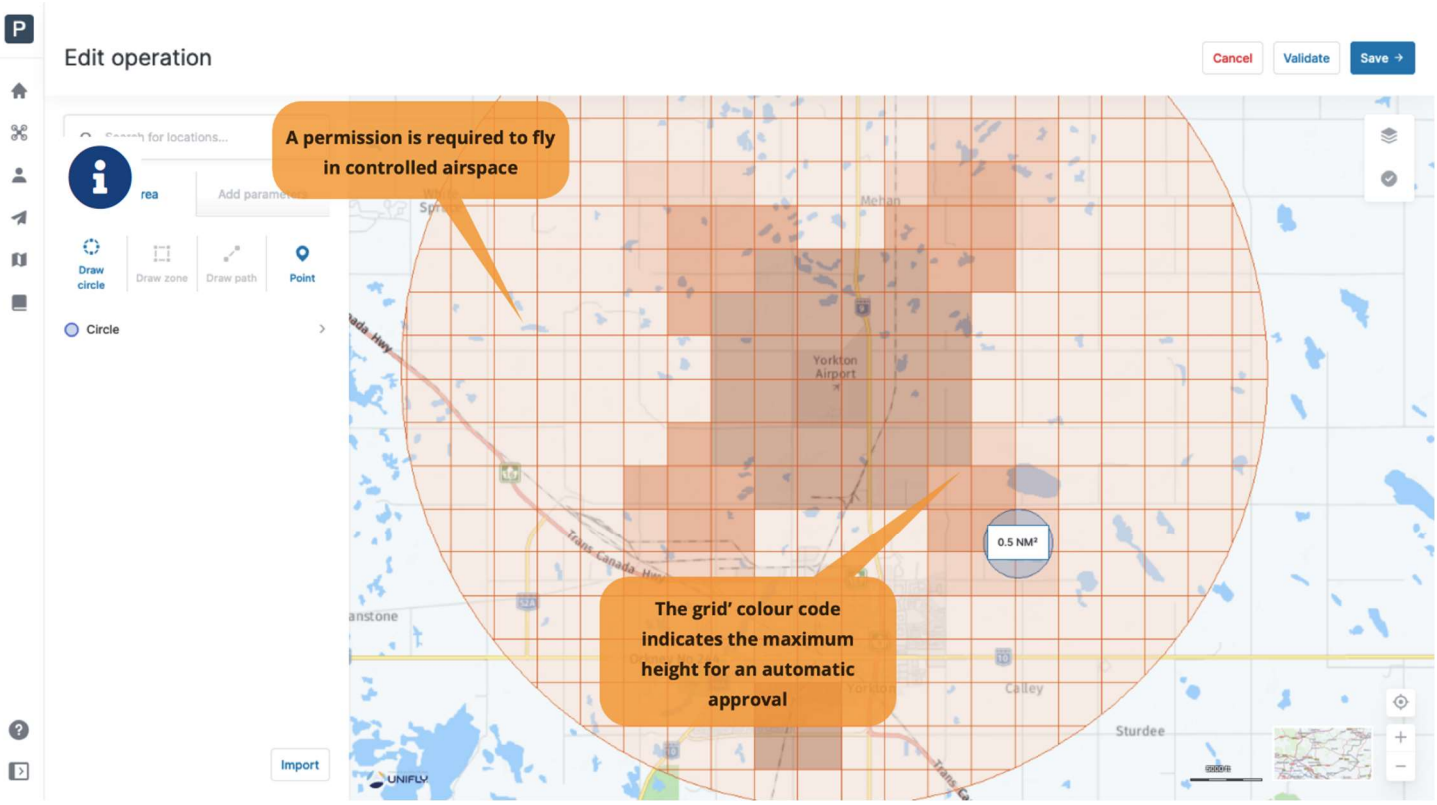
As defined in the *Canadian Aviation Regulations* Part IX, permissions are required to conduct *Advanced* operations in airspace controlled by NAV CANADA.

Permission requests are evaluated either automatically or manually:

- *Auto Approval*: permission requests that are automatically approved in NAV Drone.
- *Further coordination required*: permission requests that require a review by NAV CANADA before they can be approved or rejected.

Whether a permission request is characterised as *Auto Approval* or *Further coordination required* depends on the height and location of the operation's flight zone.

When creating a flight zone for an *Advanced* operation, airspace controlled by NAV CANADA is identified on the map by a grid with a colour assigned to each cell. That colour code indicates the maximum height at which an operation's permission request can be automatically approved in NAV Drone. Above that maximum height, permission requests will require further review by NAV CANADA when submitted.



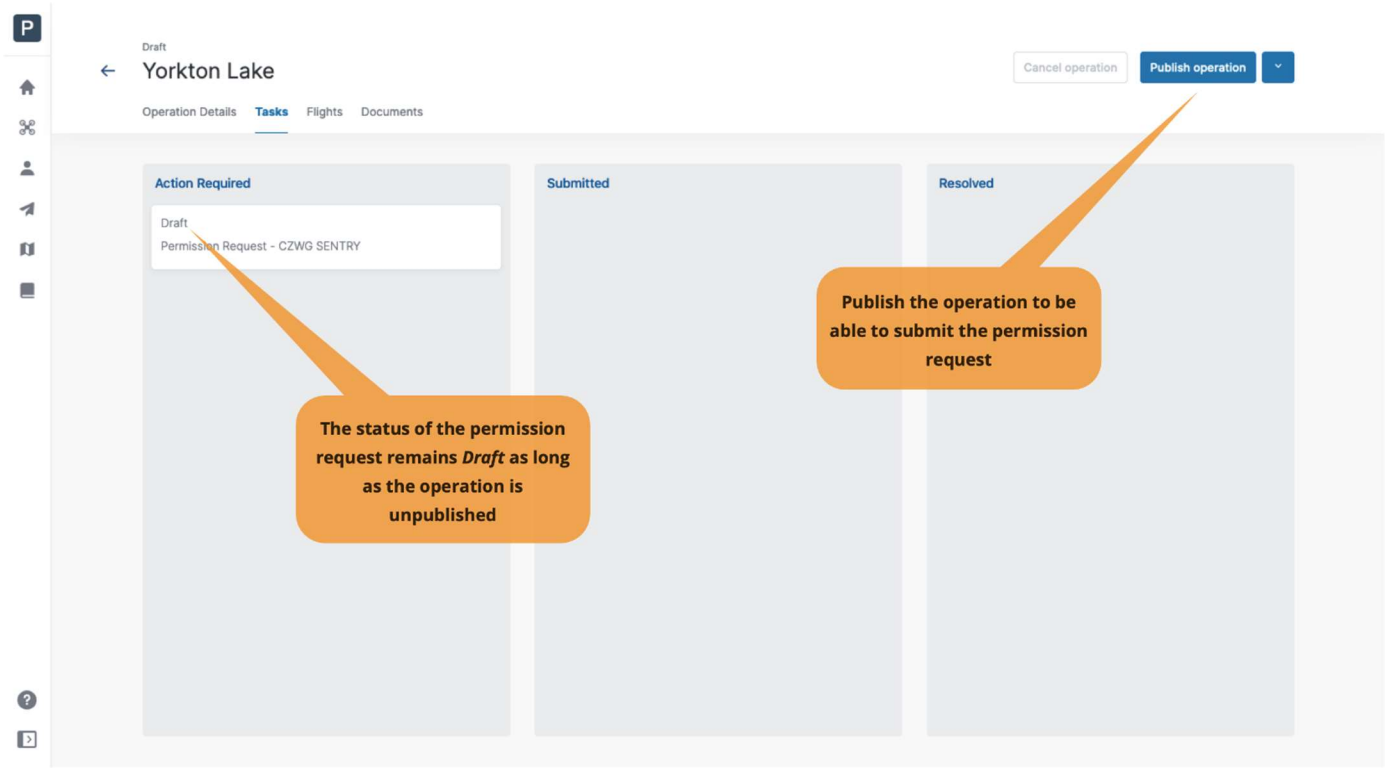
The sections below present the workflow to submit and track the status of a permission request.

> If the operation flight zone overlaps multiple NAV CANADA control zones, NAV Drone will generate a separate task (permission request) for each affected control zone in the Action Required category. Each task will need to be submitted and assessed independently.

6.7.2. Permission requests eligible for auto approval

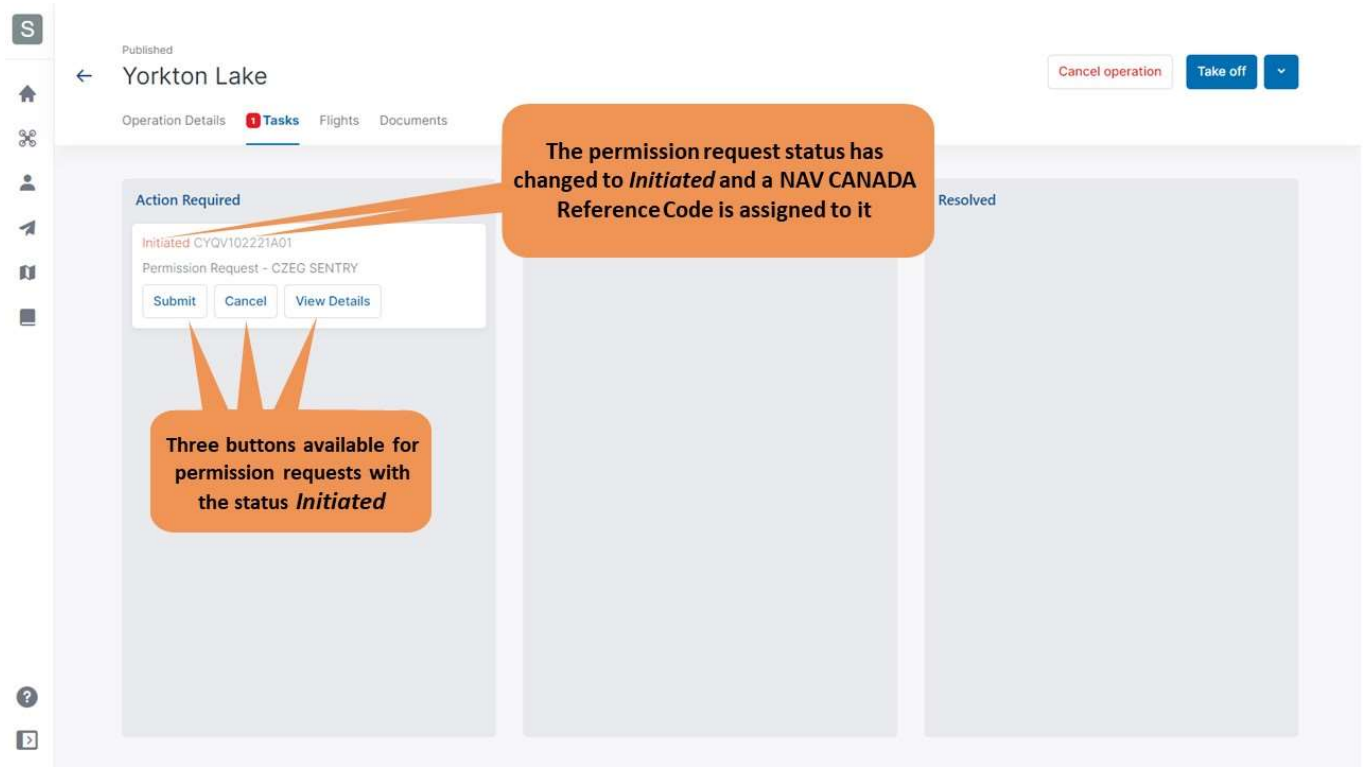
In airspace controlled by NAV CANADA, when the height of an *Advanced* operation is at or below the maximum height of the affected grid cells on the map, the permission request may be automatically approved in NAV Drone once submitted.

As indicated below, a permission request associated with a *Draft* operation will also have the status *Draft*.



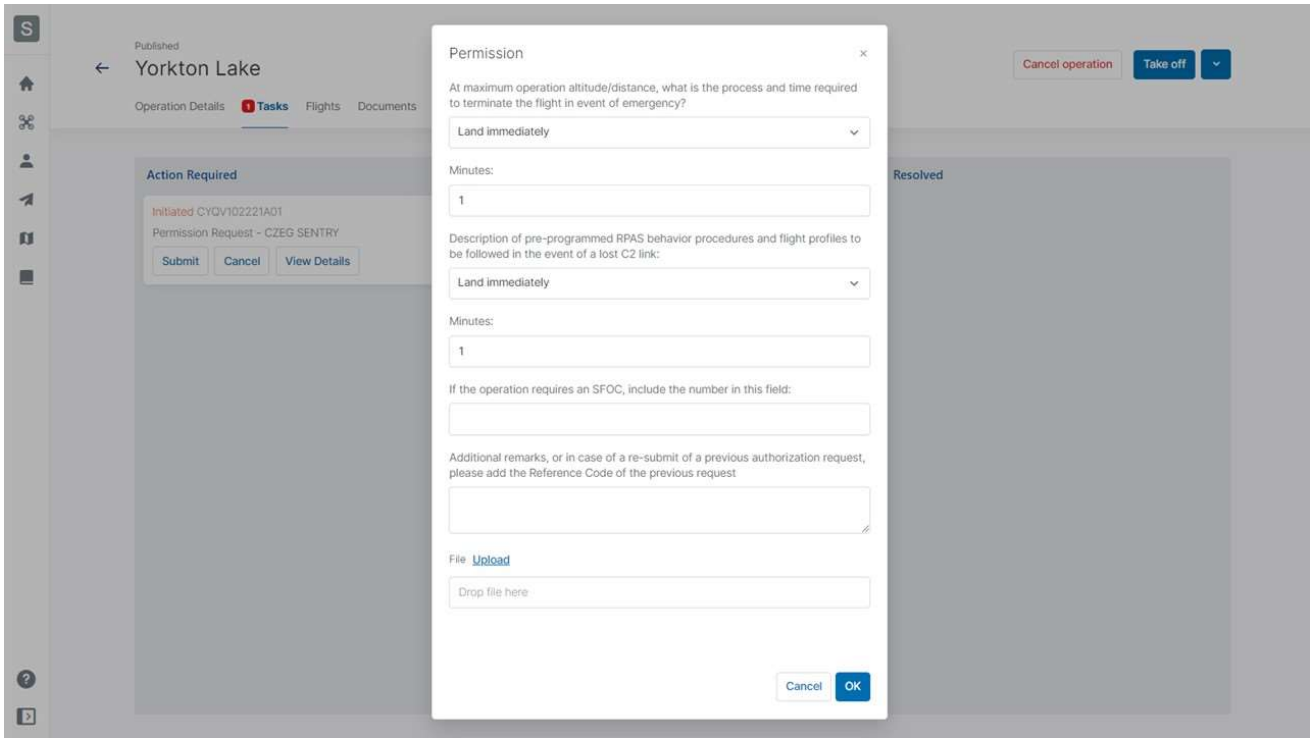
To submit a permission request, make sure that the operation has been *Published*. See section Step 4: Publish an operation.

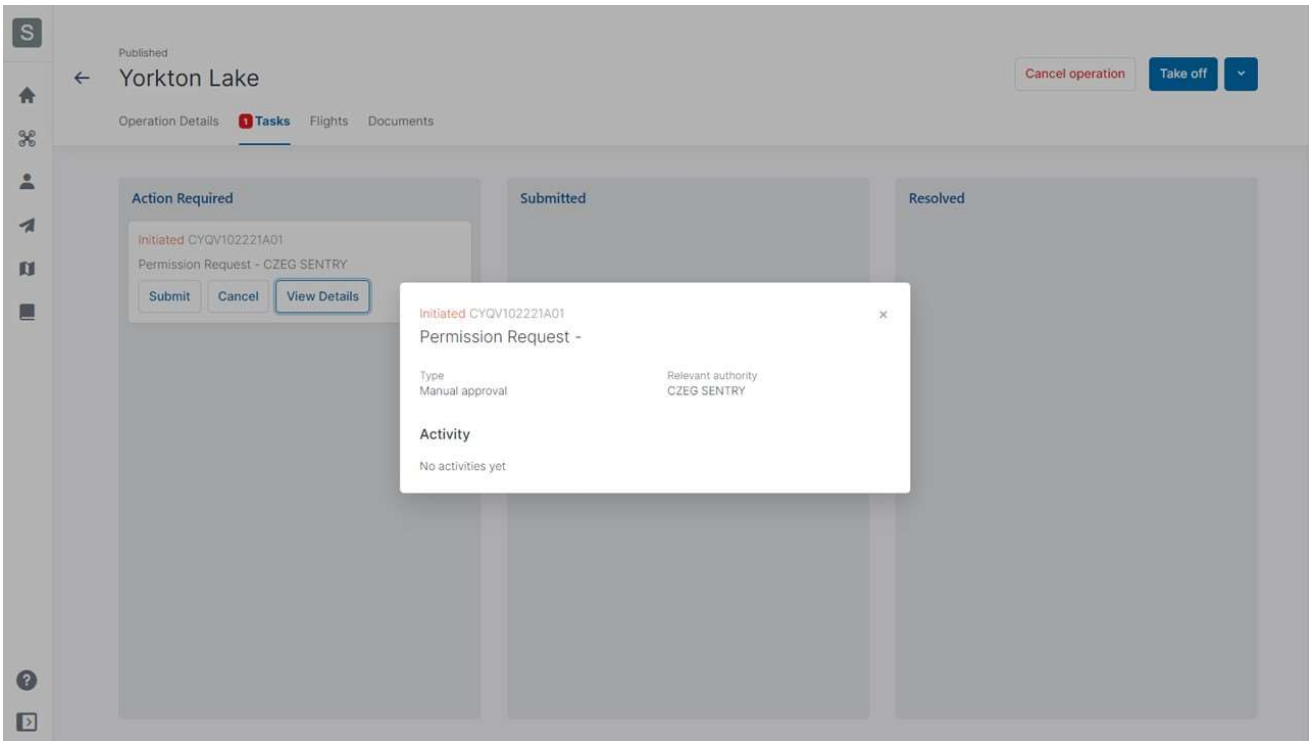
When the operation is published, the status of the permission request changes to *Initiated* and a *NAV CANADA Reference Code* is assigned to the permission request by NAV Drone.



Three buttons are available for permission requests with the status *Initiated*:

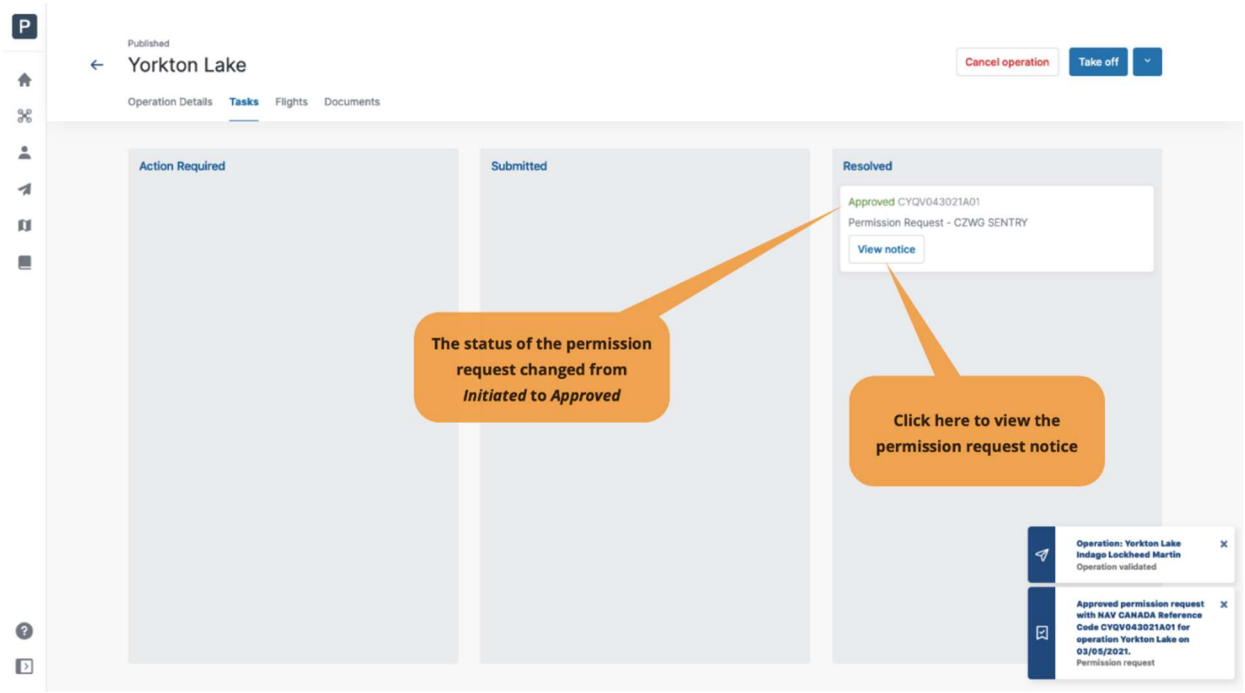
- *Submit*: clicking on that button will display a dialog box to provide additional information, as shown below.
- *Cancel*: clicking on that button will cancel the permission request.
- *View Details*: clicking on that button will provide additional information about the permission request, such as the relevant authority and the *Activity* (history of events associated with this permission request).



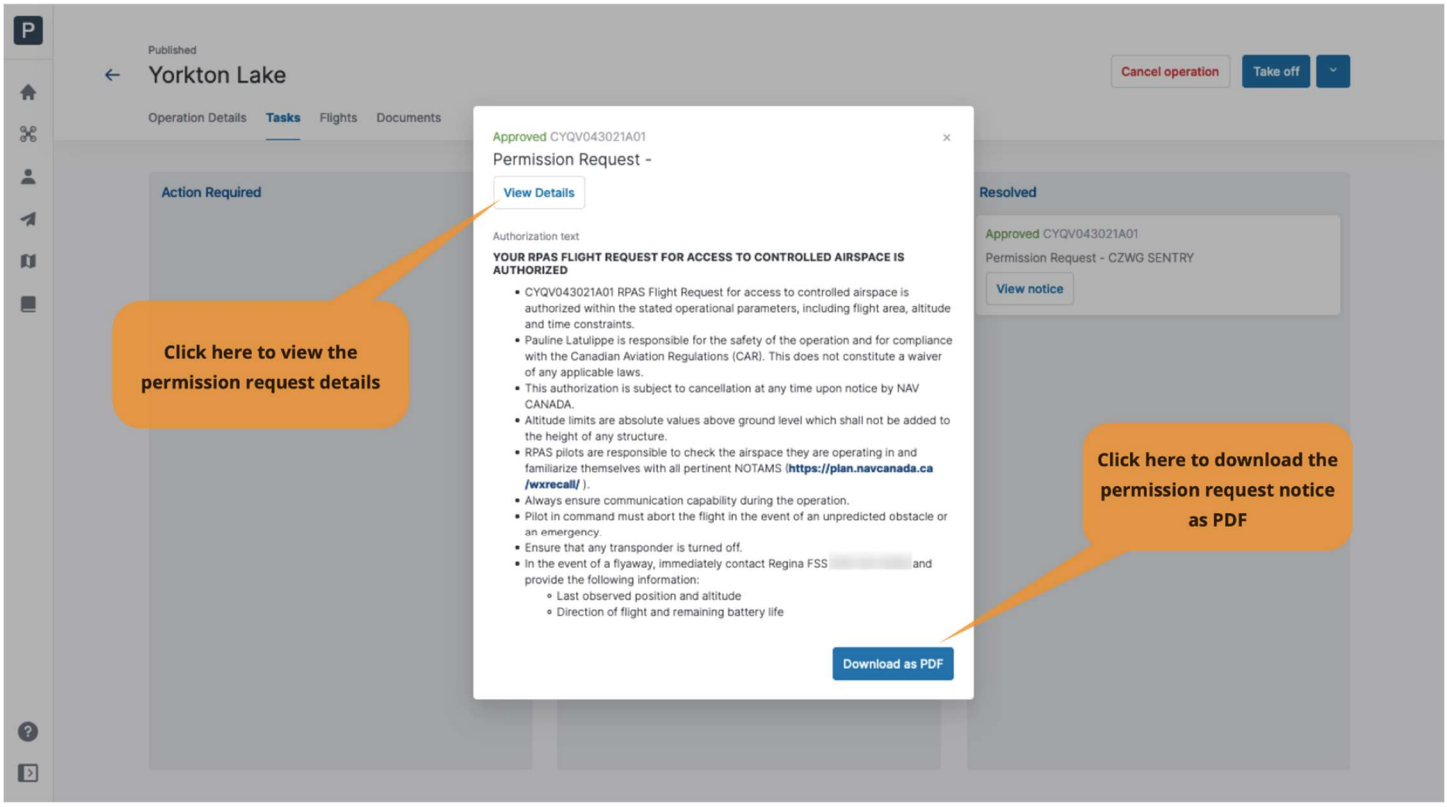


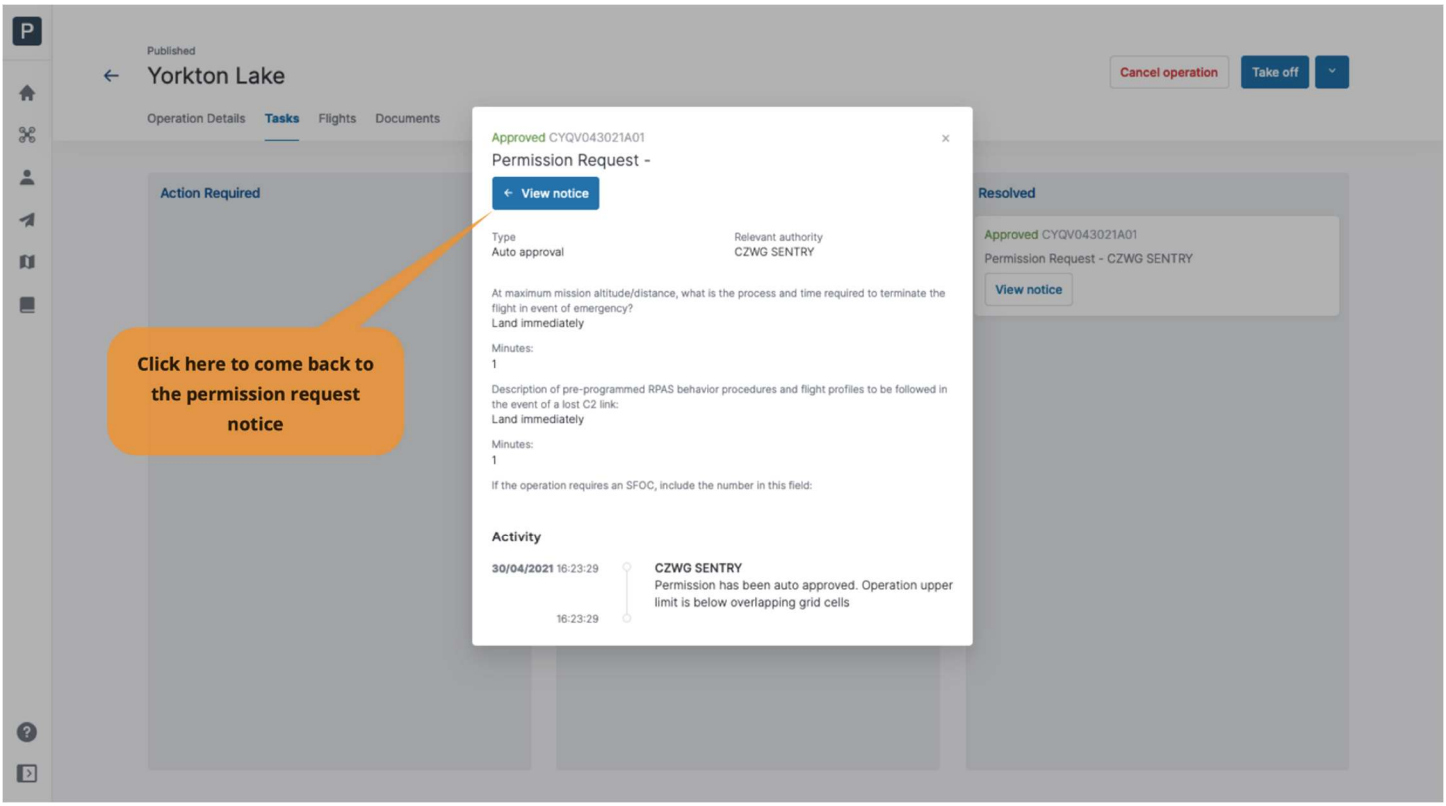
When a submitted permission request is eligible for auto approval, NAV Drone automatically approves the permission request and changes its status to *Approved*.

