The Netherlands 2000 scenery, version 3.0

Manual

This manual describes installation and use of The Netherlands 2000 scenery version 3.0. In order to use this scenery you need to have Microsoft Flight Simulator 2004. In order to be able to use all functions of The Netherlands 2000 scenery version 3.0 optimally, we advise you to read this manual in its entirety. When our instructions are not followed correctly it is likely that this influences the proper functioning of Flight Simulator and the frame rates in a negative way. For more information read FAQ at www.nl-2000.com.

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1. FORWORD

You either just downloaded the latest version of the NL2000 scenery or you are about to.
This new version is unique as it uses photo realistic ground scenery with a resolution of 3ft/pixel.
This high resolution enables low altitude flying with good visibility of ground detail.
This scenery, with many new 3D-objects, entirely new or partly recreated airports, mesh surface and a great number of new details, will make flying over the Netherlands a spectacular flight simulation experience.

We owe a lot of gratitude to all those that gave us freely information in many a form, which made version 3 even more complete and realistic than the previous versions.
We also want to extend thanks to our beta testers for their enthusiasm and patience during the test phase of version 3. Due to their full commitment and attention to detail many shortcomings in the scenery were detected in time and corrected by us.

Version 3.0 has been put together by us with the greatest care. If you still have questions or remarks, then you can address these at our website www.nl-2000.com.

We hope you will spend many happy hours flying over our latest edition of The Netherlands 2000 scenery!

The Netherlands 2000 Scenery Design Team
June 2007

2. SYSTEM REQUIREMENTS AND SETTINGS

Minimal system requirements are:
- 2.0 GHz processor
- 333Mhz FSB
- 1024 RAM internal memory
- 128 MB 3D video card (directX 9)
- 35GB of free space in a NTFS partition
- Installed version of Microsoft FS2004
- WindowsXp (all versions) or Windows Vista (all versions)
- Microsoft .NET Framework 1.1, free downloads from
- http://www.microsoft.com/downloads/details.aspx?FamilyID=262d25e3-f589-4842-8157-034d1e7cf3a3&DisplayLang=en

With above described minimal system setup not all advanced functionality of FS2004 and NL2000 can be used optimally. However, most functions of NL2000 will work correctly.

When you want to be able to use all functionality of FS2004 optimally, we advise a system with at least:
- 3.0 GHz processor (or one of comparable rating)
- >= 400Mhz FSB
- >= 2 GB internal memory
- 256 MB video card (directX 9)
- 35 GB of free space in a NTFS partition
- Installed version of Microsoft FS2004
- WindowsXp (all versions) or Windows Vista (all versions)
- Microsoft .NET Framework 1.1, free downloads from
- http://www.microsoft.com/downloads/details.aspx?FamilyID=262d25e3-f589-4842-8157-034d1e7cf3a3&DisplayLang=en

You can achieve the optimal settings with Feature Panel, see chapter 4

Screen resolution of your monitor should be set to at least 1024 x 768 pixels.

In your Flight Simulator's library the scenery "Western Europe" should be activated.

3. INSTALLATION

3.1 Sequence of installation

The scenery can be downloaded in 5 parts. Each part equalizes the size of one DVD.
Installation can be performed in two ways:

