Application *bta_obj_list* brief guide

The application runs as 3 windows:

BTA_Obj_List - the main one to control two other and to operate with TCS BTA
Including:

Entering password
Control buttons
Object fields
Offset pointing
Menus

BTA List - for the objects list
BTA Sky - for visual representation of the objects list

The last two windows are scalable. You can change the size or hide it altogether to save space on the screen.

Main window

Most of the buttons and fields in this window have *tooltips*, i.e. pop up assistances.

Remote networking

This application does not use any special interfaces to communicate with the TCS BTA, but work over *HTTP* through BTA servers Web-sites, which have appropriated CGI support (*bta_get.cgi* and *bta_send.cgi*).
At the bottom of the window there is a field **BTA Web-host name**. You need to enter the full name of the site in it (and press Enter). You also can select it from the list of those available at the time when the application was developed.
Then press the button **Change** to connect to this site.

Entering password

To operate with TCS BTA, you need to set a password to get the access level. By default, it is equal to 1, i.e. only receiving data from BTA.
The password is entered "invisibly", but near this field there is a button to show the entered password.
Then you need to click **Set** button to remember and use the password.

Telescope control

The telescope control buttons are located above the password:

BTA Stop - stop the current observation for the next pointing
Send and Point - sending the object coordinates and start pointing
these buttons only work at access level **4**.
Send Object to BTA - only send the object coordinates
this button works at access levels **2,3** and **4**.
Get from BTA - getting the current coordinates of BTA
always works if there is a connection with Web server.

Note: the received coordinates are automatically adjusted to the Epoch 2000.0.

BTA Object

This is a set of transit fields for object parameters. They are entered either manually, or by selecting from a list, or from the TCS BTA.

Obj.name - the name of the object (optional) is transmitted to the BTA TCS along with the coordinates and displayed in the work protocol

R.A. - the right ascension of the object in the format dd:dd:dd.dd
Decl. - declination of the object in the format +-dd:dd:dd.d
Epoch - the date (in dddd.dd format) or Equinox (e.g. 2000.0) for R.A. and Decl. coordinates.

Offset pointing

The Azimuth and Z offset fields are located below the coordinates of the object. They can record the values (in arc seconds) that the telescope needs to drive up to after pointing, for example, so as not to do it every time with the guidance buttons.
It can also be used to accurately point at an "invisible" object. To do this, calculate the average displacement of neighboring stars with exact coordinates.
Using the **Get** button, the accumulated error during the previous guidance can be read from the BTA TCS.
Note: the Azimuth offset here is "like in the sky", i.e. with taking *sin(Z)* into account.

BTA TCS state

If there is a connection to the BTA Web-server, the current operating mode is shown in the color field in the same manner as in all previous programs. Next to it is the field of the current access level (from 1 to 4) corresponding to the entered password.

File menu

Designed to work with *.lst files:
    Read and Add list - opens the file browser window to search and download a new list, which is added to the current one
    Clear list - if you need to load a new list instead of the current one
    Save list - opens the file browser window to save the newly created or edited list
    Quit - application shutdown

Windows menu

Designed to manipulate windows to save space on the screen:
    Show/Hide BTA_List - remove the object list window from the screen or display it again
    Show/Hide THE_Sky - the same for the window of the graphical representation of the list of objects
    View as BTA (or AllSky) - switching the view type in the "BTA Sky" window: as in the operator interface (south at the top) or on AllSky cameras (south at the bottom)
    A/Z Grid (or HA/Decl) - switching the type of coordinate grid in the "BTA Sky" window

ObjList menu

It is intended for creating or editing a list of objects:
    Add Object - form a string with object parameters from the fields of the main window and add it to the end of the objects list
    Insert Object - is the same, but the generated line is inserted before the current (highlighted) line of the objects list
    Insert Comment - insert the contents of the "Obj.Name" field before the current line as a comment (i.e. with a # at the beginning of the line)
    Remove line - remove the current (highlighted) line from the objects list

Help menu

    This is the menu for calling up help information:
        native Language - this is toggle menu line to switch to the national language the entire application interface and reference information, at the moment, the Russian language is implemented for Russified OS
        Help - opening a window with the text of the application description, removed by the **Close** button at the bottom of the window

About - brief information about the main features of the application, removed by the **Close** button at the bottom of the window

About Qt - standard help about the Qt version that used for generating the application

Objects list window

It is designed for convenient work with a list of objects from the usual xxx.lst file format (as in previous programs i.g. *telescope*).

Working with object list files is performed either through the **File** menu of the main window, or by using duplicate buttons at the top of this window:

Clear list - if you need to load a new list instead of the current one

Read .lst file - opens the file browser window to search and download a new list, which is added to the current one

The list line is highlighted and made current with a mouse click. In this case, the position of the object in the sky is marked in the graphic window with a blue cross.

To move an object to the main window for sending to the BTA TCS, click the current line a second time. You can also double-click on any line to do this.

Note: editing the list by **ObjList** menu of the main window is performed relative to the current line.

Window for graphical representation of objects in the sky

Implements the principle previously used in the programs *bta_list* and *zeiss_list*. It graphically shows the distribution of objects from the list by coordinates A and Z (or HA и Decl.). At the start of the application, the cardinal directions in the figure correspond to the mnemonics adopted in the operator interface: top - south; bottom - north; left - east; right - west (i.e. "the top view").

The type of view in this window can be switched in the **Windows** menu of main window.

You can also select a list line here by clicking on the object's circle. The selected object is marked with a blue cross. At the same time, the corresponding line is highlighted in the objects list window. And in the upper-left corner of this window, the object parameters are displayed.

If you click the selected object a second time, its parameters will be transferred to the main window for sending to the BTA TCS. You can also double-click on any object to do this.

If there is a connection with the BTA Web-server, the current position of the telescope is shown with a red cross.