The approved permission request appears in the *Resolved* category and an email is sent to the user's email address.



The **[View notice]** button provides access to the permission request notice, which contains all information related to the permission request. This notice can be downloaded as a PDF as proof that the operation is allowed.



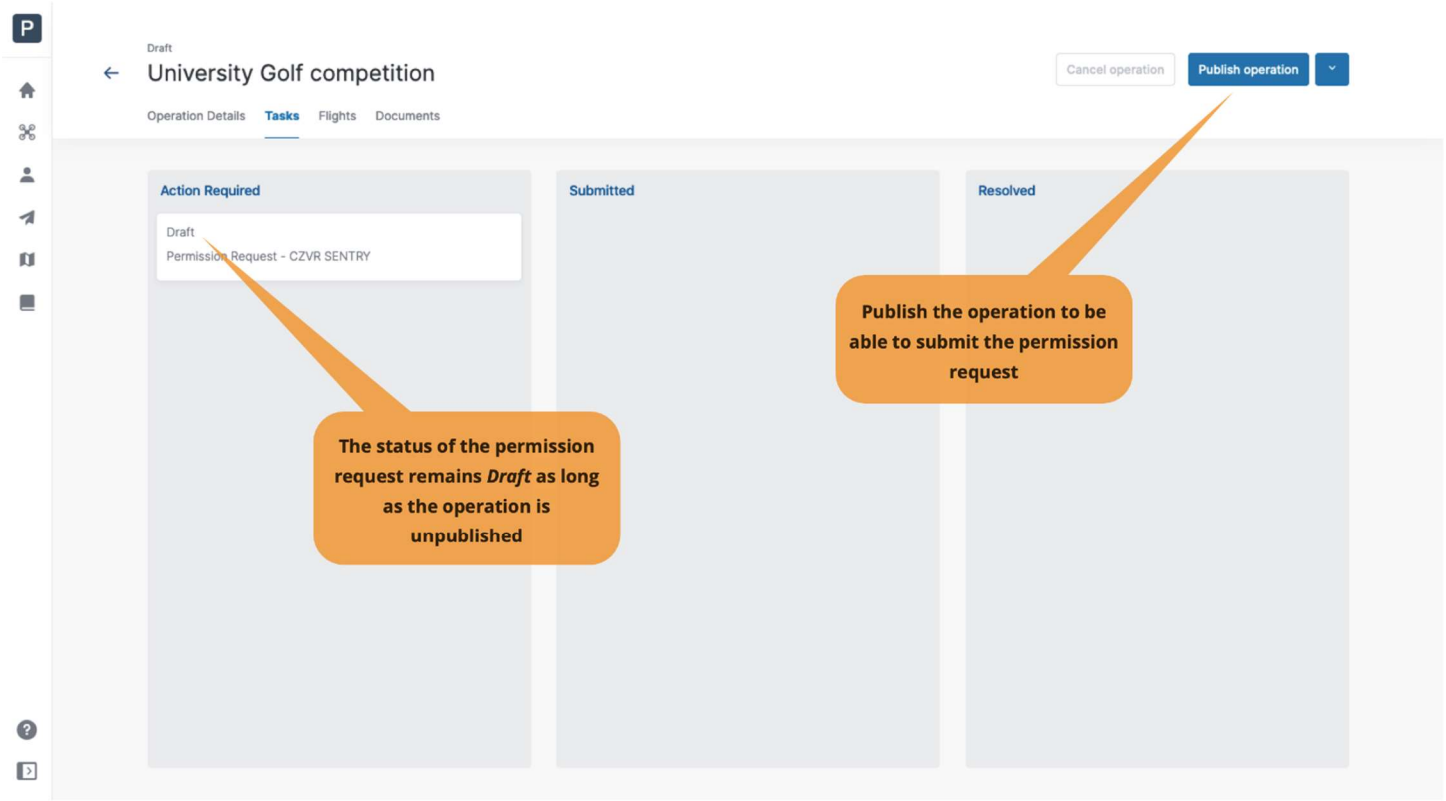


NAV CANADA reserves the right to rescind, at any time, a permission request that was approved. In that case, the operation is no longer allowed. See section Rescinded permission requests for more details.

6.7.3. Permission requests requiring further coordination

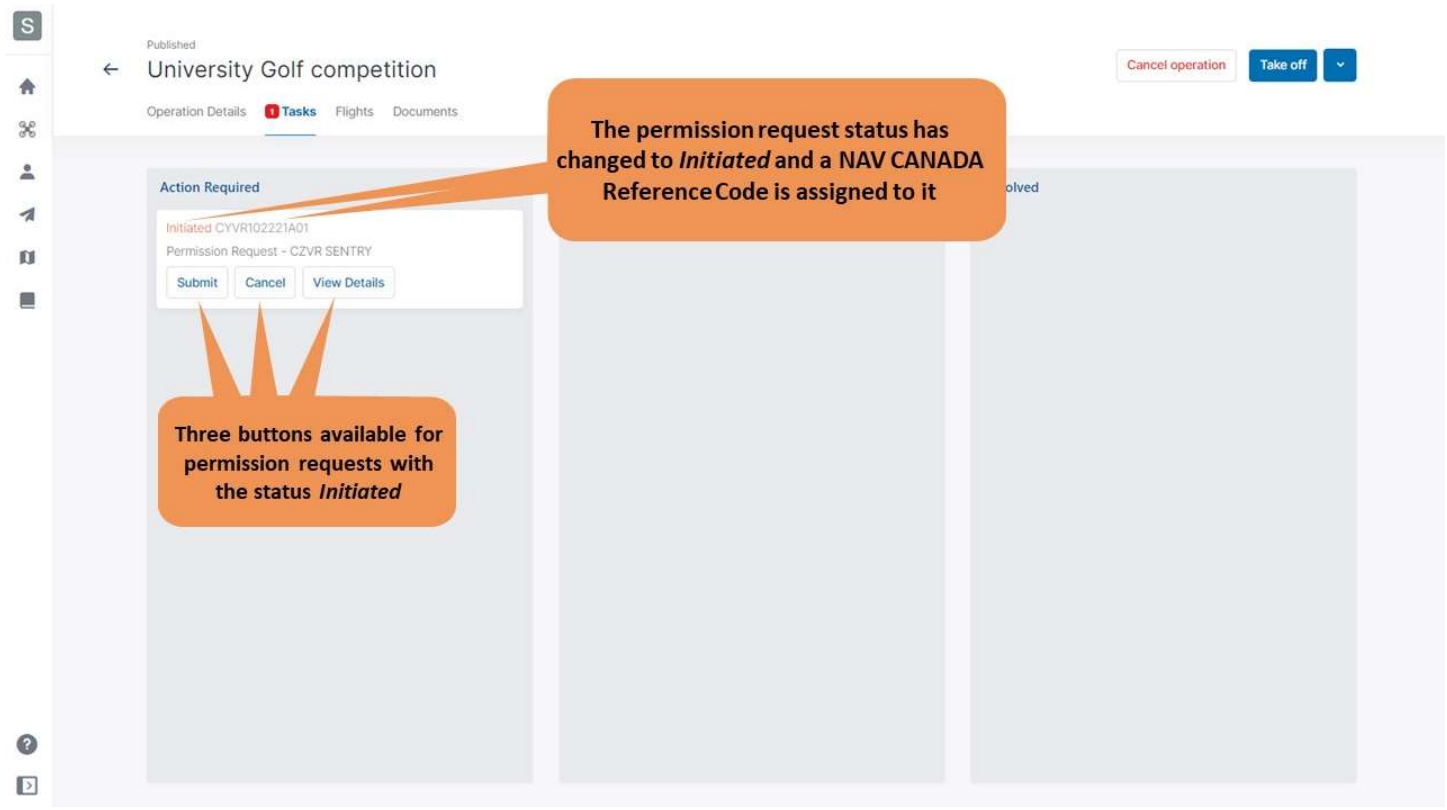
In airspace controlled by NAV CANADA, when the operation's height is above the maximum height of the grid cells on the map, the permission request will require a review by NAV CANADA once submitted.

A permission request associated with a *Draft* operation will have the status *Draft*, as indicated below.



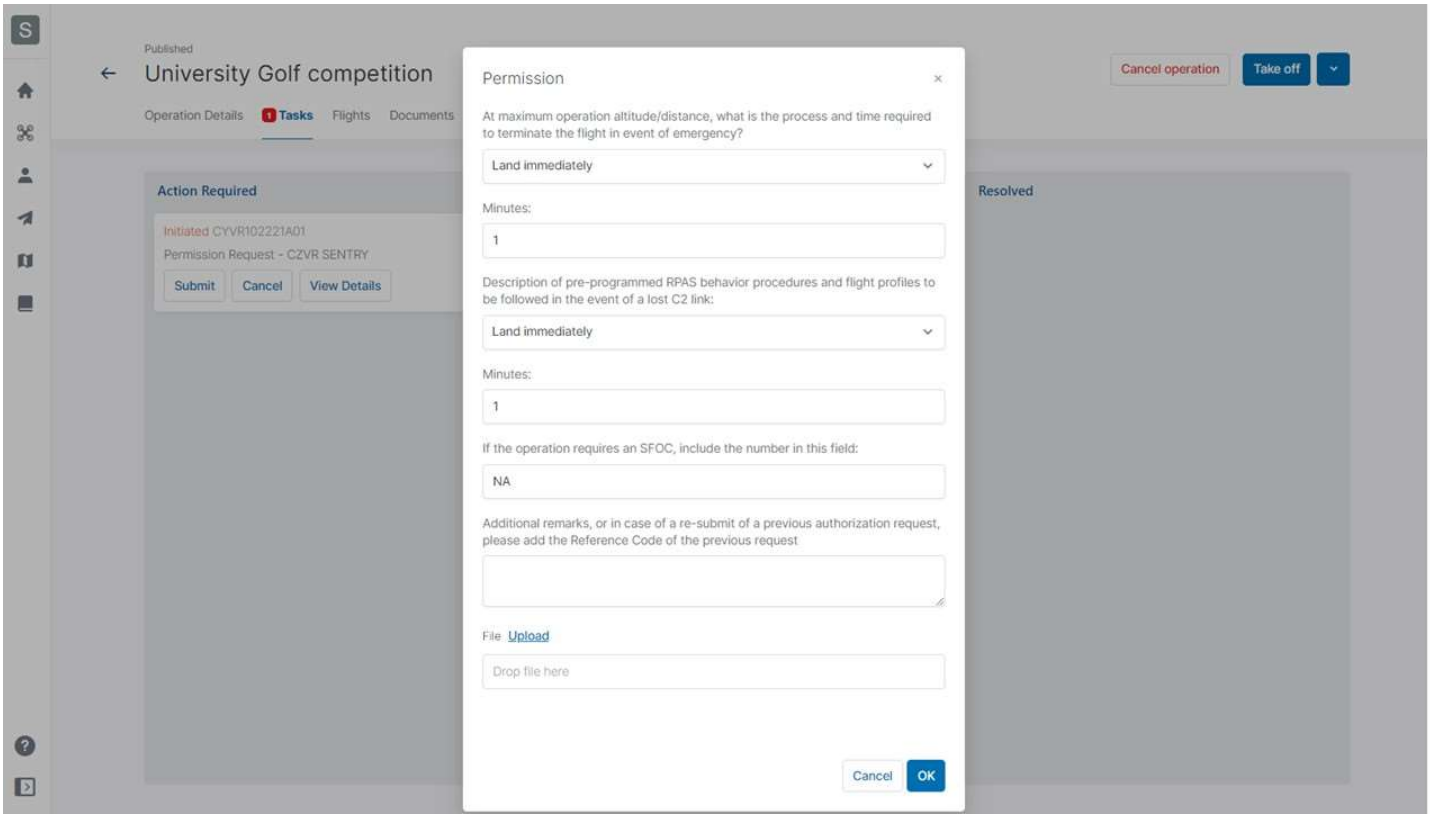
To submit a permission request, make sure that the operation has been *Published*. See section Step 4: Publish an operation.

When the operation is published, the status of the permission request changes to *Initiated* and a *NAV CANADA Reference Code* is assigned to the permission request by NAV Drone.

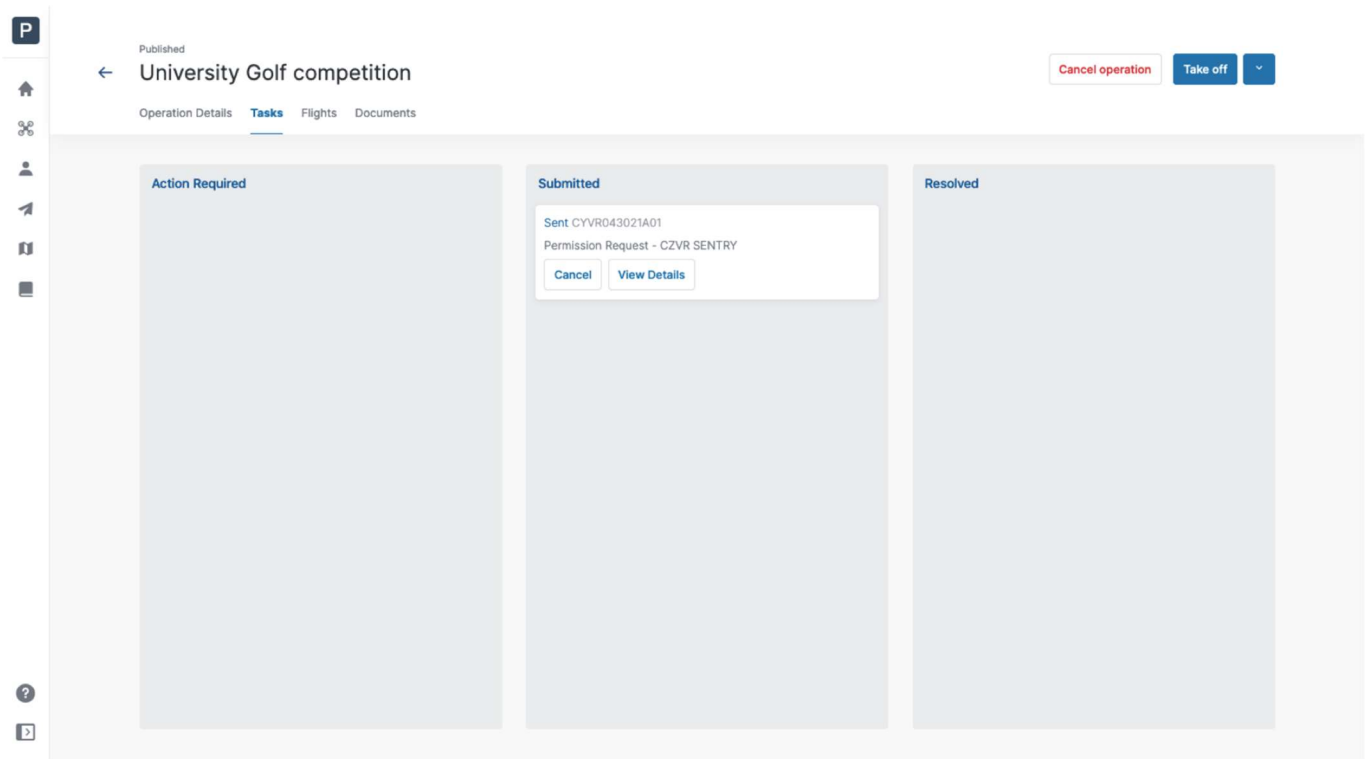


Three buttons are available for permission requests with the status *Initiated*:

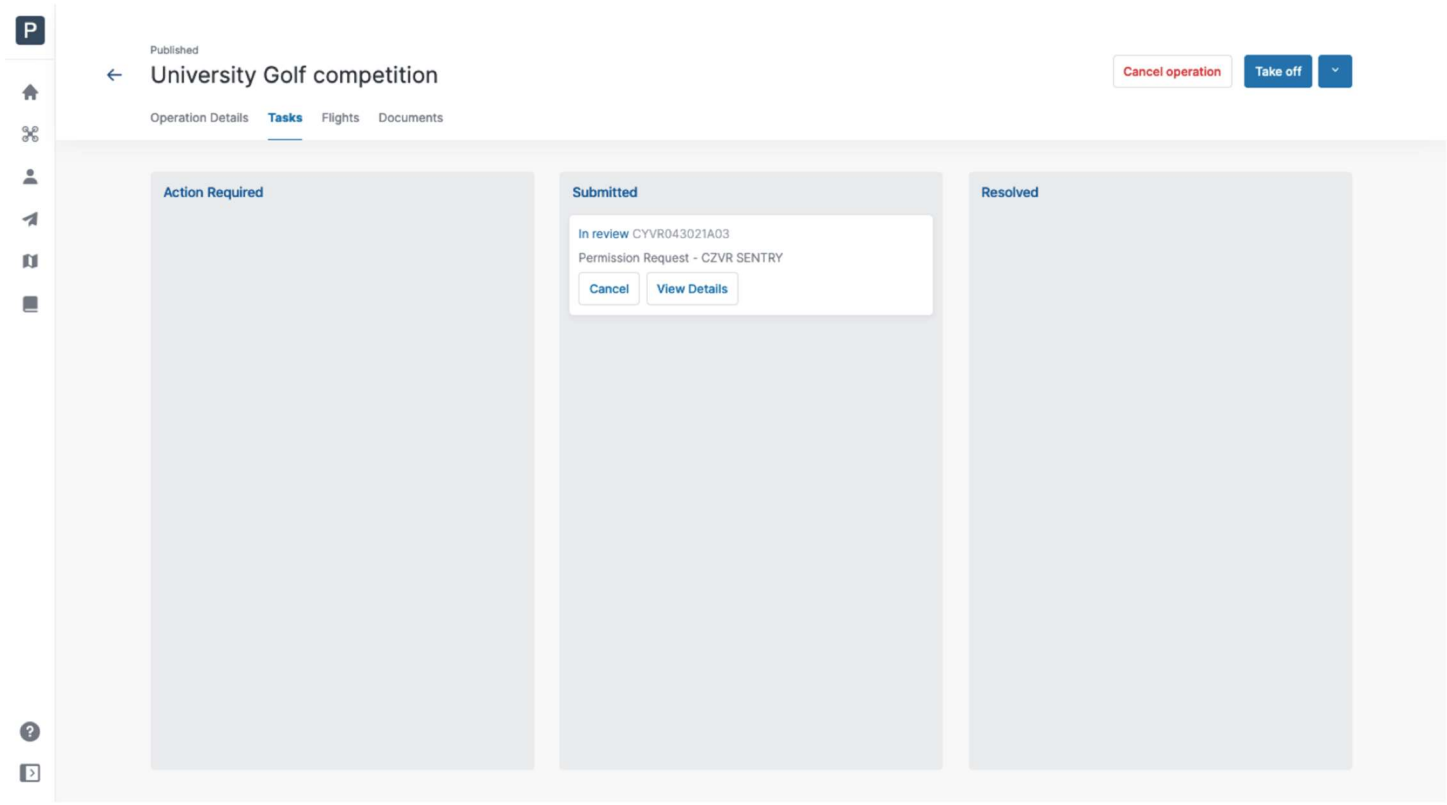
- *Submit*: clicking on that button will display a dialog box providing additional information, as shown below.
- *Cancel*: clicking on that button will cancel the permission request.
- *View Details*: clicking on that button will provide additional information about the permission request, such as the relevant authority and the *Activity* (history of events associated with this permission request).



When a submitted permission request requires further coordination, NAV Drone sends the permission request to NAV CANADA and changes its status to *Sent*, moving the permission request to the *Submitted* category. The user still has the option to cancel the permission request or to view the permission request details.



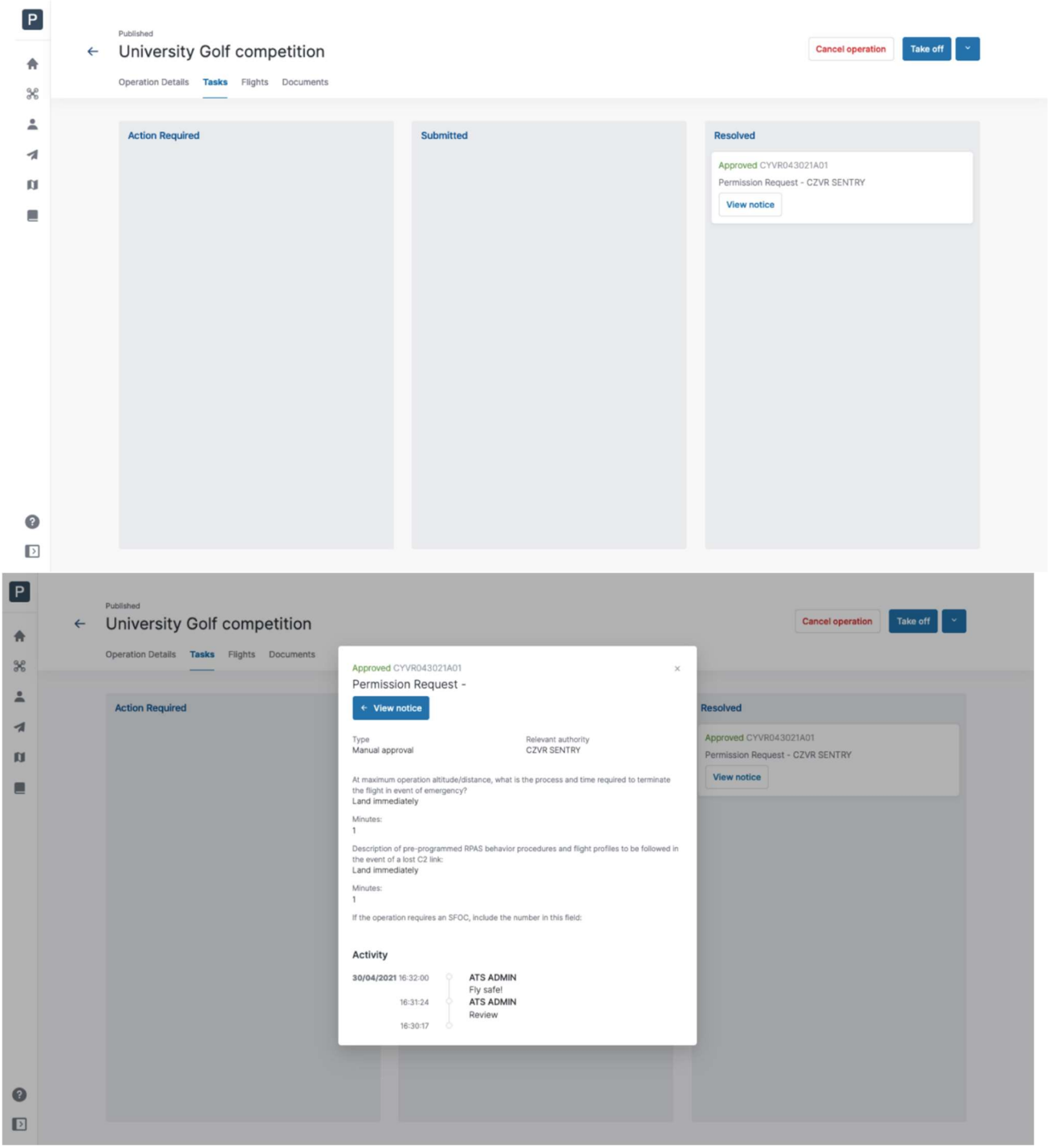
A permission request with a *Sent* status means that the permission request has been successfully submitted to NAV CANADA. When NAV CANADA starts the review, the company will change the status of the permission request to *In review* to notify the user.