1. Copy the contents of all 5 parts to one temporary folder and start the installation tool from there.

Or

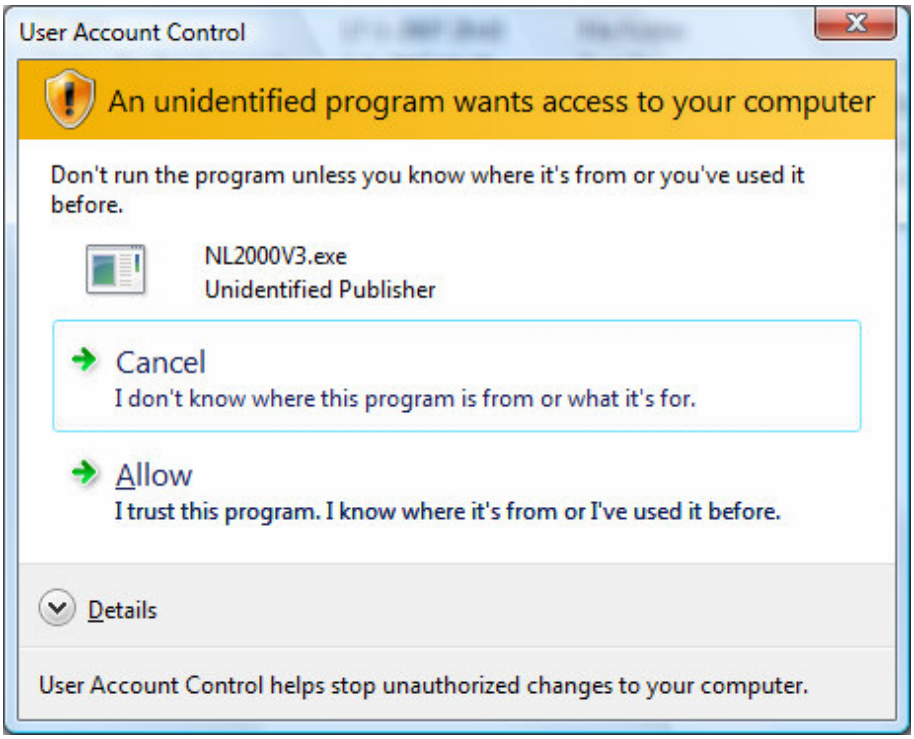
2. Burn 5 DVD's with corresponding part numbers of the download and start installation by means of the installation tool from the first DVD.

Download and installation can take a long time, due to the large amount of files. The installation tool will show the installation progress by means of progress bars and a window in which copied file names will be shown.

Install The Netherlands 2000 scenery version 3.0 by means of the automatic installation tool. This tool will enable you to determine installation options and location on your hard drive. Except the files that will need to reside in specific folders of Microsoft Flightsimulator.

You start installation by double clicking on "nl2000v3".

When you install the NL2000 scenery in Windows Vista you could see the window below on your screen. Click on "Allow" to continue the installation.



The following screens will appear in succession:

Figure 3.1: opening screen of the automatic installation tool.

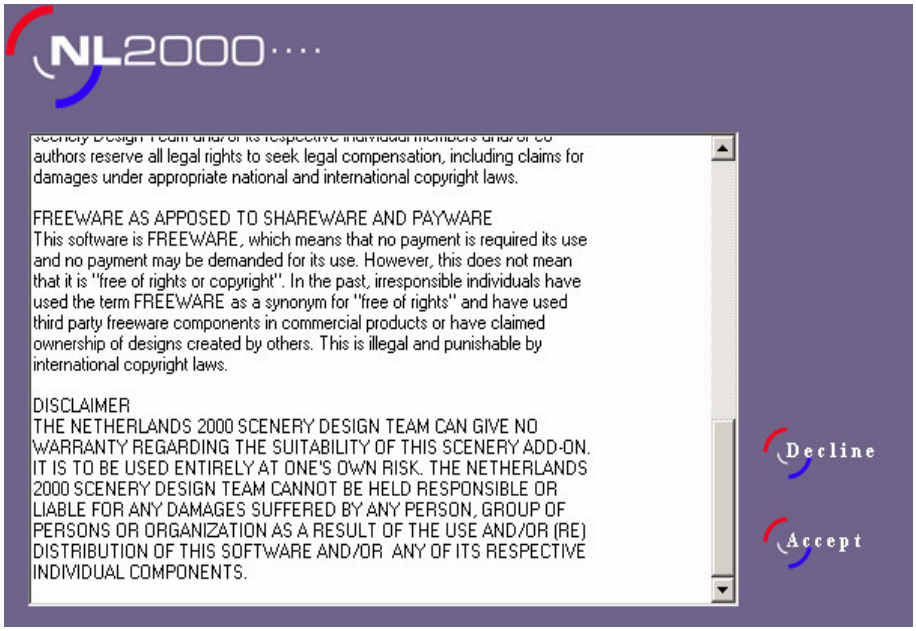


Figure 3.2: copyright acceptance screen.

By clicking “Accept” you accept the conditions spelled out in the copyright notice and installation will continue. Otherwise click “Decline” to terminate installation.

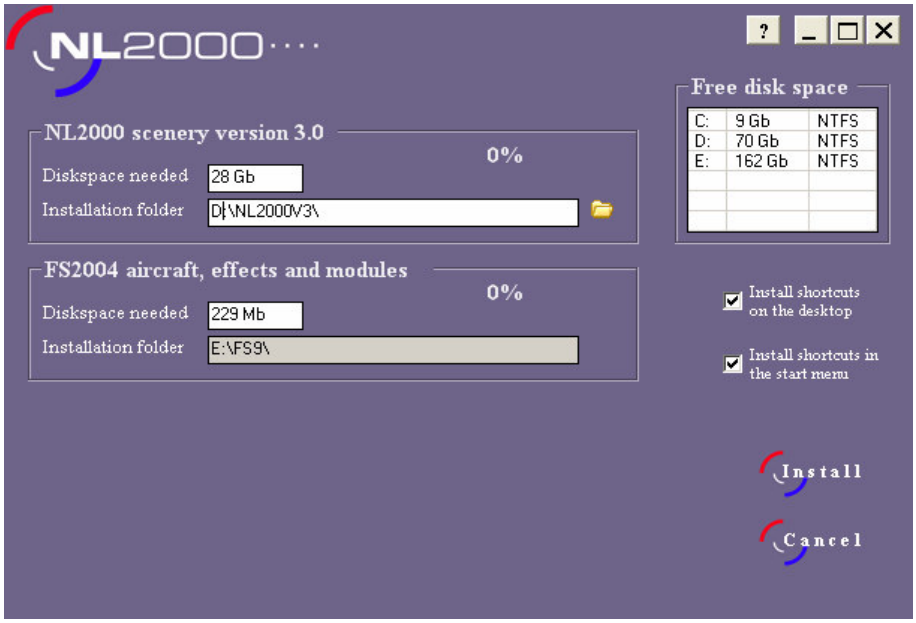


Figure 3.3: selection screen for installation location

Here you can chose the installation location of the scenery. Installation on another drive then where FS2004 resides may have a positive influence on the reading speed of files during loading of the scenery in FS2004 later. This is for sure the case with an external hard drive using USB2.0. This screen also allows for shortcuts selection.