The result of the review will be one of the following three options:

- *Approved*: after review, NAV CANADA determined that the operation is **allowed**.
- *Rejected*: after review, NAV CANADA determined that the operation is **not allowed**.
- *Needs action*: after review, NAV CANADA determined that an action by the operator is required before a decision can be made.

When a permission request has been *Approved*, it is moved to the *Resolved* category and an email is sent to the user's email address. The **[View notice]** button provides access to the permission request notice, which contains all information related to the permission request and can be downloaded as a PDF as proof that the operation is allowed.



When a permission request has been *Rejected*, it is moved to the *Resolved* category.

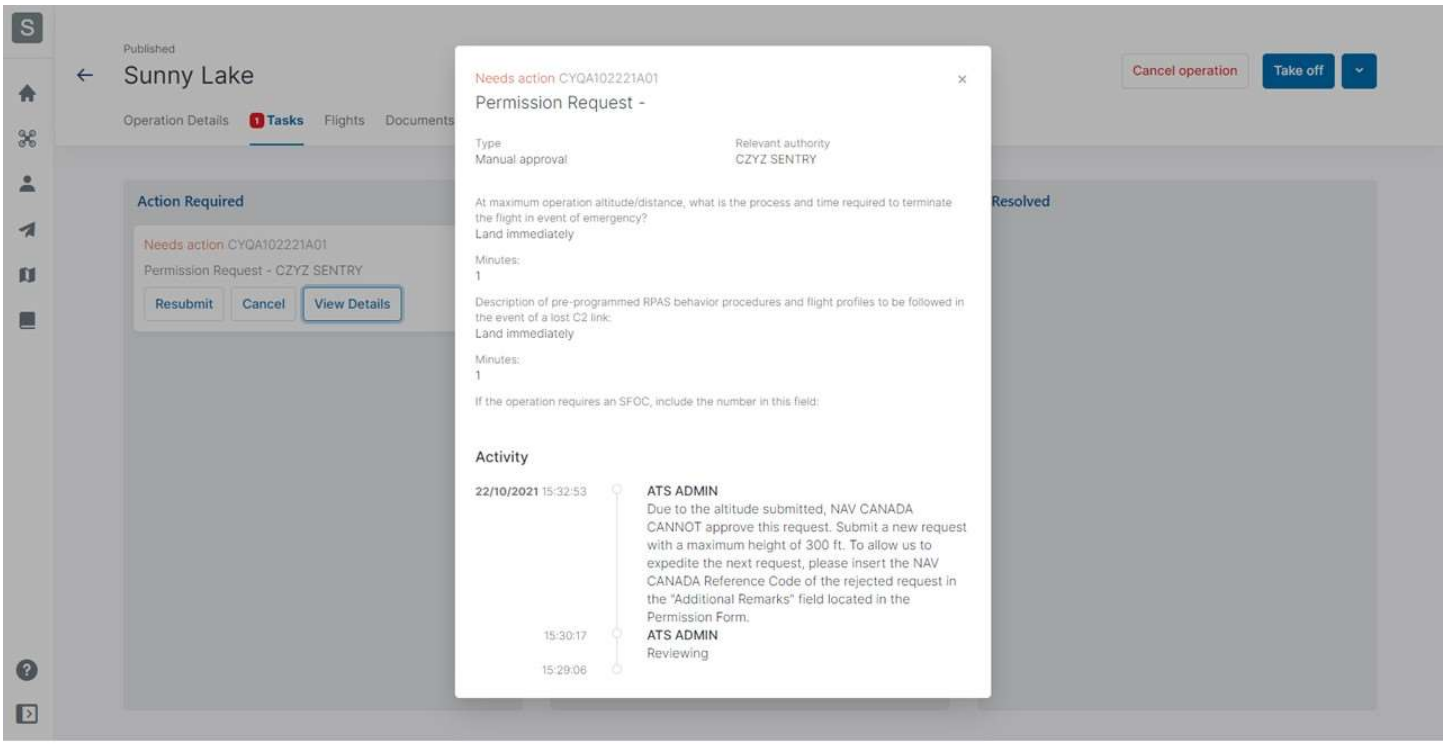
When a permission request *Needs action*, it is moved to the *Action required* category.

In both cases, users will receive an email from NAV CANADA explaining why their request was rejected or needs action. This information can also be viewed on the permission request details screen under *Activity*.

NAV CANADA reserves the right to rescind, at any time, a permission request that was approved. In that case, the operation is no longer allowed. See section Rescinded permission requests for more details.

6.7.4. Permission requests with status *Needs action*

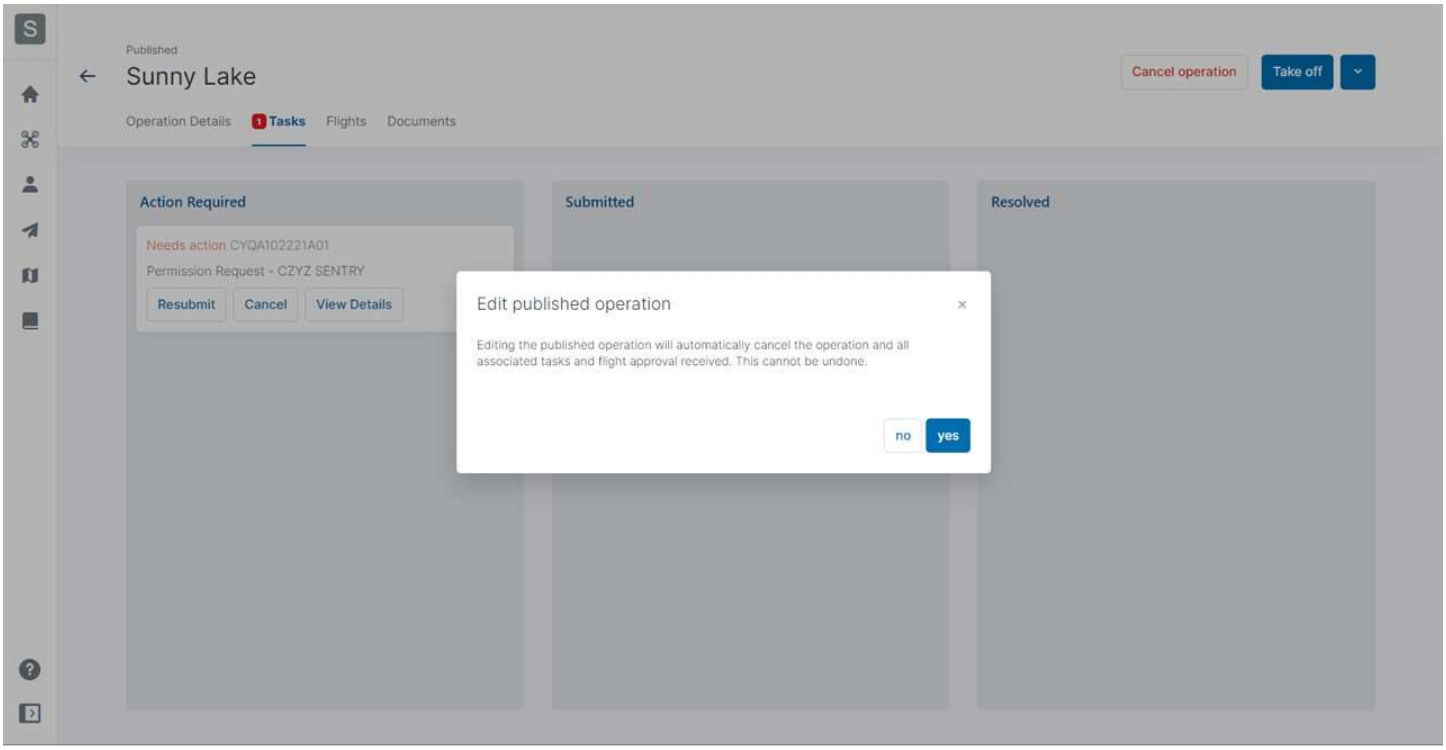
When a permission request reviewed by NAV CANADA and its status changes to *Needs action*, changes to the operation might be required depending on the reason provided by NAV CANADA.



When NAV CANADA requires change to the flight zone and/or the operation parameters, editing the published permission request will cancel the previous request and all associated tasks, generating a new permission request. Provide the *NAV CANADA Reference Code* of the previous (cancelled) request for quicker evaluation.

Follow the procedure below when changes to the operation are required:

1. Click on the ⌄ button at the top right of the screen and select *Edit*.
2. When prompted with the warning message as shown below, click on the **[yes]** button to proceed.
3. Make the required changes to the operation.
4. Save the operation as *Draft*.
5. Publish the operation.



A new permission request has been created for the operation. The remainder of the procedure is identical as described in section Permission requests requiring further coordination.

NAV CANADA reserves the right to rescind at any time an approved permission request. In that case, the operation is no longer allowed. See section Rescinded permission requests for more details.

6.7.5. Rescinded permission requests

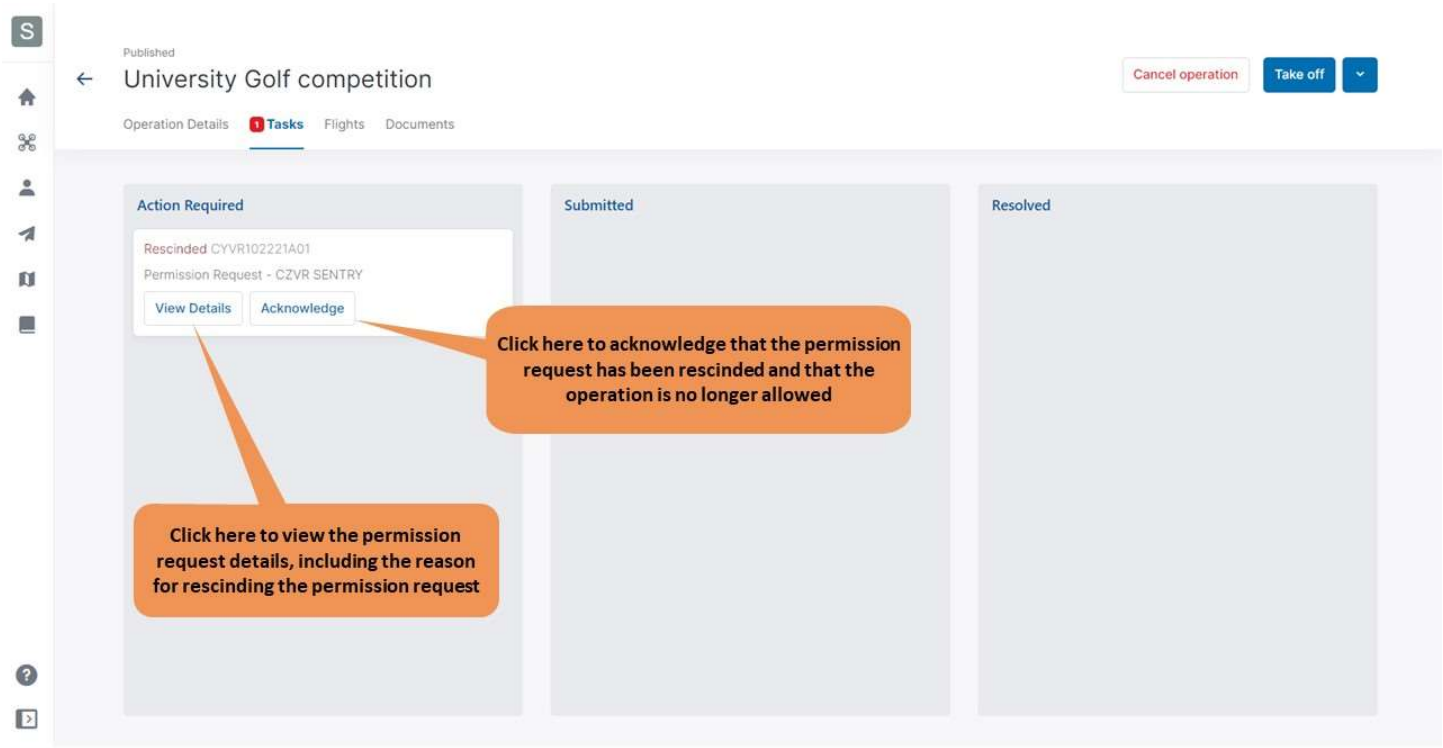
If a permission request is rescinded, NAV CANADA will provide the reason for the status change.

There are three methods a rescinded permission request will be communicated to the user:

- If the user is logged in to the system at the time the permission request is rescinded, a notification will be displayed at the bottom right of the screen.
- An email is sent to the user's email address.
- The operation's validation status indicates that an action is required to acknowledge that the permission request has been rescinded. This task is also displayed in the operation's *Tasks* tab in the category *Action required*.

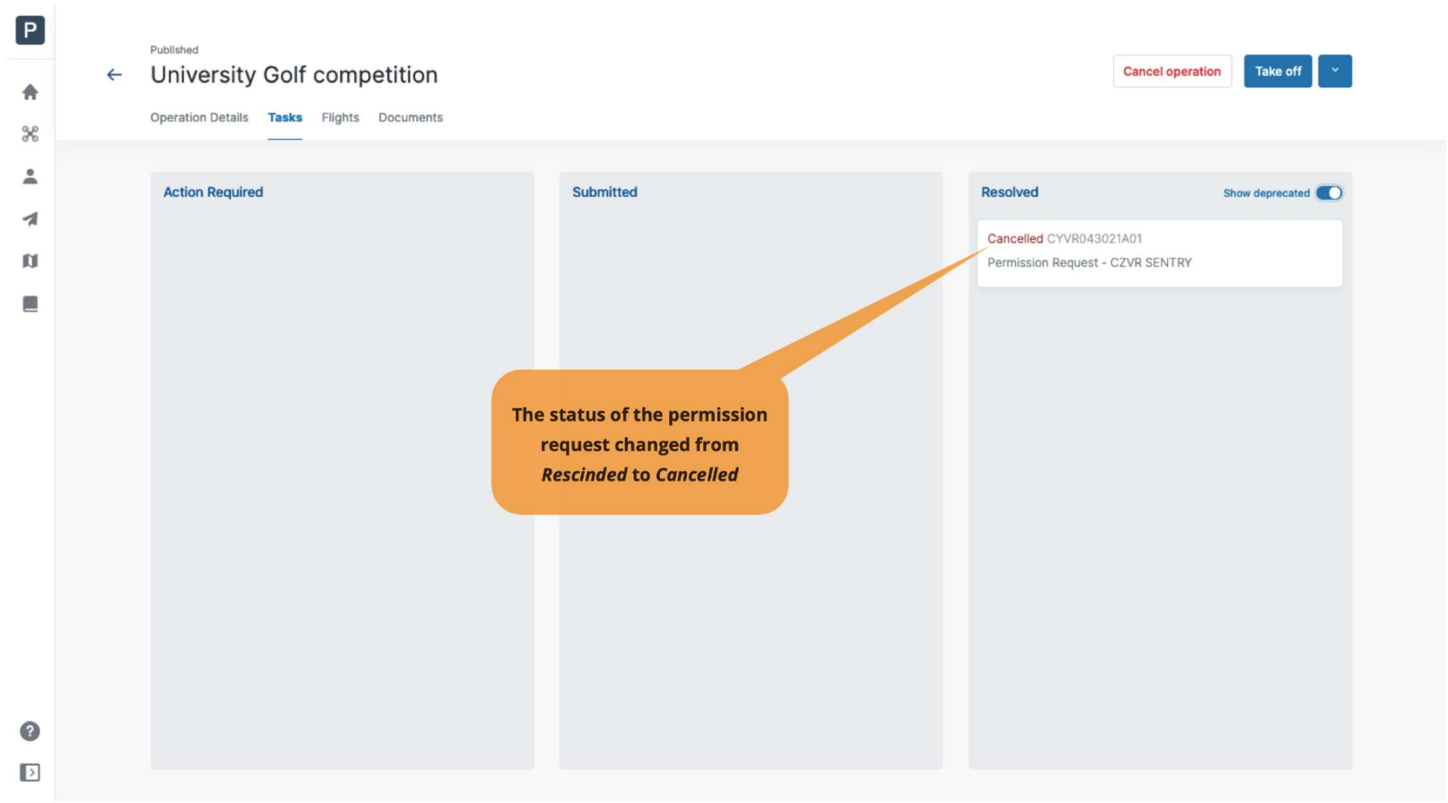
It is not common for a permission request to be rescinded by NAV CANADA.

When it occurs, it is mandatory to acknowledge that the permission request has been rescinded to confirm that the operator understands that the operation is no longer allowed.



Clicking on the **[View Details]** button opens a dialog box that displays more information about the permission request. Information as to why the permission status has been changed can be viewed under *Activity*.

Clicking on the **[Acknowledge]** button changes the status of the permission request from *Rescinded* to *Cancelled* and moves it to the task category *Resolved*.



6.8. Log a flight

When selecting a published operation from the operations table, a **[Take off]** button is available at the top right of the screen. To log a flight in NAV Drone as the operation is being conducted in the field:

1. Click on the **[Take off]** button to indicate that a flight has just started (the drone is taking off). The **[Take off]** button is replaced by the **[Land]** button.
2. Click on the **[Land]** button to indicate that the flight has finished (the drone is landing). The **[Land]** button reverts back to the **[Take off]** button.

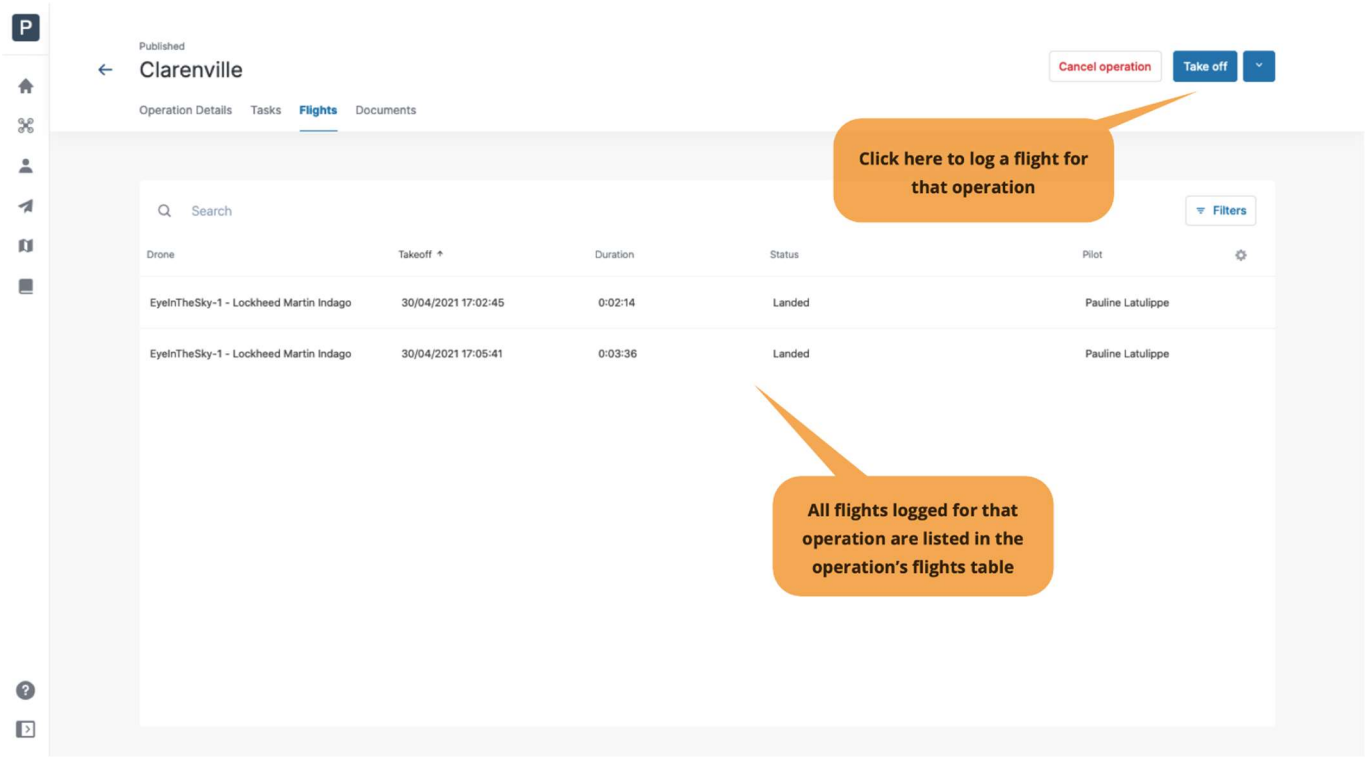
A flight is considered as one takeoff and landing sequence. Therefore, an operation can consist of multiple flights.

Flights can also be logged under your account using the NAV Drone Mobile app.

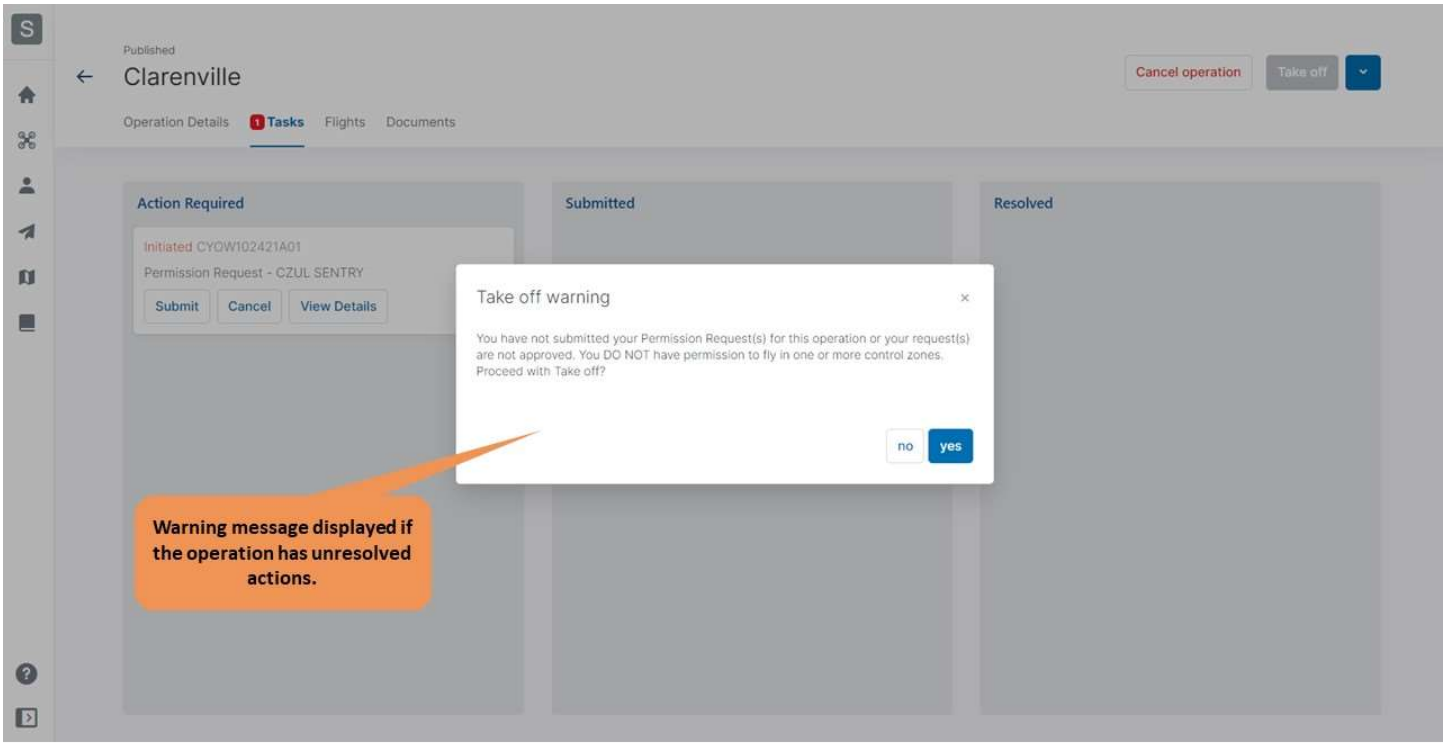
If the operation has unresolved actions, a warning message will be displayed to the user to confirm if they wish to continue with their takeoff. Unresolved actions mean you have not completed the permission request process and DO NOT have permission from NAV CANADA to fly in one or more control zones. Please complete any unresolved actions prior to takeoff.

Logging a flight in NAV Drone records the flight's start time, end time, and time flown, and associates this information with the drone and the pilot selected for this operation.

The operation's *Flights* tab provides a table that lists all flights logged in NAV Drone for that operation.

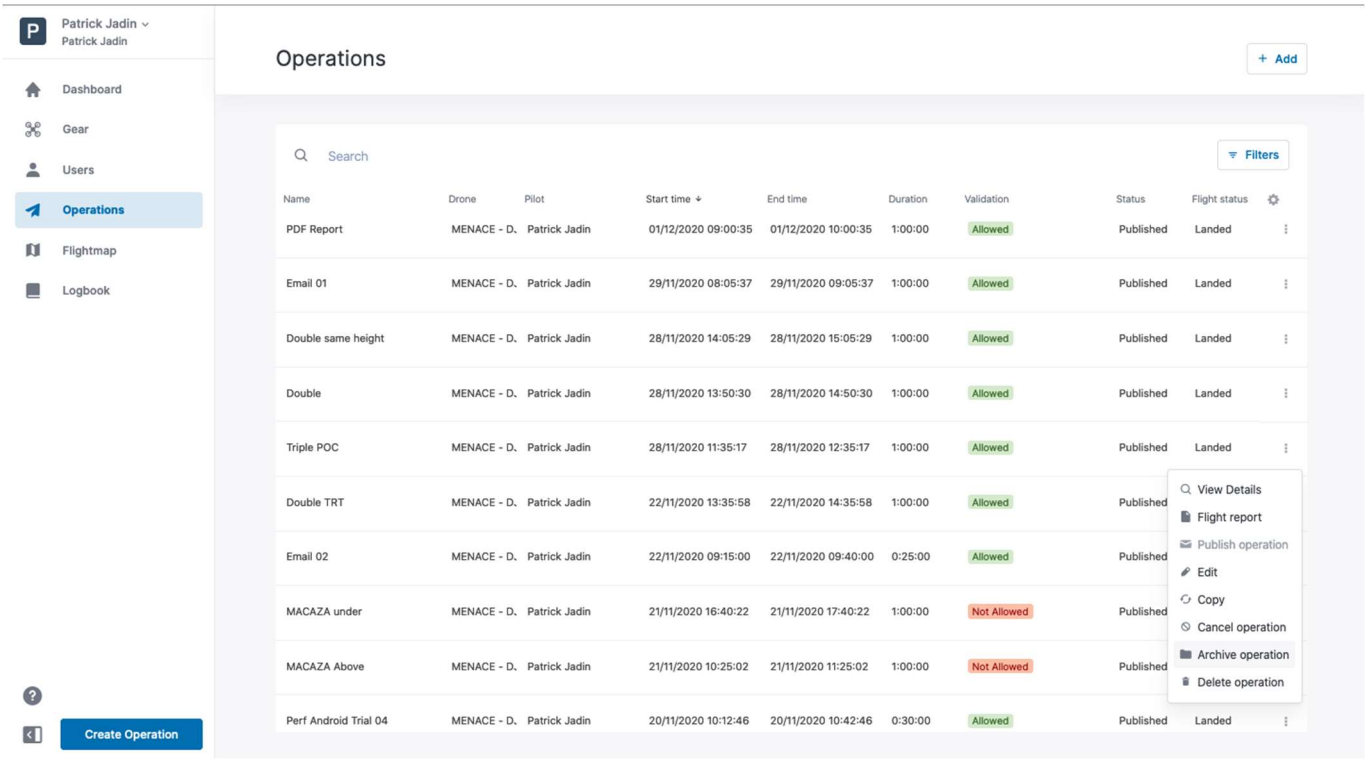


Logging your flights in NAV Drone allows you to view your flight history from your logbook as described in section Logbook.



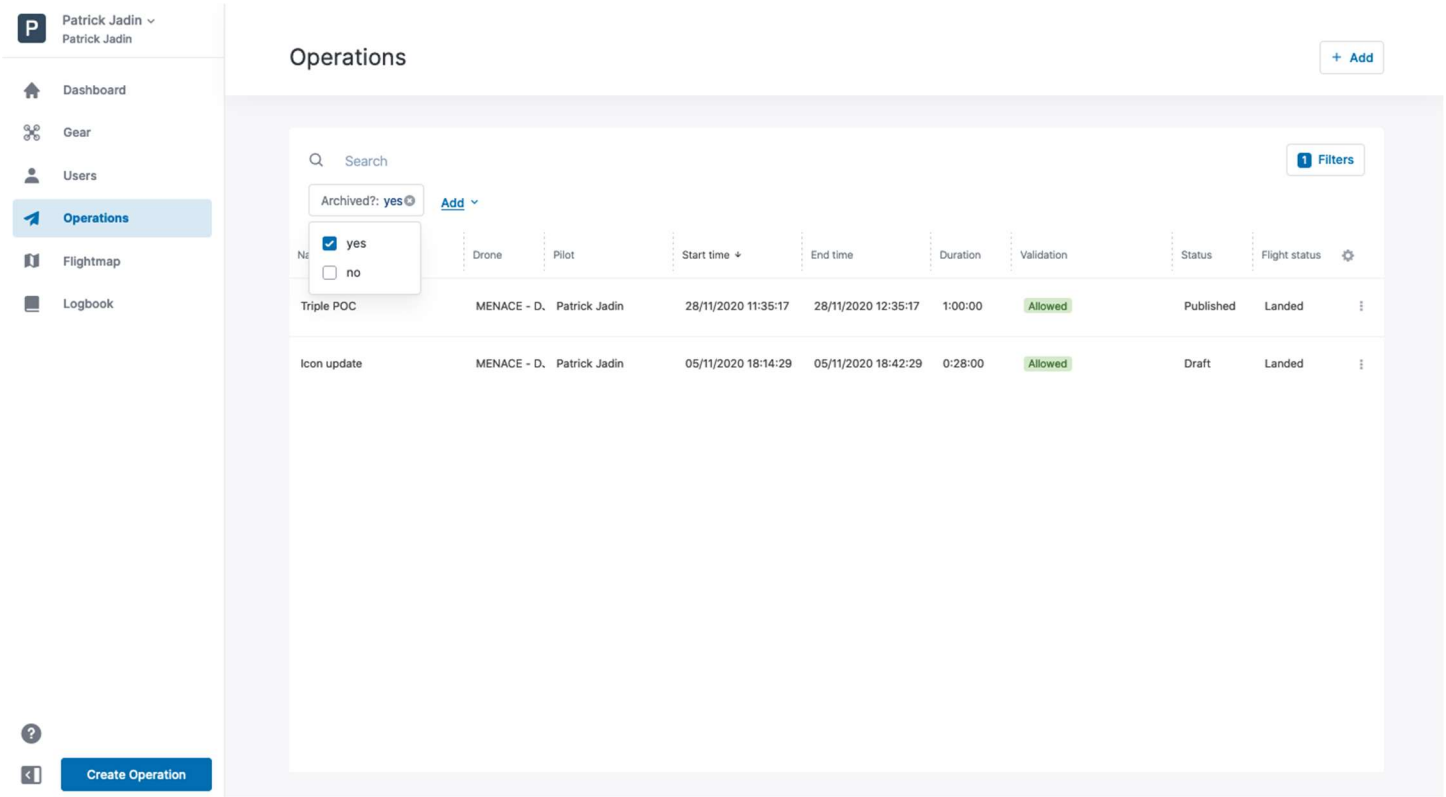
6.9. Archive an operation

To archive an operation, select *Archive operation* action in the operation quick access menu (see section Operation quick access menu).

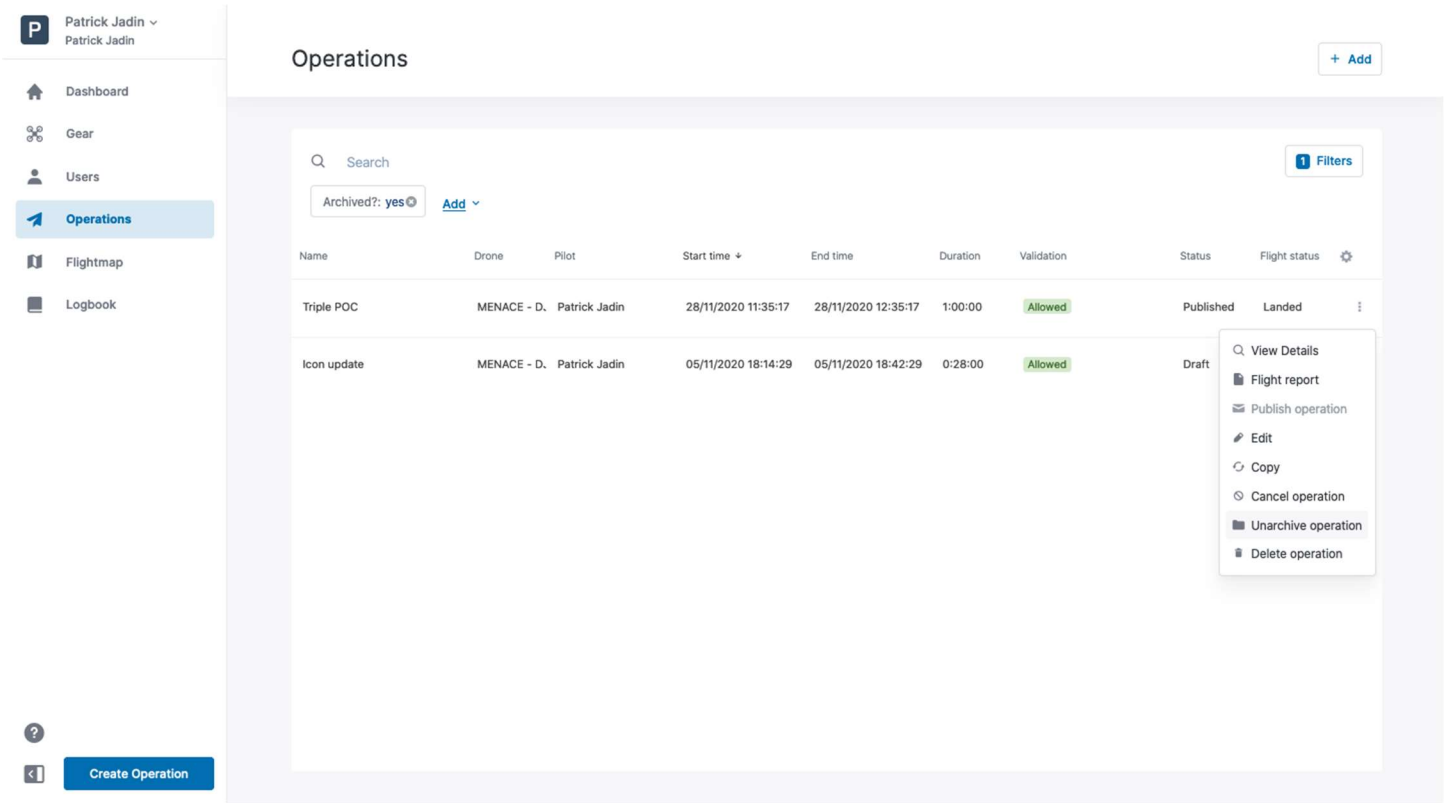


The operation will be removed from the operations table.

To retrieve the archived operations, select *Archived?* filter (see Filter table entries in the Table functionalities section) with checkbox *yes* selected. The operations table will be filtered by archived operations.



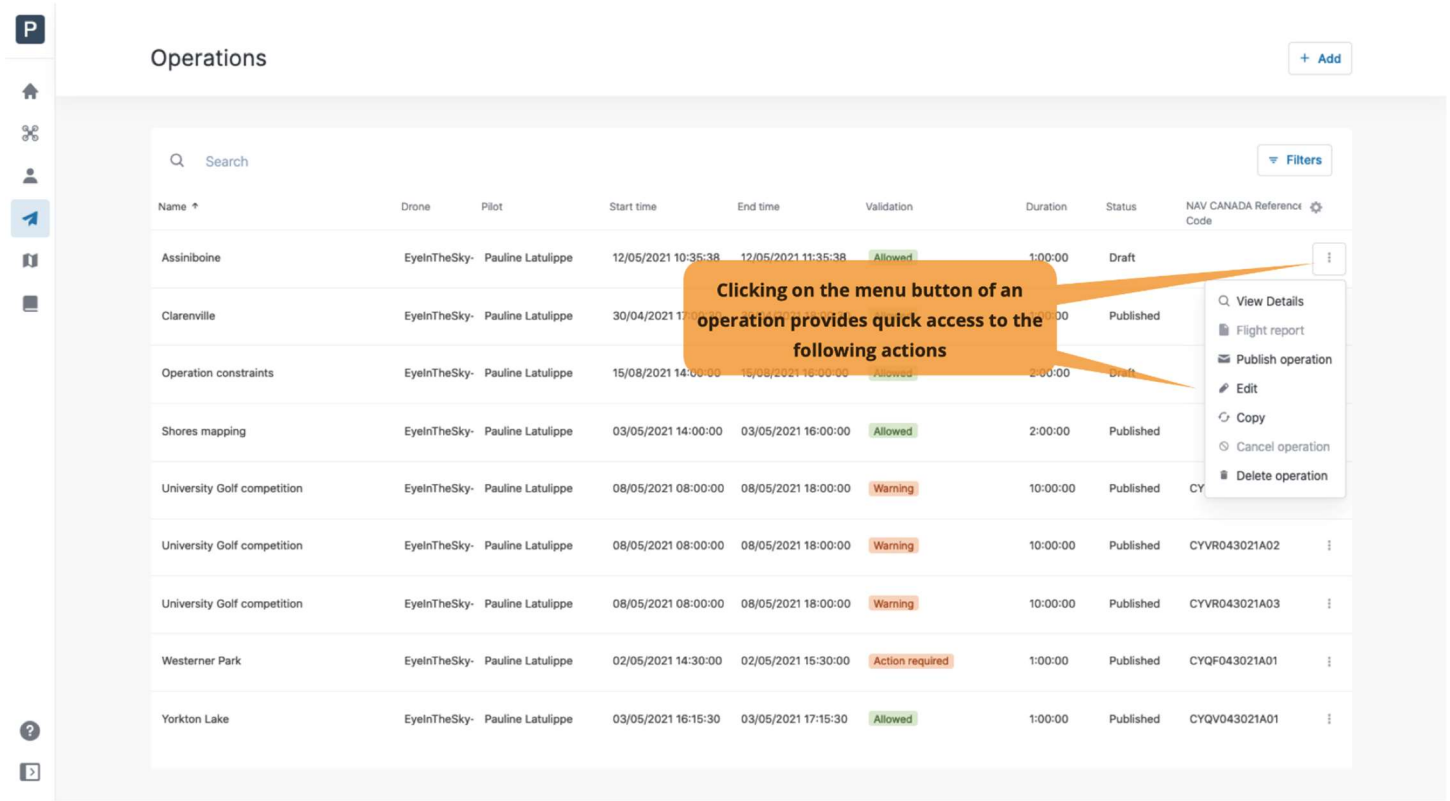
By selecting *Unarchive operation* in the operation quick access menu, the operation will appear in the operations table.



6.10. Operation quick access menu

In the operations table, the menu icon (⋮) on the right side of each operation provides a quick access to the following actions:

- *View Details*: opens the operation details.
- *Flight report*: downloads a flight report for the selected operation.
- *Publish operation*: publishes a draft operation. If an operation is already *published*, this button is disabled.
- *Edit*: allows to edit the operation flight zone and parameters.
- *Copy*: creates a copy of the selected operation.
- *Cancel operation*: cancels the operation. Only *published* operations can be cancelled. Cancellation is required before deleting a *published* operation.
- *Archive operation*: The operation is archived and no longer displayed in the operations table. It can be recovered using the filter.
- *Delete operation*: deletes a draft or a cancelled operation.



6.11. Table functionalities

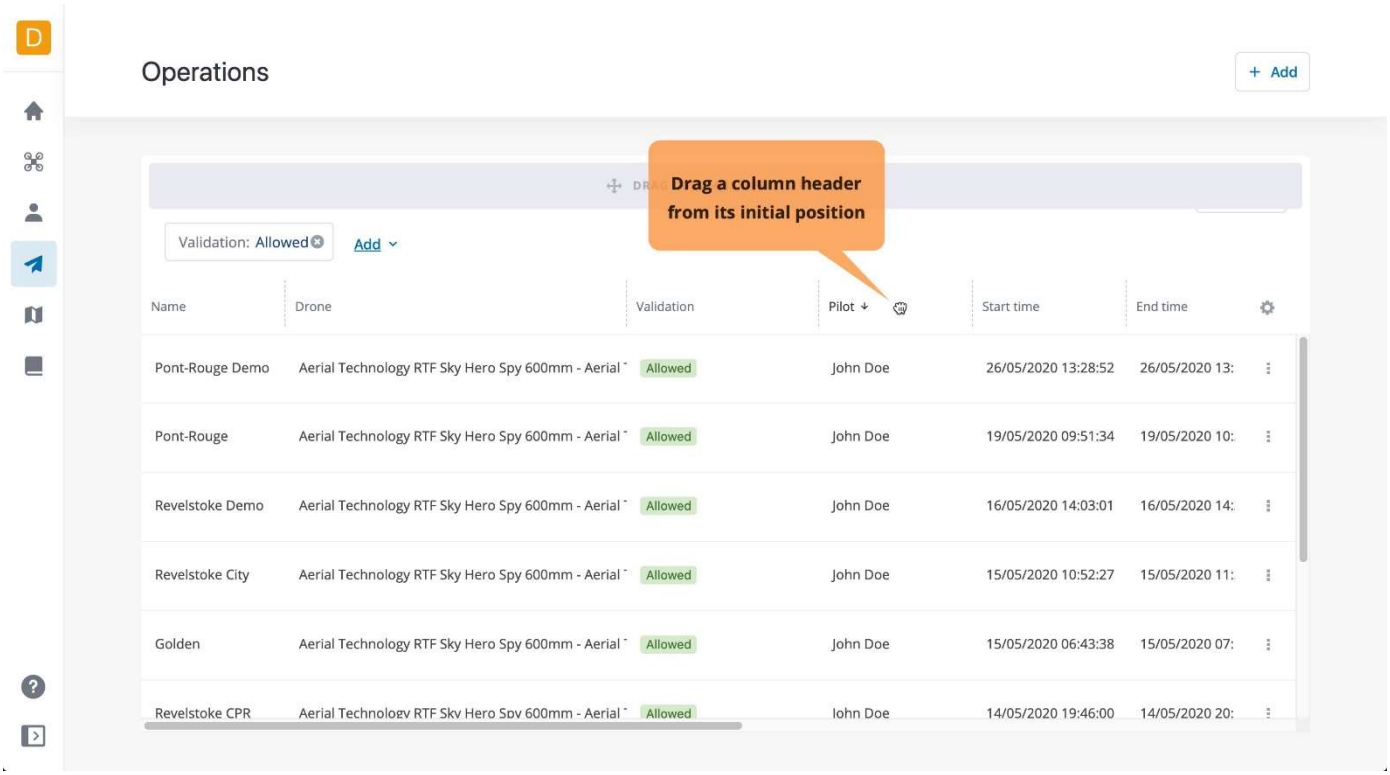
Initially empty upon the creation of a new account, the operations table will contain all your operation entries. This section presents functionalities available in the NAV Drone Web application to help you find and organize your operations as needed.

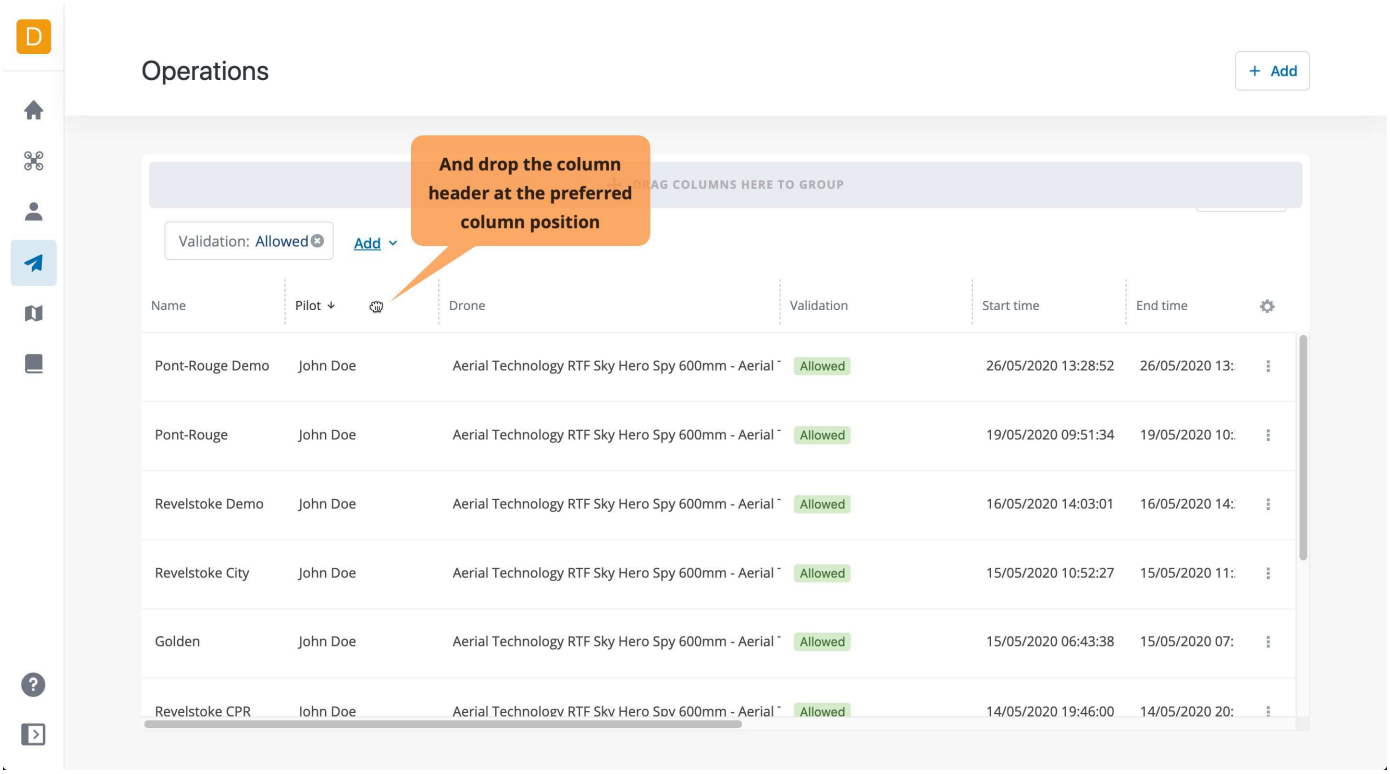
6.11.1. Adjust a column width

To adjust a column width, move your mouse cursor into the column header area and place it on the border between two columns. Drag the border delimiter left or right to adjust the column width accordingly.

6.11.2. Reposition a column

To change the order of the columns, drag a column header from its initial position and drop it at the preferred column position.