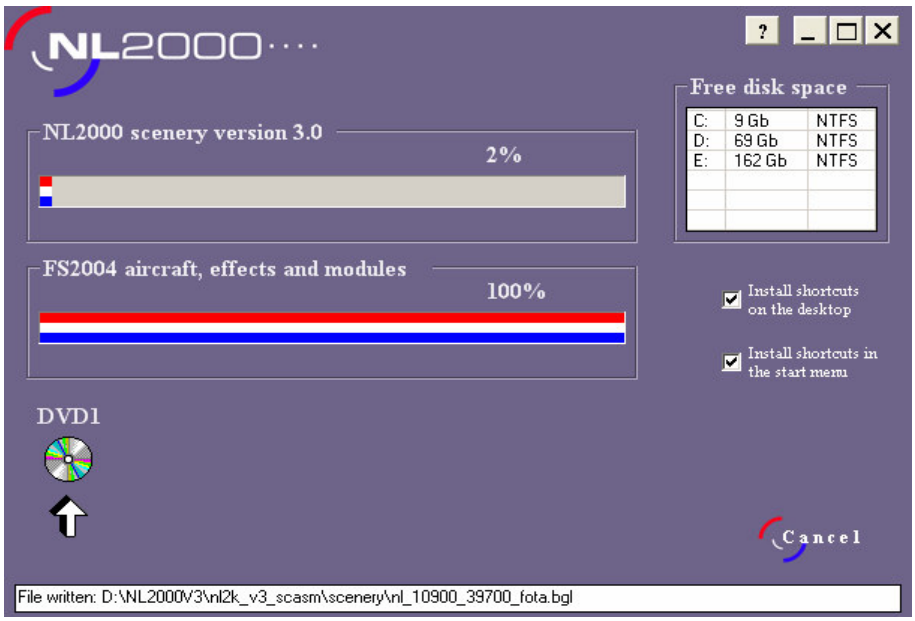
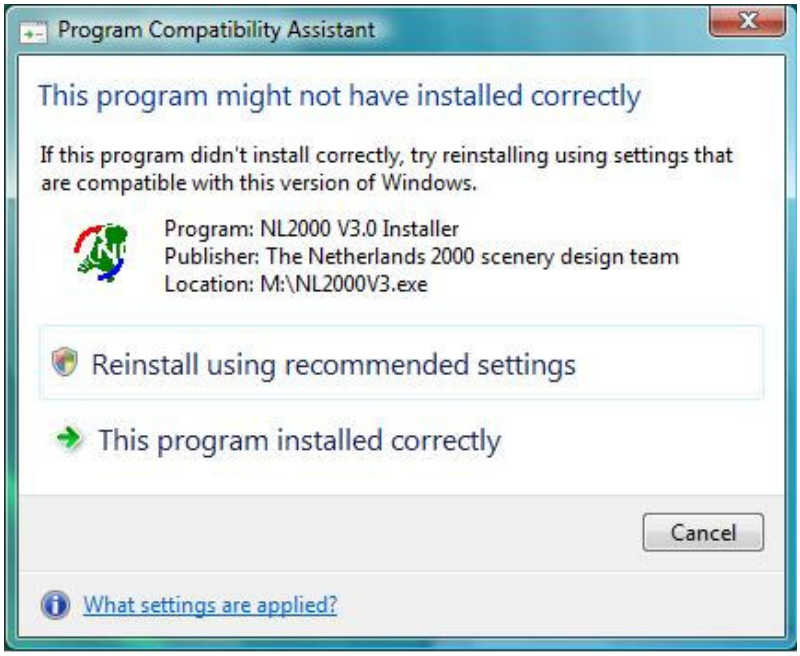


Figure 3.4: the "flag" and file names show the progress of installation.

On this screen you can monitor the progress of installation, which DVD's have been and is being installed by the installation tool. The column showing free disk space is updated continuously, so you will constantly know the remaining free space on your hard drive.

The installation tool will show a blinking arrow at the left bottom of the screen once the next installation DVD is required. Insert the next DVD and click continue. This blinking can occur also in the event of a reading mistake of the DVD. When after a repeating reading mistake you click "continue" several times a browser window will appear in which you can change the installation location. Thus you can change DVD players during installation without interrupting installation.

Please note: While finalizing the installation, Windows Vista-64 users will see the following screen. Select "This program installed correctly" to complete the installation.



3.2 Uninstallation of the scenery

Follow the next described steps to uninstall the scenery:

Start the NL2000 installation tool. The following screen will appear on your monitor.
Click on the “Uninstall” option and the NL2000 scenery will be removed from your system.