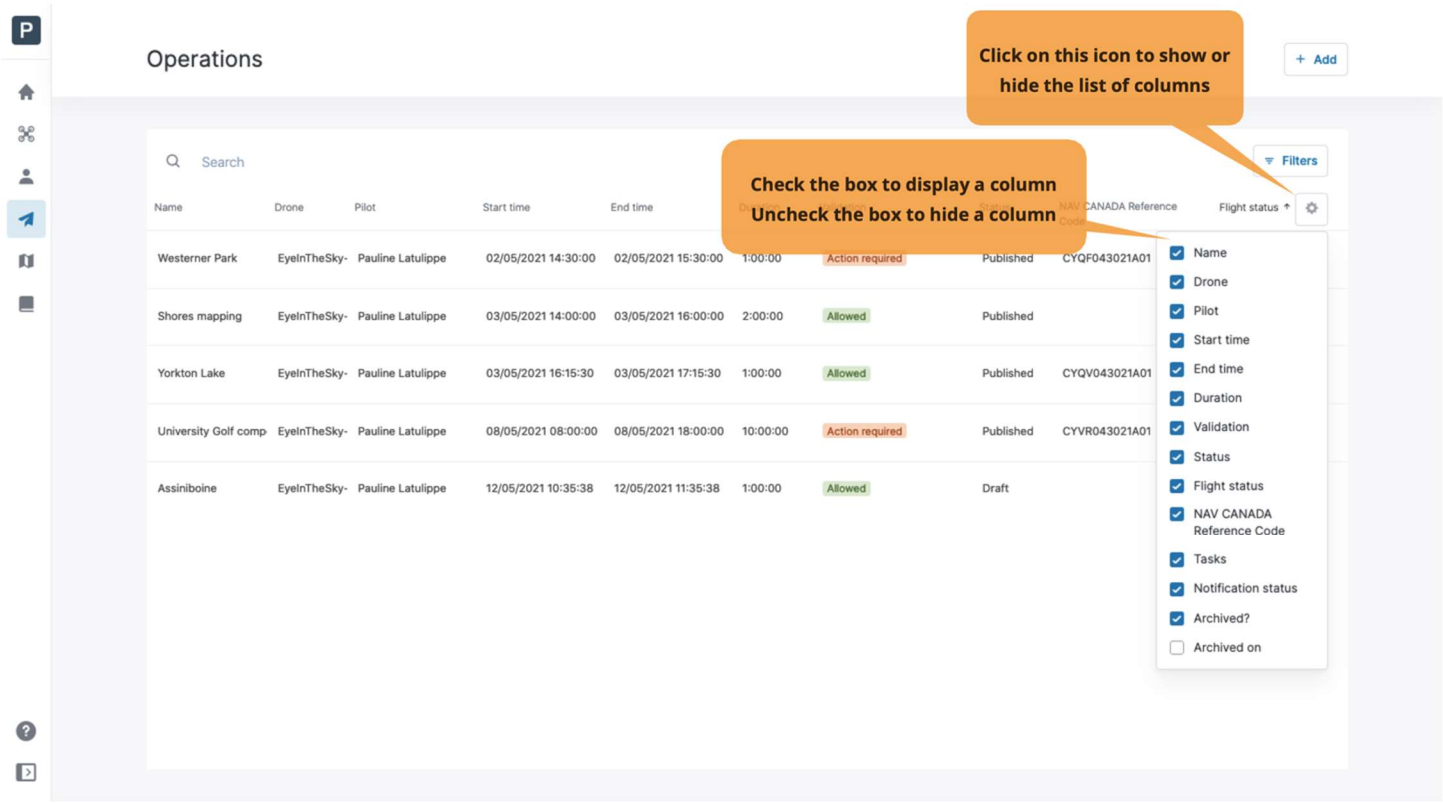




6.11.3. Hide/display columns

The ⚙ icon allows you to configure which columns to display/hide:

1. Click on the ⚙ icon on the right side of the column header line to show the list of columns.
2. Check the columns that should be displayed and uncheck the columns that should be hidden. If required, scroll down to see all available columns.
3. Click on the ⚙ icon again to hide the list of columns.

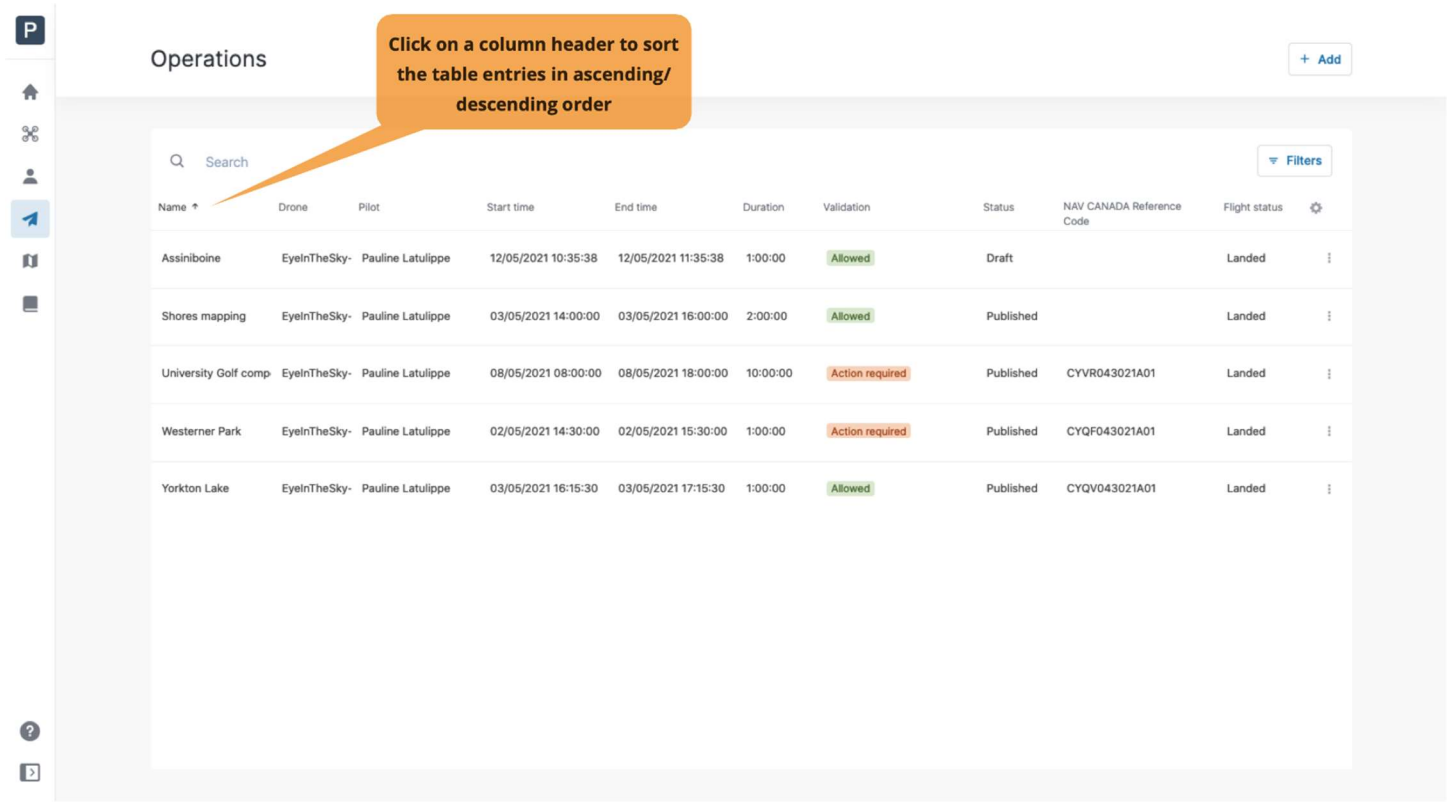


6.11.4. Sort table entries

Sorting will display table entries in ascending or descending order. To sort the table entries, click on a column header.

A vertical arrow pointing *upwards* is displayed next to the column header to indicate that the table entries are sorted in *ascending* order on that attribute.

A vertical arrow pointing *downwards* is displayed next to the column header to indicate that the table entries are sorted in *descending* order on that attribute.



6.11.5. Filter table entries

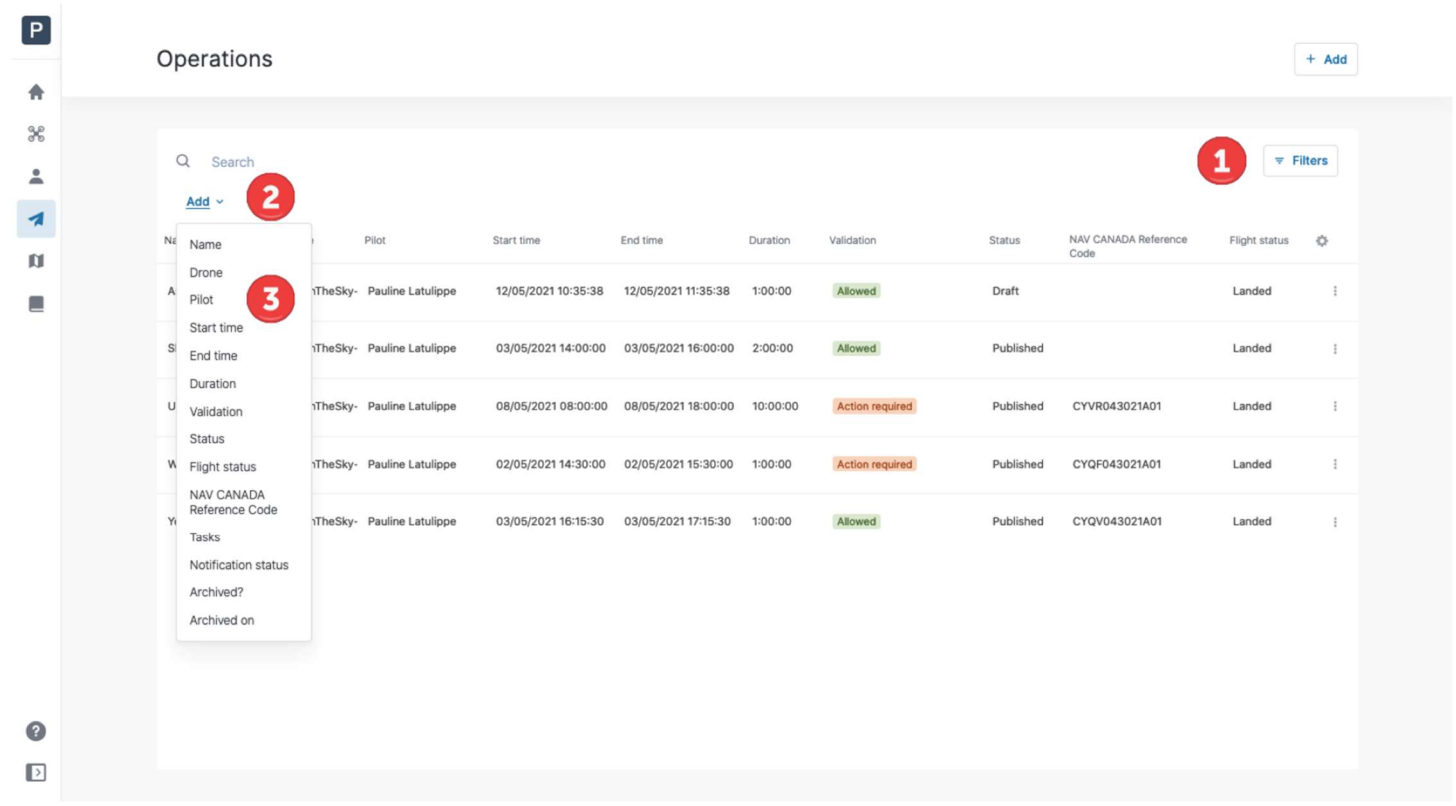
Filtering ensures that only table entries corresponding to the defined filter are displayed. To define a new filter:

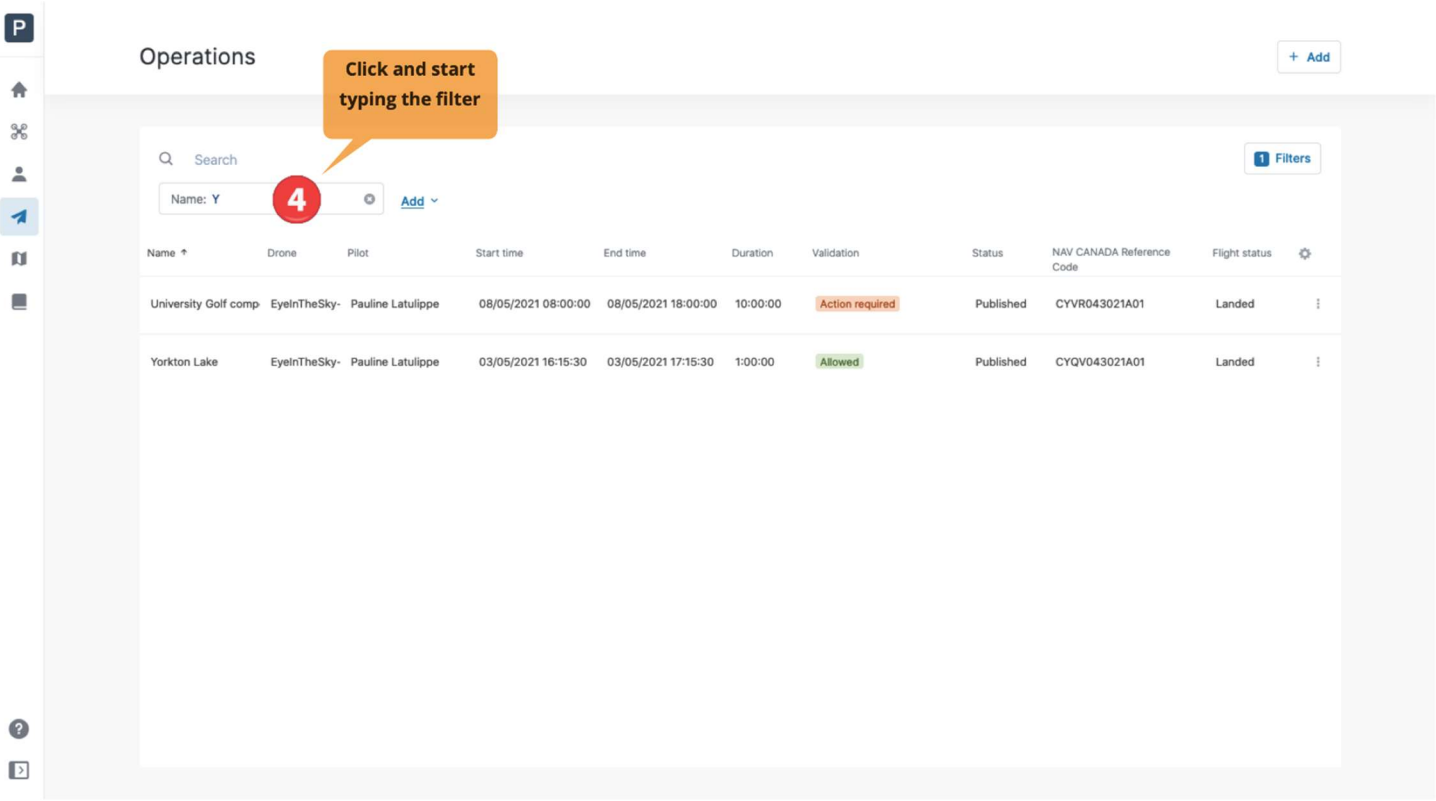
① Click on the **[Filters]** button.

② An **[Add]** button will appear above the first column's header. Click on the button to display the list of available fields.

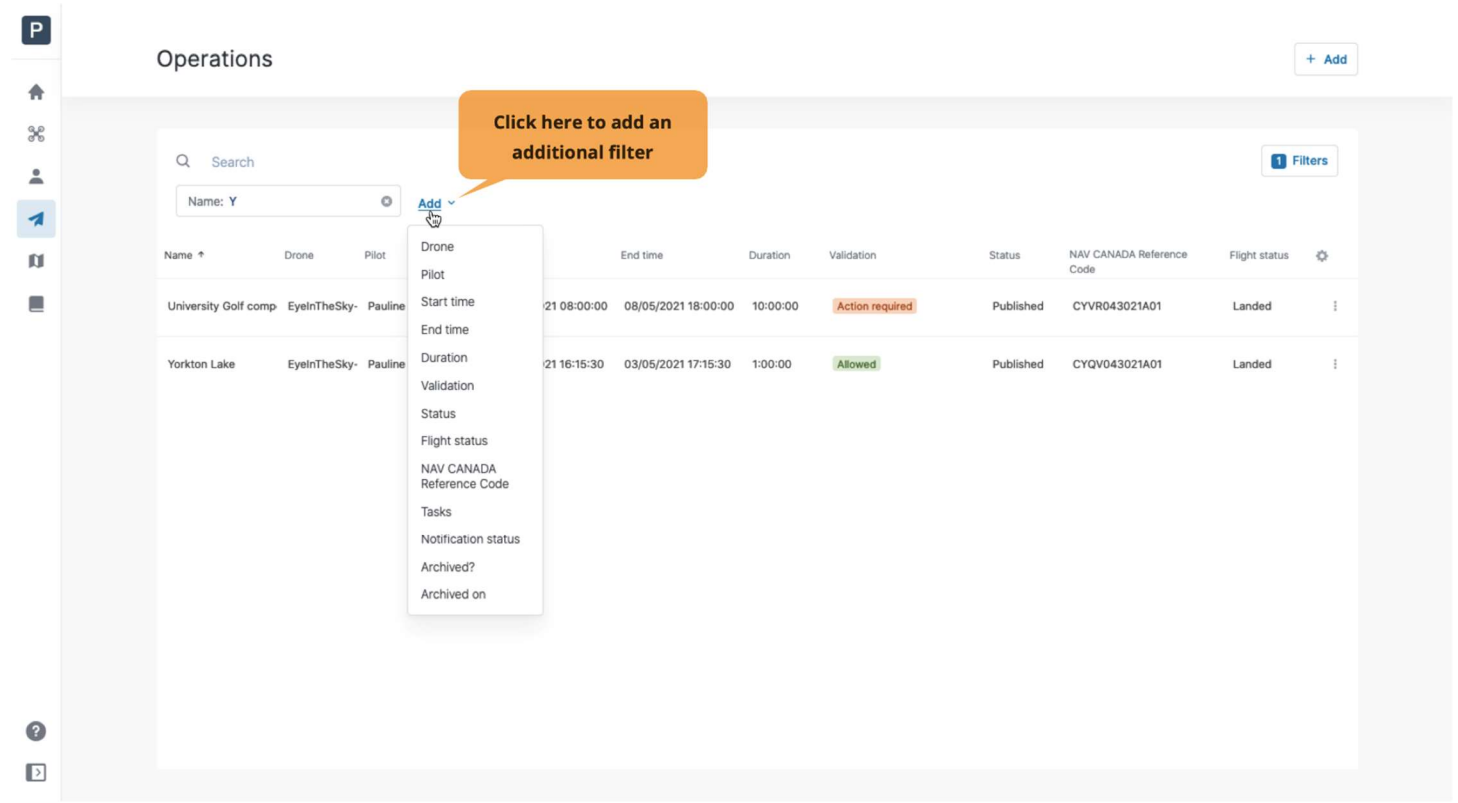
③ Select from the list the field you want to use as filter.

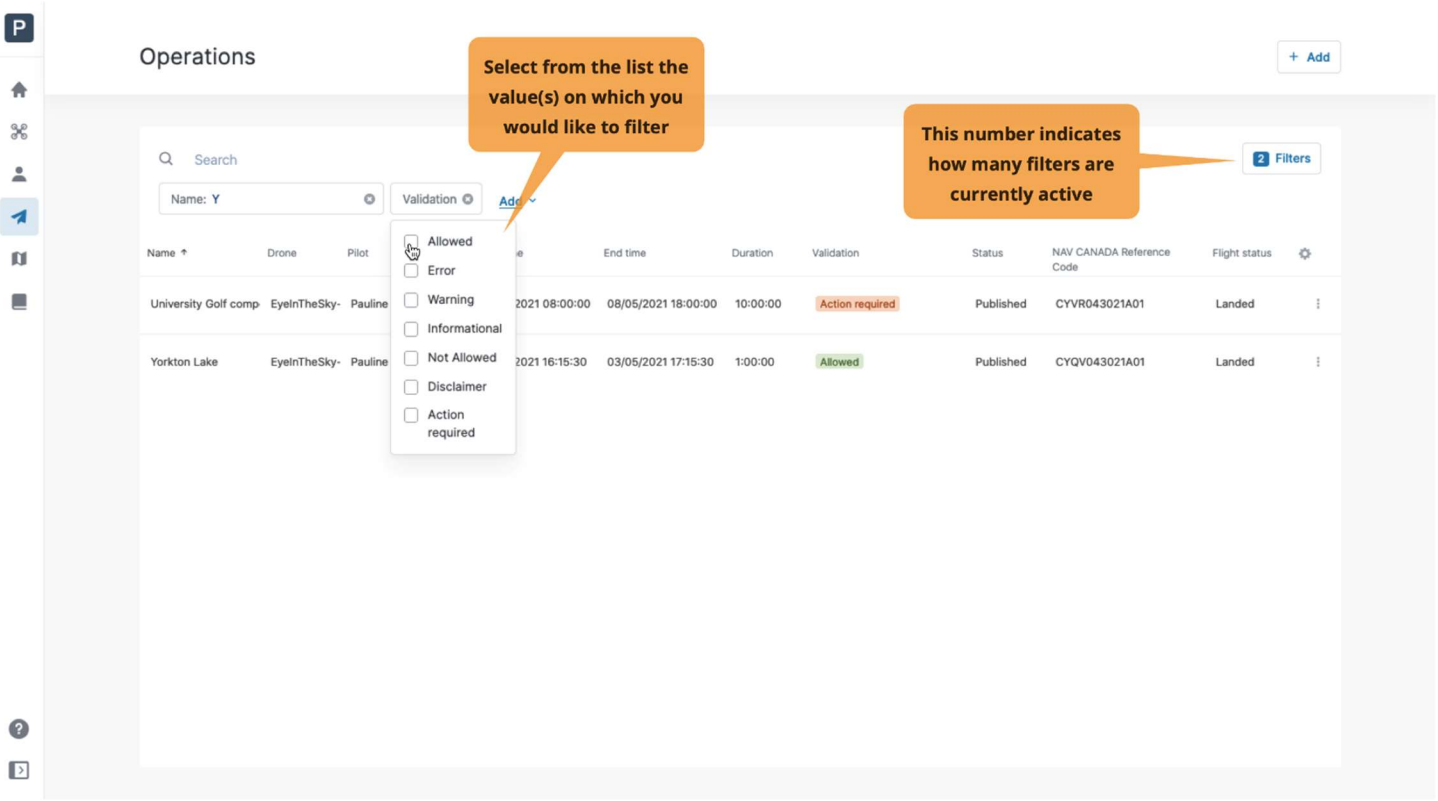
④ Click on the filter button and start typing the filter string. Filtering occurs as you type.



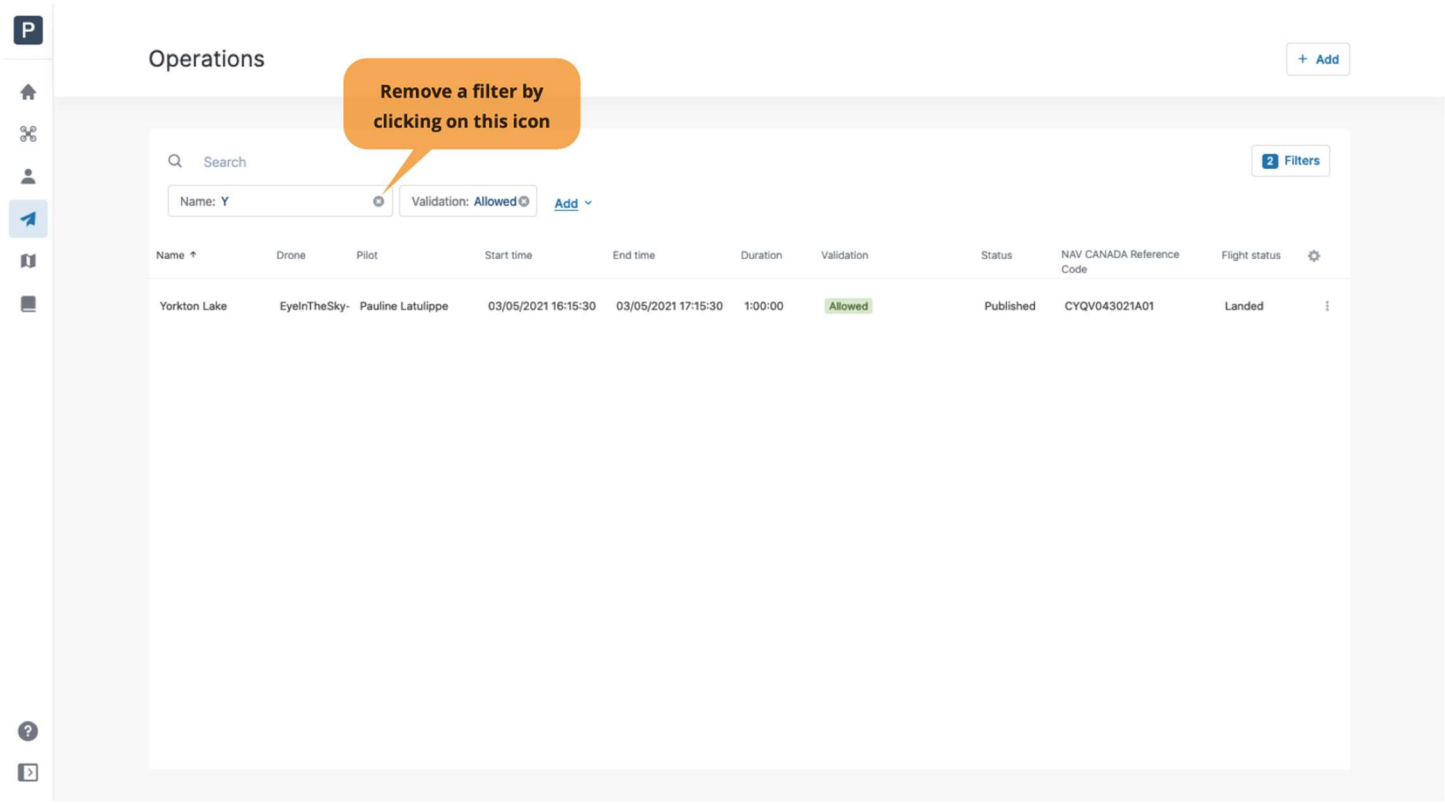


If needed, additional filters can be added. The number on the **[Filters]** button indicates how many filters are active. Multiple filters are applied following a Boolean *AND* function, as shown below.





Remove a filter by clicking on the ✖ icon on the right side of the filter.



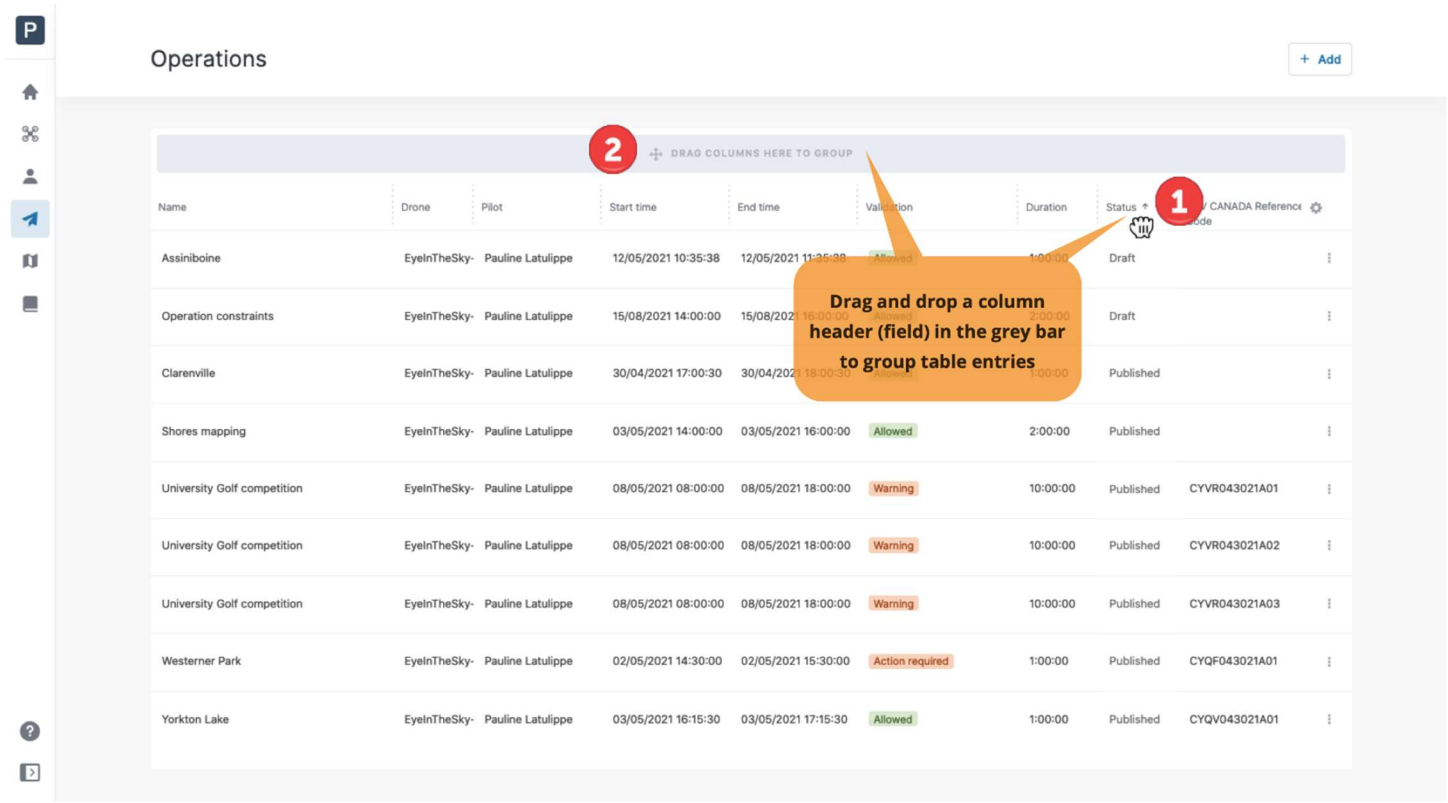
6.11.6. Group table entries

Simple grouping

Grouping displays table entries in groups, based on their attributes or fields. To group table entries:

① Drag the column header of the selected field. A grey horizontal bar with the text *DRAG COLUMNS HERE TO GROUP* will appear above the column headers.

② Drop the selected column header in this new bar.



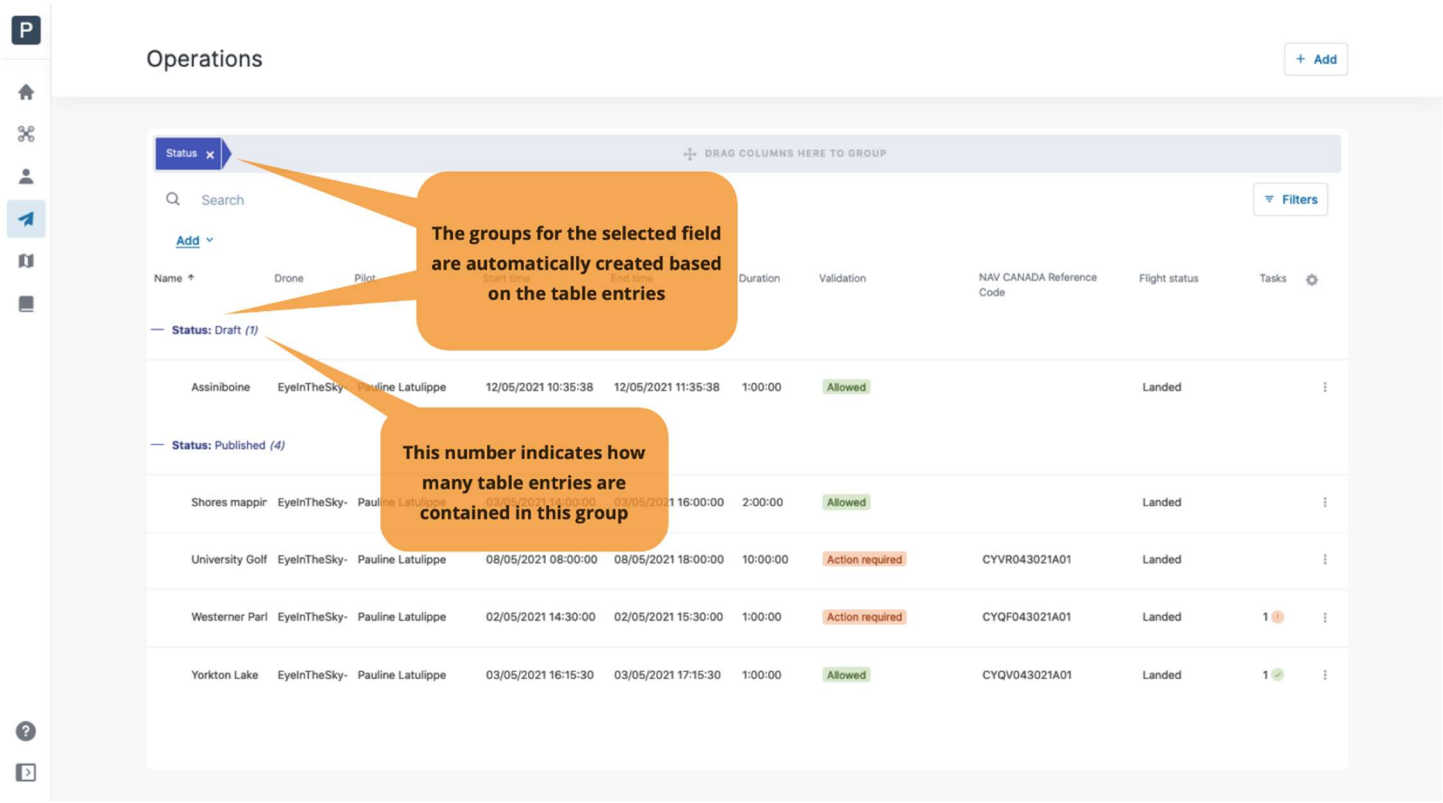
Not all fields support grouping.

The groups for the selected field will be created based on the table entries. In the example below, *Status* is the field used to group.

Each status therefore constitutes a group that contains all operations with that status. The number on the right side of a group indicates the number of tables entries contained in this group.

In the example below, grouping on the *Status* field results in one single group (one status) containing one entry (one operation for that status).

Expand or collapse the table entries contained in a group by using the + and − icons on the left side of the group.



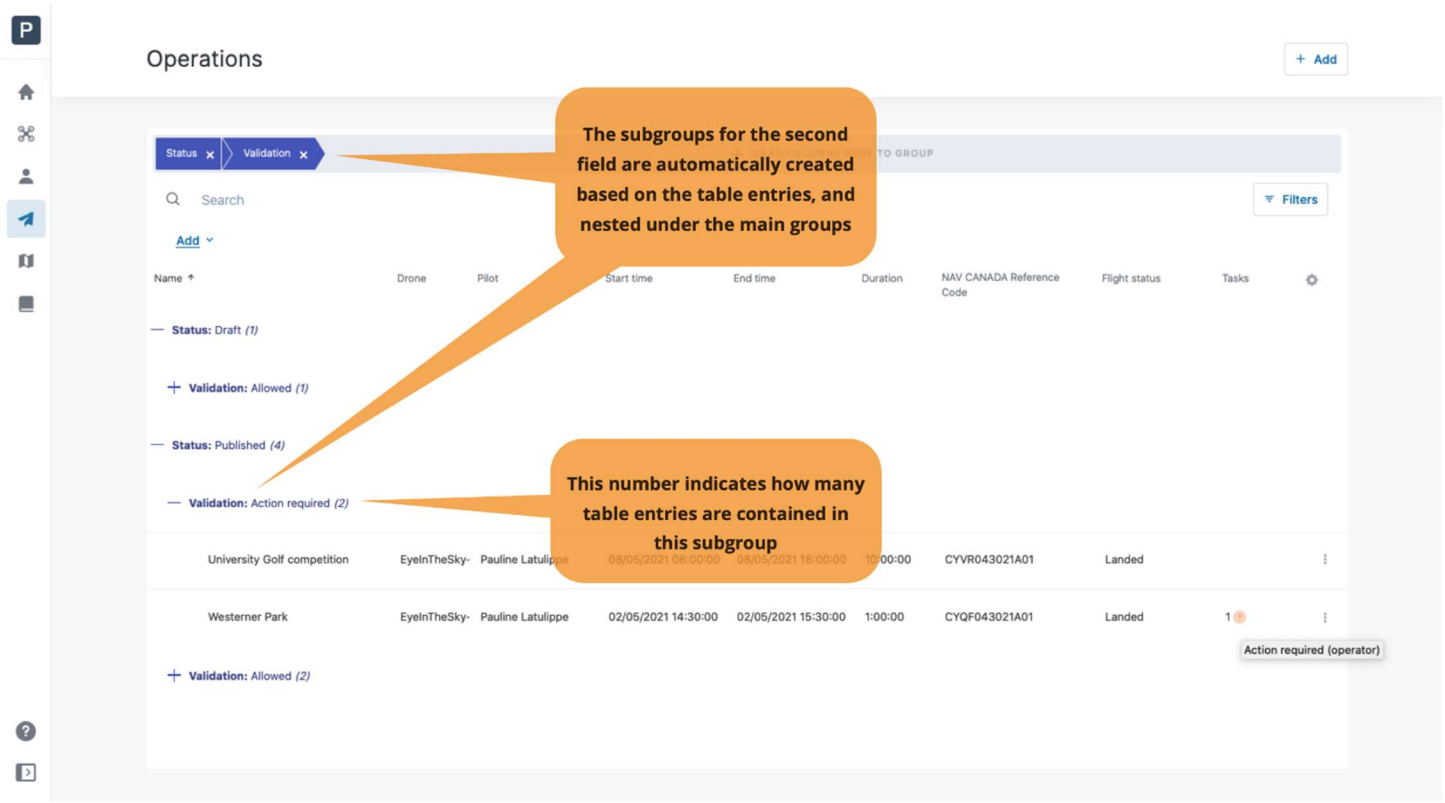
Disable grouping by clicking on the ✕ icon on the right side of the group in the grey bar above the column headers.

Nested grouping

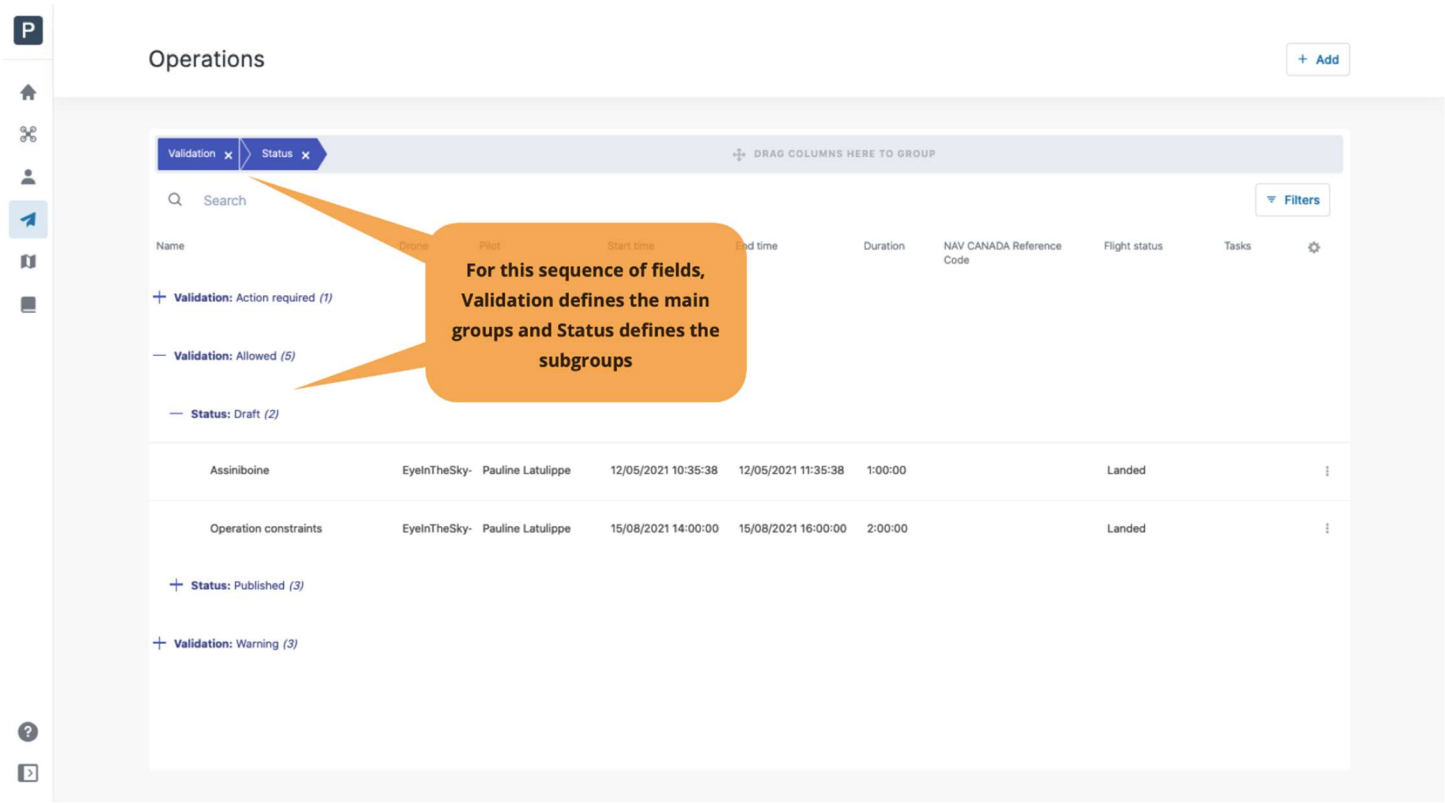
Nested groups are groups with multiple levels, or groups within groups. Nested groups can be created by selecting multiple fields.

To create a second level of grouping, drag the column header of another field and drop it in the *DRAG COLUMNS HERE TO GROUP* bar above the column headers.

In the example below, *Validation* is the second field used to group, after grouping by *Status*. As a result, subgroups are created under each group, in this case two validation subgroups are created under the existing status group.



The sequence matters in nested grouping. In other words, if we consider the fields used in the example above, selecting first the *Validation* field and then the *Status* field will lead to different results, as shown below where validation defines the main groups and status the subgroups.



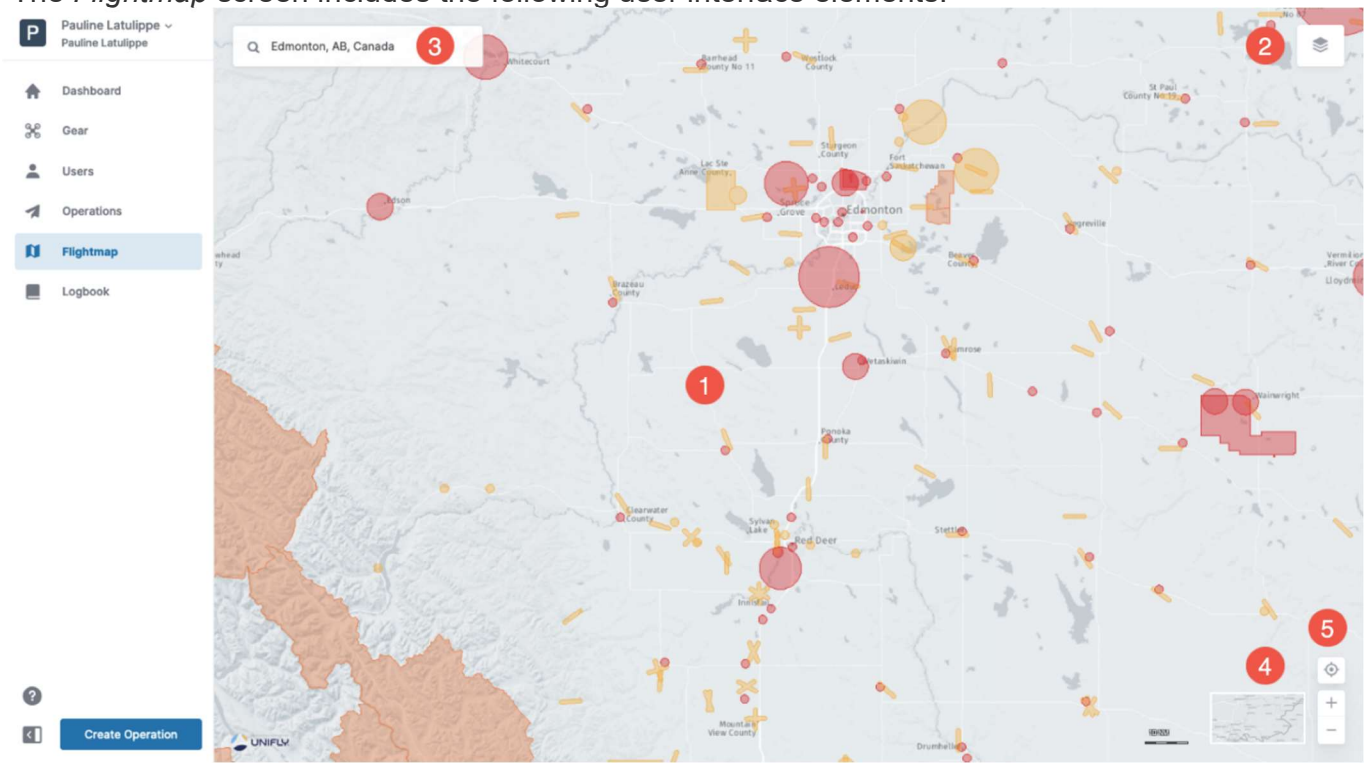
Chapter 7. Flightmap

The NAV Drone Web application allows the user to visualize airspace information as well as the flight zones of your drone operations in *Flightmap*.

Click on *Flightmap* in the left sidebar to access this module.

7.1. User interface overview

The *Flightmap* screen includes the following user interface elements:



① The *Map window* is the main frame and displays information about the Canadian domestic airspace and data relevant to VLOS operations. See section Display airspace information for more details.

② The button allows you to configure which layers should be visible on the map. See section Hide/display map layers for more details.

③ The **[Search]** field is used to search for locations. Click on the field, start typing an address or latitude/longitude coordinates. Selecting one of the search results will reposition and zoom the map, and put a blue marker on that location.

④ The **[Display Mode]** button allows you to select the map's display mode. See section Change the display mode for more details.

⑤ The "move to current location" (⌖) and zoom (**+** and **−**) buttons allow you to navigate the map. You can also move the map by dragging it with the left mouse button and zoom the map in or out using the mouse scroll wheel or by double clicking on a location on the map (left mouse button = zoom in, right mouse button = zoom out).

7.2. Map layers

The map presented in NAV Drone Web is created by displaying a number of map layers on top of the base map (background map). The base map is always displayed, but the map layers can be hidden or displayed.

The following information is visible as a layer on the map for *Basic* operations:

Map Layer	Colour
Current operations	Blue
Controlled airspace	Red
Delegated airspace	Red
Class F airspace	Red (Restricted or danger) & yellow (Other)
Airports	Red (Certified or military) & yellow (Registered)
Parks	Orange
Additional NOTAMs	Red
Temporary no drone zones	Red

The following information is visible as a layer on the map for *Advanced* operations:

Map Layer	Colour
Current operations	Blue
Controlled airspace	Orange
Delegated airspace	Red
Class F airspace	Orange (Restricted or danger) & yellow (Other)
Airports	Orange (Certified or military) & yellow (Registered)
Grids	Shades of orange, depending on the maximum height of the grid cell
Parks	Orange
Additional NOTAMs	Red
Temporary no drone zones	Red

Areas filled with red are **prohibited**. Areas filled with yellow require additional **caution** due to other air traffic. Areas filled with orange require **permission** from NAV CANADA, Parks Canada, the Department of National Defence, an airport operator, Penitentiary Authorities, or any other specified user agency.

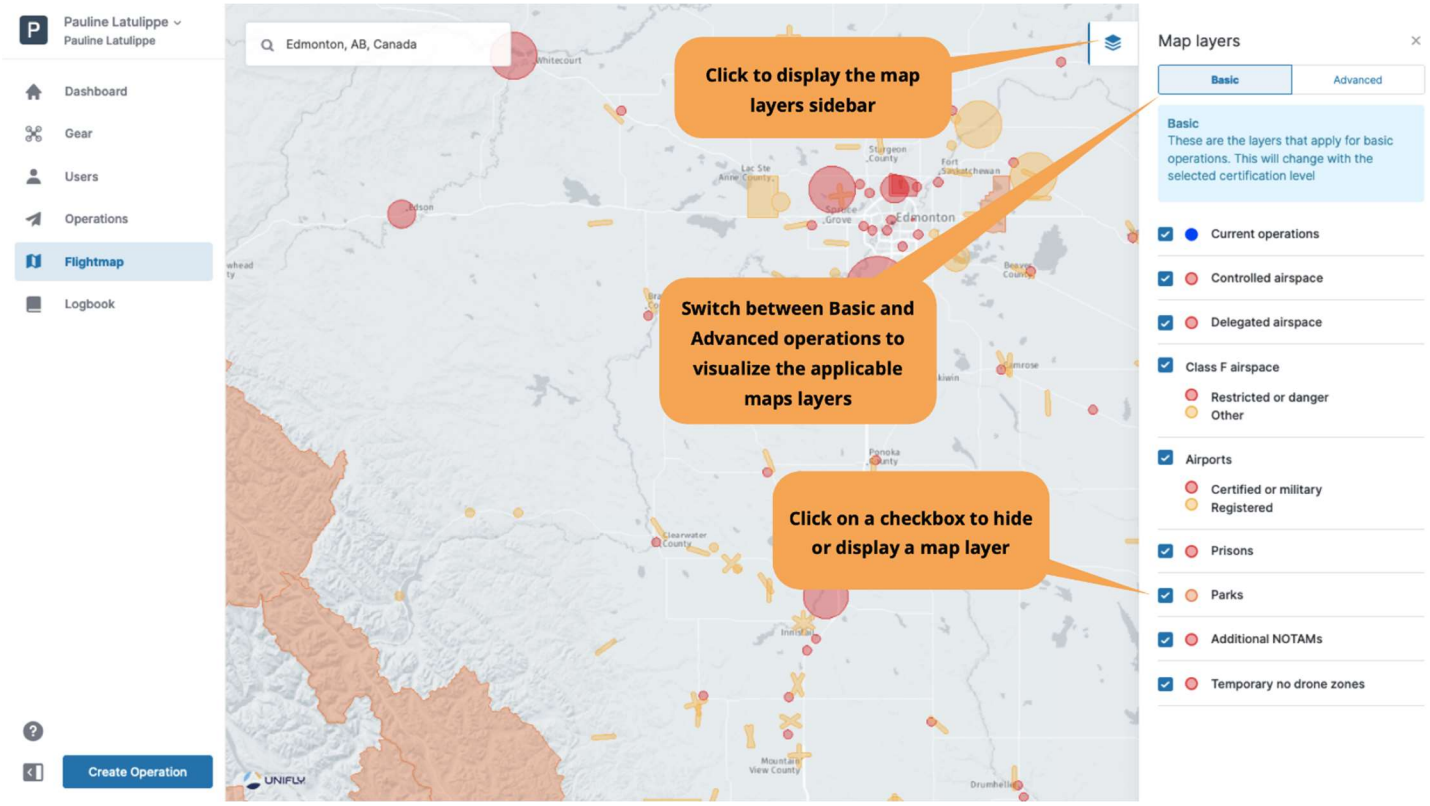
The *Current operations* map layer is only available in *Flightmap*. It is not available when creating a new operation.

7.3. Hide/display map layers

The list of layers can be accessed by clicking on the button at the top right of the *Map window*. The user can hide or display each map layer in the list.

Hiding/displaying a map layer can be done as follows:

1. Expand the *Map layers* sidebar by clicking on the button at the top right of the *Map window*.
2. Select the type of operations (*Basic* or *Advanced*) for which you want to visualize the applicable airspace information.
3. Select the map layer(s) to display by activating the corresponding checkbox in front of the layer's name.
4. Close the *Map layers* sidebar by clicking again on the button.



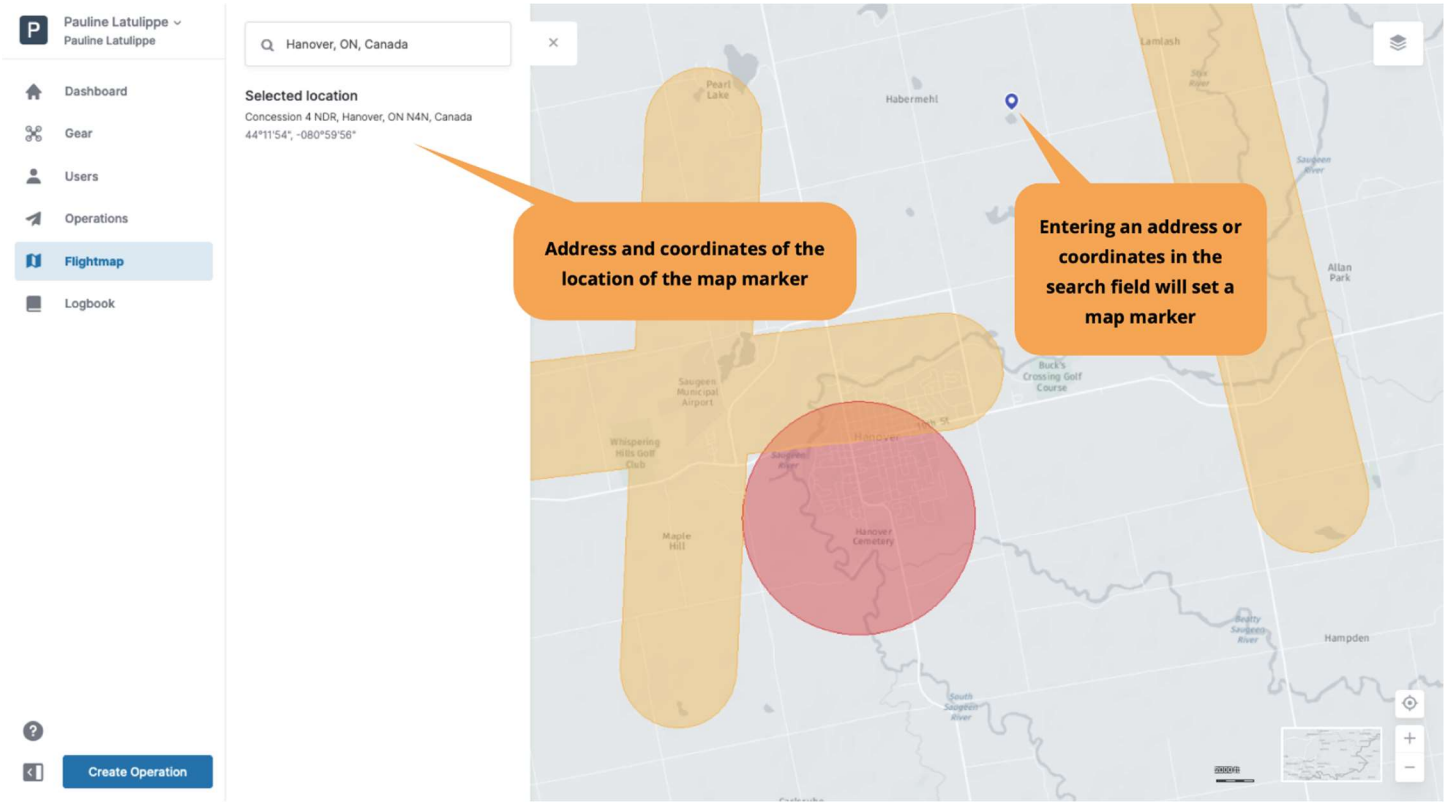
Information will only be displayed for the selected type of operations (*Basic* or *Advanced*) and for the geozones associated with displayed map layers.

7.4. Display airspace information

Information about airspace geozones is displayed by selecting a location on the map in the *Map window*. Selecting a geozone will also highlight the geozone on the map. Three scenarios are possible, as described below.

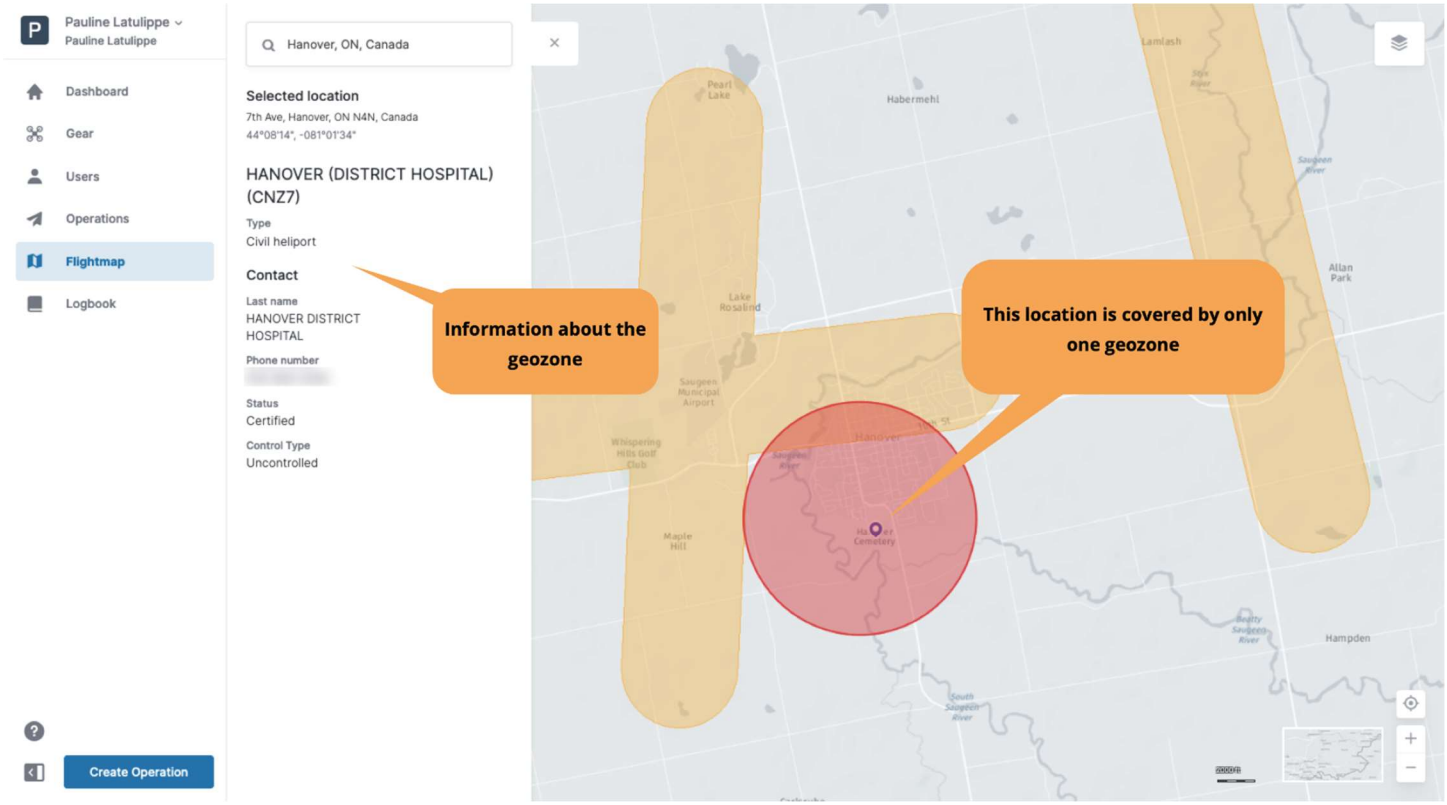
7.4.1. Location not covered by any geozone

If the selected location is not covered by any geozone, a blue map marker ( ) is displayed at the selected location and information regarding that location (coordinates and, when available, address information) is displayed at the top left of the screen:



7.4.2. Location covered by one visible geozone

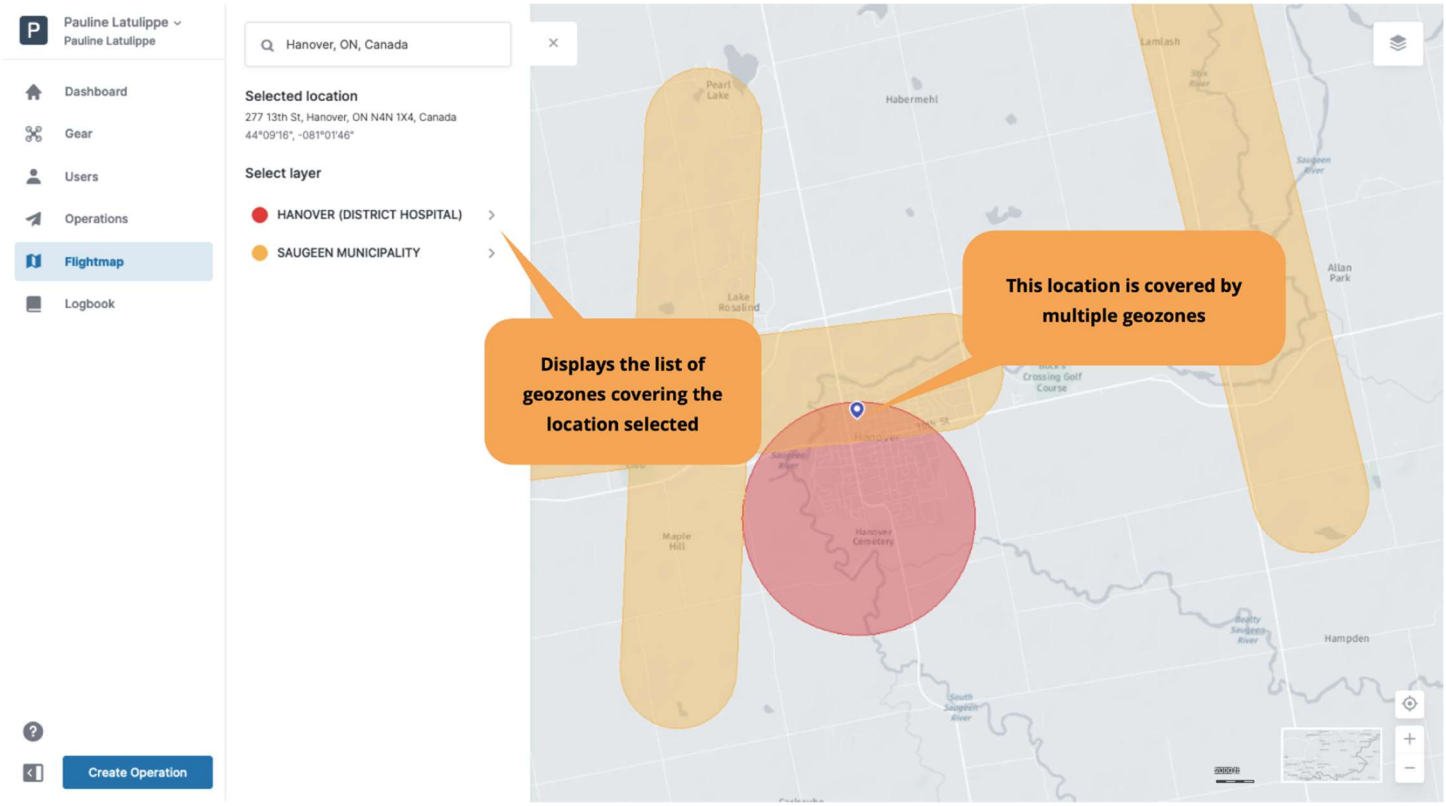
If the selected location is covered by only one visible geozone, detailed information associated with that geozone is displayed in a sidebar on the left of the *Map window*:



This information sidebar can be closed by clicking on the ✖ icon at the top right of the sidebar.

7.4.3. Location covered by multiple visible geozones

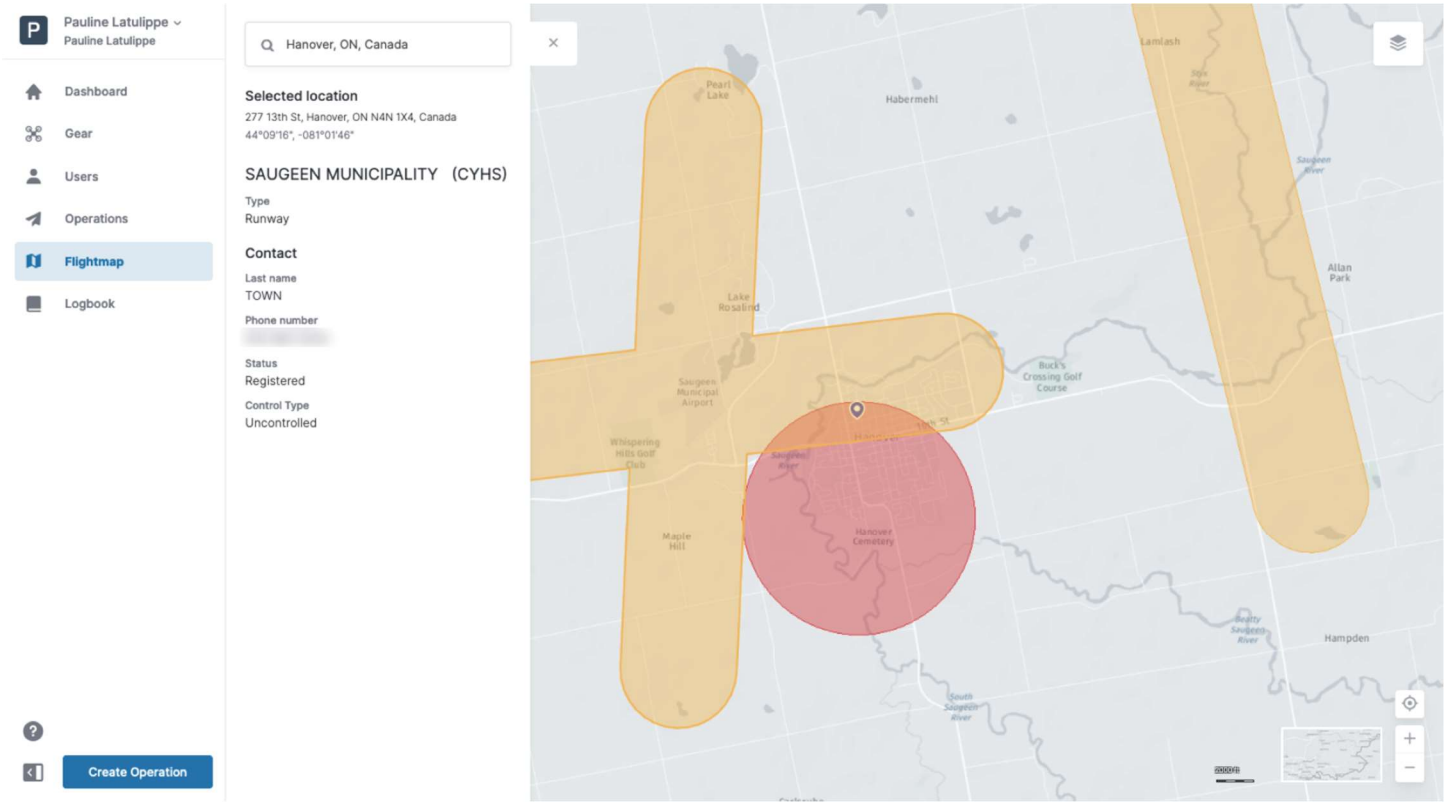
If the selected location is covered by multiple visible geozones, a list of the geozones covering that location is displayed in the sidebar on the left of the *Map window*:



In the example above, the location selected is covered by the geozone *HANOVER (DISTRICT HOSPITAL)* and the geozone *SAUGEEN MUNICIPALITY*.

Selecting one of the geozones in the list by clicking on its name (in this case, *SAUGEEN MUNICIPALITY*) displays the information for the selected geozone in that same sidebar.

This sidebar can be closed by clicking on the ✖ icon at the top right of the sidebar.



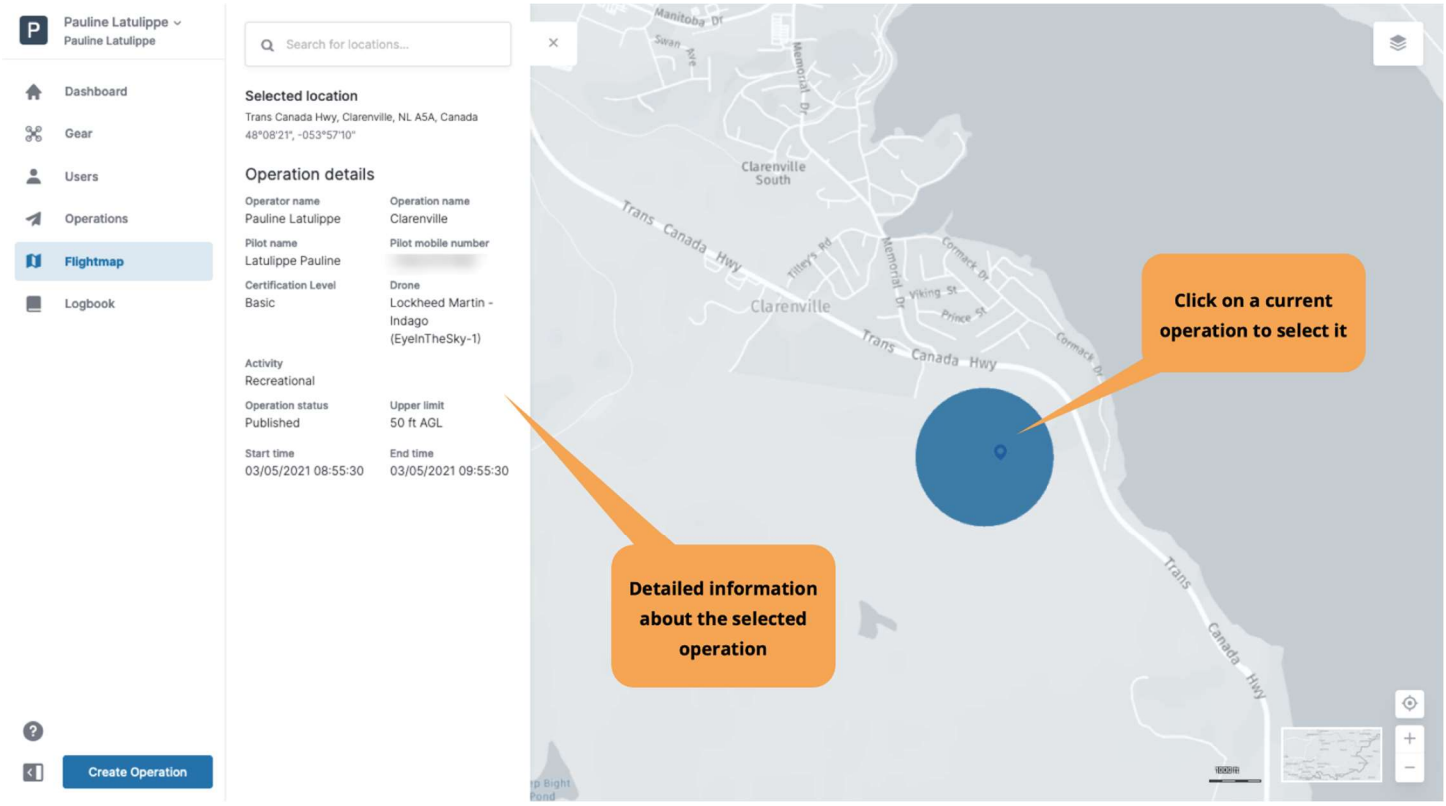
7.5. Display operation information

Information about your operation is displayed by selecting the flight zone of the operation on the map in the *Map window*.

Selecting a flight zone will also highlight the flight zone on the map and provide the following information in the sidebar on the left of the *Map window*:

- Operator name
- Operation name
- Pilot's contact details
- Certification level
- Drone manufacturer, model, and registration number
- Activity
- Operation status
- Upper limit
- Start/end date and time

This sidebar can be closed by clicking on the ✕ icon at the top right of the sidebar.



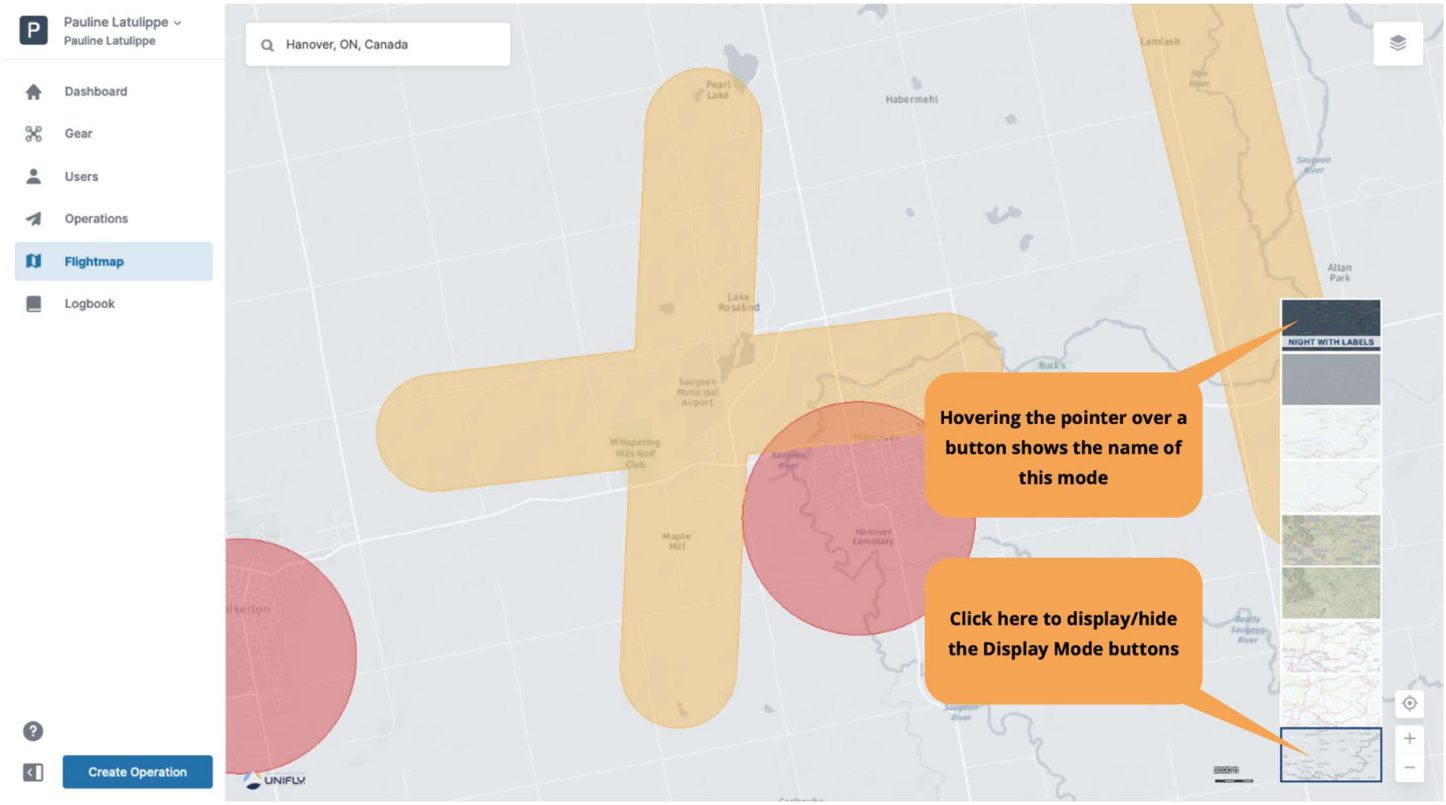
7.6. Change the display mode

The base map of the *Map window* can be displayed in different modes:

- Night with labels
- Night no labels
- Day with labels
- Day no labels
- Satellite with labels
- Satellite no labels
- Coloured with labels
- Coloured no labels

Changing the display mode can be done as follows:

1. Click on the **[Display Mode]** button to display the available display mode selection buttons.
2. Select the display mode you want to activate. When hovering the pointer over a button, the name of the mode will be displayed.
3. Click on the **[Display Mode]** button again to hide the display mode buttons.


Pauline Latulippe
Pauline Latulippe
Dashboard
Gear
Users
Operations
Flightmap
Logbook
Create Operation
Hanover, ON, Canada
Hovering the pointer over a button shows the name of this mode
Click here to display/hide the Display Mode buttons
NIGHT WITH LABELS
UNIFLY

Chapter 8. Logbook

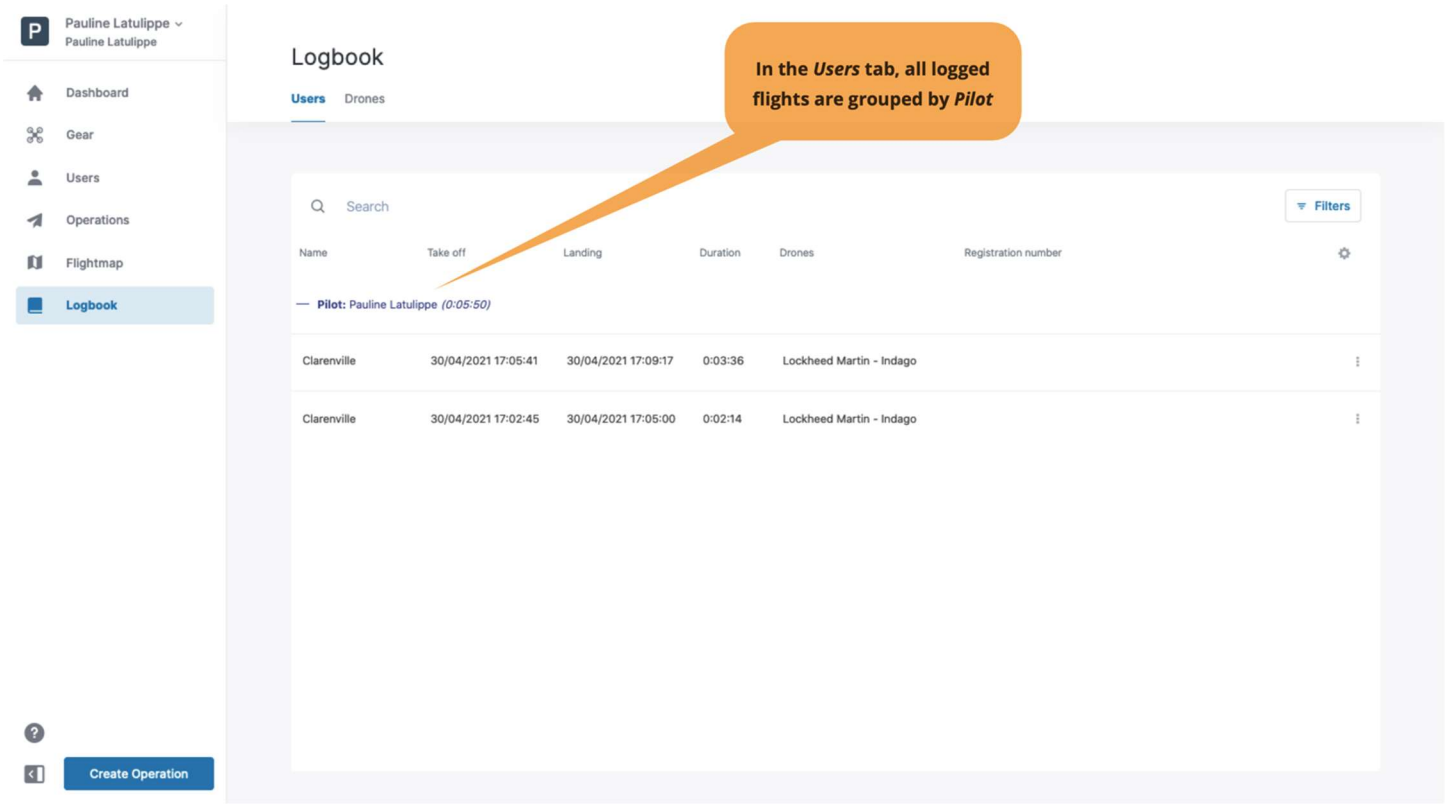
All flights logged in NAV Drone under your account as described in section Log a flight are also visible in the *Logbook*.

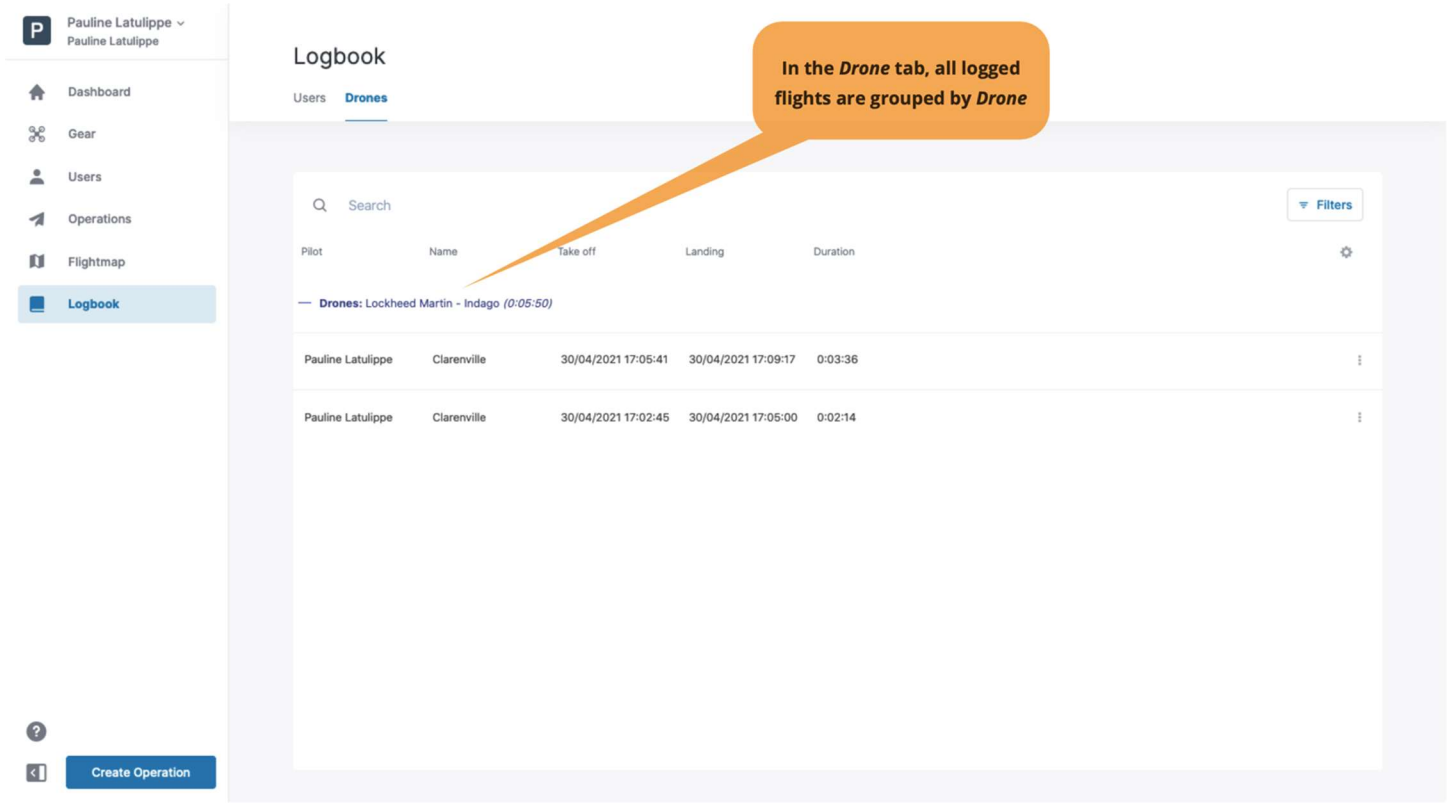
Click on *Logbook* in the left sidebar to access the logbook module. The logbook helps you keep track of all flights conducted under your account and provides statistics regarding the total flight time for the pilots and drones.

The logbook interface consists of two tabs:

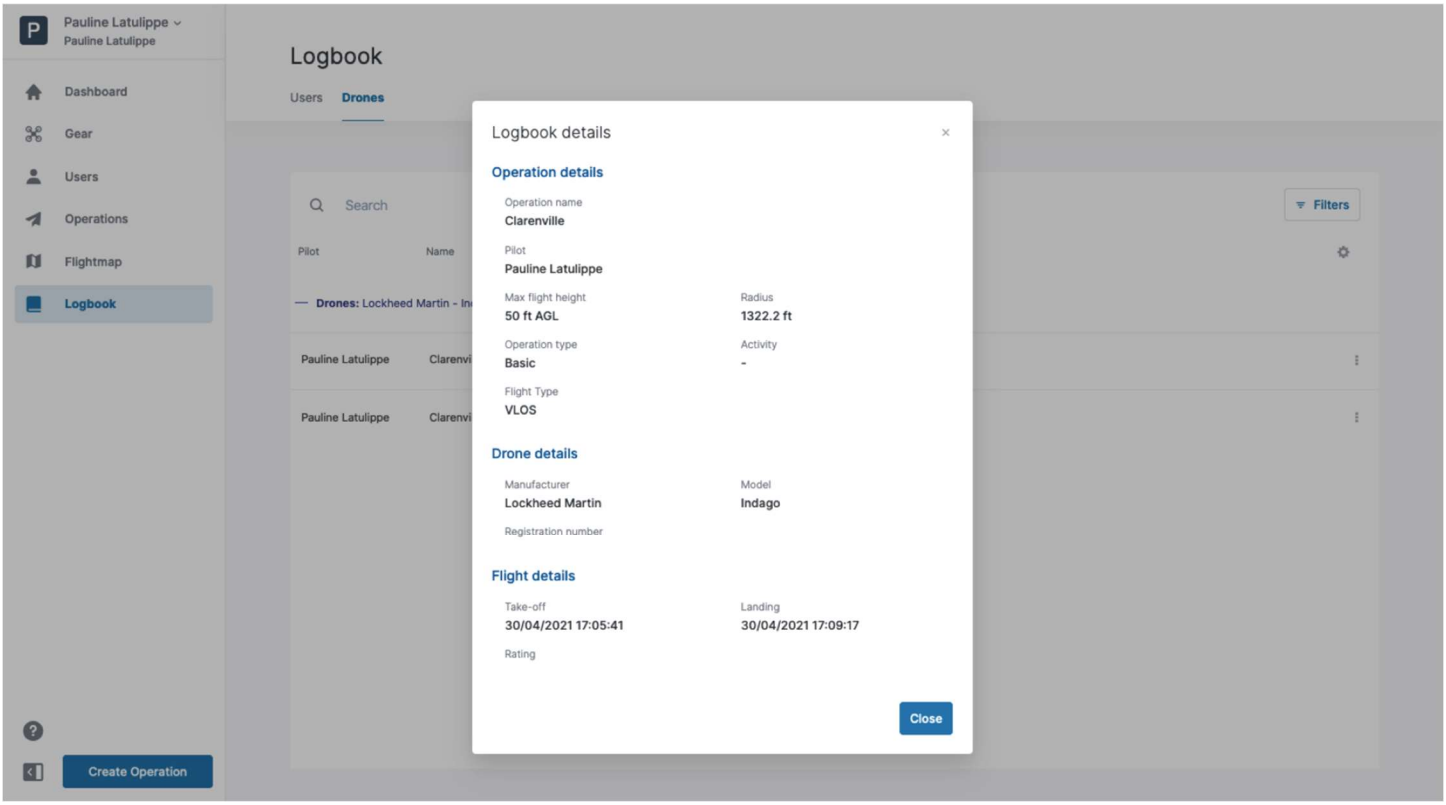
- *Users*: a table showing all flights grouped by *Pilot*. The number indicated on the right side of each pilot's name is the total flight time logged for that pilot.
- *Drones*: a table showing all flights grouped by *Drone*. The number indicated on the right side of each drone's name is the total flight time logged for that drone.

Therefore, both tabs present the same information (all flights logged) but grouped based on a different field. See section Simple grouping for more details about this table functionality.





By clicking on any logbook entry, a dialog box is displayed which provides additional information about the operation, the drone, and the selected flight.



Chapter 9. Glossary

TITLE	*ABBREVIATION*	*DESCRIPTION*
Above Ground Level	AGL	The altitude expressed in feet measured above ground level.
Above Sea Level	ASL	The altitude expressed in feet measured above sea level.
Activity	-	Type of operation.
Aerodrome	AD	Any area of land, water (including the frozen surface thereof) or other supporting surface used, designed, prepared, equipped, or set apart for use, either in whole or in part, for the arrival, departure, movement, or servicing of aircraft. This includes any buildings, installations, and equipment situated thereon or associated therewith.
Aerodrome routine meteorological report	METAR	A METAR describes the actual weather conditions at a specified location and at a specified time as observed from the ground.
Air Navigation Service Provider	ANSP	Organization which is responsible for the provision of air navigation services in domestic or international airspace.
Air Traffic Control	ATC	A service provided to aircraft in controlled airspace.
Air Traffic Controller	ATC	A person holding a valid license to control air traffic.
Air Traffic Management	ATM	A management concept aimed at ensuring full utilization of ATC systems, according to the possibilities offered by future air navigation systems, as they evolve, from both a national and an international perspective.
Air Traffic Service	ATS	A service that includes ATC service, flight services and alerting services
Air Traffic Services Specialist	-	The ATS Specialist is a member of the NAV CANADA personnel who manages access to controlled airspace.

Airspace	-	The portion of the atmosphere controlled by a country above its territory, including its territorial waters or, more generally, any specific three-dimensional portion of the atmosphere.
Altitude	ALT	The height of an object or point in reference to sea level or ground level.
Approval	-	Authorization granted to an operator to manoeuvre in controlled airspace under conditions specified by an ATS unit based on the information provided in the permission request
Area Control Centre	ACC	An ATC unit that provides ATC service to aircraft operating within a flight information region (FIR)
Area of Responsibility (Glossary for Pilots and Air Traffic Services personnel - TP11958E)	AOR	A geographical area within which alerting service is provided by an ATS unit designated as the responsible unit.
Area of Responsibility (NAV Drone)	AOR	The group of control zones for which an ATS unit is responsible for coordinating the assessment of RPAS permission requests.
Base map	-	A base map is a background layer with geographic information. A base map usually provides location references for features that do not change often such as boundaries, rivers, lakes, roads, and highways.
Beyond Visual Line of Sight	BVLOS	Flight performed beyond the pilot's/observer's line of sight.
Canada Air Pilot	CAP	A document in which the Minister may establish standard procedures for air operations at specific aerodromes. Contains descriptions of approaches, SID, STAR and airport layout and procedures.

Canadian Aviation Regulations	CARs	The rules enacted under the Aeronautics Act, that govern civil aviation in Canada. Replacing the Air Regulations and the Air Navigation Orders, the CARs and their associated standards came into force on October 10, 1996, after a comprehensive consultation process between Transport Canada and the aviation community. This co-operative and partnership approach to rule-making continues within the Canadian Aviation Regulation Advisory Council (CARAC), which discusses proposed amendments to the CARs and their associated standards.
Canadian Water Aerodrome Supplement	CWAS	A joint civil/military publication concerning water aerodromes that is intended to be used to supplement enroute charts and the Canada Air Pilot (CAP).
Certificate	-	In a professional context: a designation earned by a person to assure qualification to perform a job or task. Example: a drone pilot certificate. In a digital context: in cryptography, a public key certificate, also known as a digital certificate or identity certificate, is an electronic document used to prove the ownership of a public key.
Certification Level	-	Two categories (Basic and Advanced) of drone operations as defined under the Canadian Aviation Regulations Part IX. Each category has a different set of rules drone pilots must follow.
Checkbox	-	Graphical control element that allows the user to make a binary choice, i.e. a choice between one of two mutually exclusive options. For example, the user may have to answer 'yes' (checked) or 'no' (not checked) on a simple yes/no question.
Circuit – Aerodrome traffic circuit	-	The specified path to be flown by aircraft operating in the vicinity of an aerodrome

Civil Aviation Authority	CAA	A government statutory authority in each country that maintains an aircraft register and oversees the approval and regulation of civil aviation.
Command and Control	C2	The data link between the remotely piloted aircraft and the remote pilot station for the purpose of managing flight.
Control tower	TWR	A unit established to provide ATC service to aerodrome traffic. Also called “Tower”.
Control Zone	CZ	A controlled airspace of defined dimensions extending upwards from the surface of the earth up to and including 3000 ft AAE unless otherwise specified
Coordinated Universal Time	UTC	The time system used in aviation operations and given to the nearest minute, except when the pilot requests a time check. Time checks are given to the nearest 15 s. The day begins at 0000 and ends at 2359. Synonymous with Zulu time.
Dialog Box	-	Graphical control element in the form of a small window that communicates information to the user and prompts them for a response.
Disclaimer	-	Terms and conditions that apply to a user’s access and use of the NAV Drone applications.
Drone	-	An unmanned aircraft guided by remote control or onboard computers. Synonymous of RPA (Remotely Piloted Aircraft), UAV (Unmanned Aerial Vehicle), and UAS (Unmanned Aerial System).
Drone Name	-	Nickname that a pilot can associate with a drone.
Drone Operator	-	The drone operator means any legal or natural person who operates or intends to operate one or more drones.

Drone Pilot	-	A drone pilot is the person designated by a drone operator who is in command of the drone and in charge of the safe conduct of the flight. Depending on a number of factors, including the drone type and the drone operation, a drone pilot may be required to have one or more active certifications to be allowed to execute the drone flight.
Emergency		A situation that places an aircraft or other vehicle, or some person on board or within sight, in a state that requires immediate action.
Explore without account	-	Possibility in the NAV Drone mobile app to try out the mobile app without registering and logging in. Therefore, not all functionalities are available.
Flight	-	A flight is considered as one takeoff and landing sequence. Therefore, an operation can consist of multiple flights.
Flight Information Centre	FIC	A centralized ATS unit that provides services pertinent to pre-flight and the enroute phase of flight
Flight Information Region	FIR	An airspace of defined dimensions extending upwards from the surface of the earth within which flight information service (FIS) and alerting service are provided.
Flight Service Station	FSS	An ATS unit that provides services pertinent to the arrival and departure phases of flight at uncontrolled aerodromes and for transit through a mandatory frequency (MF) area
Flight Service Specialist	FSS	A certified employee assigned duties and responsibilities at an FSS or FIC
Fly-away		An interruption or loss of the command and control link (C2 Link) where the pilot is unable to affect control of the aircraft and the aircraft is no longer following its preprogrammed procedures, all of which results in the RPA operating in an unpredictable or unplanned manner
Geozone	-	Any airspace that may have restrictions, may require permission, or may require awareness of manned aviation.

Ground Control Station	GCS	A ground control station refers to the complete set of ground-based hardware systems used to control a drone. Synonymous with Remote Pilot Station (RPS).
Height	-	In aviation: the vertical distance of an object measured from a stated reference such as the ground (above ground level = AGL). Reported in feet.
International Civil Aviation Organization	ICAO	A specialized agency of the United Nations, the objective of which is to develop the principles and techniques of international air navigation and to foster planning and development of international civil air transport.
JavaScript Object Notation	JSON	A common data format used for asynchronous browser–server communication.
Keyhole Markup Language	KML	Keyhole Markup Language (KML) is an XML notation for expressing geographic annotation and visualization within Internet-based, two-dimensional maps and three-dimensional Earth browsers. KML was developed for use with Google Earth, which was originally named Keyhole Earth Viewer. KML became an international standard of the Open Geospatial Consortium https://www.ogc.org/standards/kml in 2008. As for any XML standard, the message grammar can be checked to see if it is correctly formatted so the system using it will be able to read and process the data.
Logbook	-	For pilots and operators, the logbook keeps track of all flights conducted under a user account and provides statistics regarding the total flight time for the pilots and drones.
Lost C2 Link	-	The loss of command and control link (C2 Link) contact with the RPA such that the pilot can no longer manage the aircraft's flight. A lost C2 Link does not necessarily result in a fly-away situation, as the RPA will be programmed to follow a predictable flight path until the link is reacquired or the flight is terminated. Lost C2 link procedures are programmed by the manufacturer, and on some models, may be modified/programmed by the RPAS operator.

Map Layers	-	Airspace zone categories displayed on top of the background map (base map).
Maximum Take-Off Weight	MTOW	Maximum take-off weight (MTOW) of an aircraft is a value defined by the aircraft manufacturer. It is the maximum mass at which the aircraft is certified for takeoff due to structural or other limits. MTOW is usually specified in units of kilograms or pounds. The mass is a fixed value and does not vary with changes in temperature, altitude, or runway available.
Multicopter	MC	A rotorcraft with more than two rotors. An advantage of multirotor aircraft is the simpler rotor mechanics required for flight control.
Nautical Mile	NM	The international nautical mile is defined as exactly 1852 metres (about 1.15 miles). The derived unit of speed is the knot, one nautical mile per hour.
No Drone Zone (NAV Drone)	NDZ	Specific to NAV Drone, a No Drone Zone is an airspace in which drone traffic is restricted or forbidden. No Drone Zones are temporary.
Notice to airmen	NOTAM	A notice distributed by means of telecommunication containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations.
Operation (NAV Drone)	-	An operation is created by a pilot or by an operator and represented by a flight zone and associated parameters such as the operation type, the start/end date and time, the designated pilot, the drone planned to be flown, etc.

Operator	-	A distinction is made between the operator level (commercial entity) and the user level (individual). One operator can invite multiple users to join their crew (drone pilots, observers, and payload specialists). In the same way, one user can be associated with multiple drone operators, as is the case for a freelance pilot who is contracted by multiple operators, for example.
Permission Request	-	For Advanced operations in airspace controlled by NAV CANADA, the operator must submit a permission request to NAV CANADA. Permission requests are evaluated either automatically or manually, depending on the height and location of the operation's flight zone. The possible statuses for a permission request are: Draft, Initiated, Sent, In Review, Needs Action, Approved, Rejected, Rescinded, and Cancelled.
Pilot in Command	PIC	See "Drone Pilot".
Registration Number	-	A registration number assigned to a drone by Transport Canada
Remote Control	RC	The use of control signals transmitted by radio to remotely control a device.
Remote Pilot	RP	See "Drone Pilot".
Remotely Piloted Aircraft	RPA	See "Drone".
RPAS Traffic Management	RTM	An international aviation concept that brings an automated ATM- like system to very low-level airspace which will be occupied primarily by unmanned aircraft (commonly referred to as drones).
Shape handle	-	Graphic control element in the form of a small square, used for editing a shape by dragging the handle.
Tasks	-	For a drone operator, the Tasks tab list all tasks related to an operation, in three categories representing three different task statuses: Action Required, Submitted and Resolved. In the context of NAV Drone, tasks are associated with a permission request.

Tooltip	-	Common graphical user interface element displayed as an informational text box when hovering over an item. It is used in conjunction with a cursor, usually a pointer.
Transport Canada	TC	The federal authority responsible for regulating civil aviation
Transport Canada Aeronautical Information Manual	TC AIM	A primary Transport Canada publication of aeronautical information intended to serve as a pre-flight reference source for pilots and that contains information essential to aircraft operations in Canadian Domestic Airspace (CDA). It consolidates information of a lasting nature into a single document. Topics covered are general flight information, communications, meteorology, rules of the air and ATC procedures, entry and departure requirements for international flights, search and rescue, aeronautical charts and publications, licensing and registration, health, and airmanship
UAS Traffic Management	UTM	Equivalent to RPAS Traffic Management (RTM)
Uncontrolled aerodrome	-	An aerodrome at which a control tower has not been established. This designation also applies during the non-operational period when an established control tower is on reduced hours (part-time)
User agency	-	The agency, organization, or military command responsible for the activity for which Class F airspace has been provided. The user agency shall be identified for Class F restricted areas, military operations areas, and danger areas and, where possible, should be identified for Class F advisory areas.
Validation	-	An operation validation consists in verifying that the operation complies with applicable rules and regulations.

Vertex	-	In geometry, a vertex is a point where two or more curves, lines, or edges meet. As a consequence, the point where two lines meet to form an angle and the corners of polygons are vertices.
Very Low Level	VLL	Very Low-Level airspace (VLL) is usually understood to be the volume of air below 500ft above (non-built-up) ground level.
Visual Flight Rules	VFR	The rules that govern the procedures for conducting flight under visual conditions. The abbreviation is used by pilots and controllers to indicate a type of flight plan or weather conditions.
Visual Line-of-Sight	VLOS	Unaided visual contact at all times with a remotely piloted aircraft that is sufficient to be able to maintain control of the aircraft, know its location, and be able to scan the airspace in which it is operating in order to perform the detect and avoid functions in respect of other aircraft or objects.
Visual Meteorological Conditions	VMC	Meteorological conditions, expressed in terms of visibility and distance from cloud, equal to or greater than the minima specified in CAR 602.