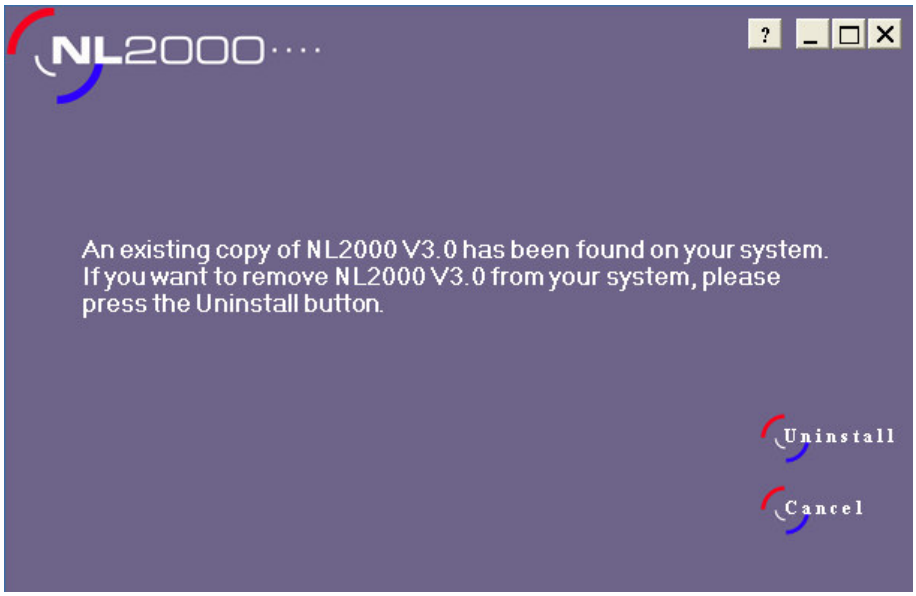


Figure 3.5: instruction screen for uninstallation.

In the event automatic removal of the NL2000 scenery does not work you can perform a manual uninstall. These are the steps to follow:

- Start Feature Panel and restore the default files (see chapter 4.2 on page 10)

- Start Fs2004 and delete all NL2000 V3 folders from the scenery library.

- Use a file browser (such as explorer), look for the NL2000 V3 folder and delete this.

3.3 Error messages during installation

It is possible you see error messages during installation. A number of them are known to us and will be discussed in this chapter.

Message: An error occurred during start-up of the NL2000 V3 installer.
Make sure you install NL2000 V3 either from DVD or from a local path.
NL2000 V3 cannot be installed directly from a network drive.

Solution: The installer can not be started from a network drive.
You can solve this problem by starting the installer from the DVD or from a temporary folder on your hard drive.

When there is not enough free disk space on the hard drive, you should copy NL2000V3.exe and VB6STKIT.DLL in a temporary folder and start the installation from there. Then the installer will request the location of the remainder of files (these can be located on a network drive).

Message: Unable to locate xxxxxxxxxxxxx\Fs9.CFG. Fs9.CFG can not be updated.

Solution: The installer is not able to find the file Fs9.cgf. The remedy is to cancel installation, restart FS2004 and to retry installation of NL2000 V3.

More experienced Fs2004 users can solve this by editing the Fs9.cfg file.
TERRAIN_MAX_VERTEX_LEVEL must be given the value 21.

Message: Unable to create directory xxxxxxxxxxxxxx

Solution: Shortcuts cannot be created automatically. This can be solved by manually starting the installation tool from the NL2000V3 folder.

Message: Unable to locate xxxxxxxxx\uninstall.csv file, NL2000 V3.0 cannot be uninstalled automatically.

Solution: NL2000 V3 keeps track of installed files in "uninstall.csv" file. The uninstaller reads this file in order to delete all files of NL2000 V3. If this does not work NL2000 V3 can be manually removed, see chapter about uninstallation.

4. FEATURE PANEL

4.1 What is Feature Panel?

Version 3.0 has been equipped with Feature Panel, which has to be started immediately after automatic installation. Feature Panel provides a menu driven selection of choices, through which you will be able to influence the degree of reality of the scenery by changing its optional settings. You have to keep in mind the capabilities or limitations of your PC. The more options you select, the lower the frame rate (number of screen updates per second) will be.

Feature Panel can always be revisited via the shortcut on your desktop or by means of Start>Programs>The Netherlands 2000>NL2000 V3.0 Featurepanel.

Especially once newly started you will want to experiment with Feature Panel. This is the reason why the installation tool creates the short cut on your desktop.

4.2 Feature Panel

Feature Panel exists of 7 selection buttons that refer to subject menus. Each selection button opens a new menu, from which you can select subject specific options. (See figure 4.1)

Every menu options screen in Feature Panel at the top shows two slots that point to the installation locations of NL2000 and FS2004 (FS9).

The option “Restore default Microsoft files…… etc.” enables you to automatically restore all Microsoft Flightsimulator default files, including AFCAD files, textures files, etc. from the original FS2004 CD.

Be aware:
By selecting option preferences in Feature Panel original files are overwritten. These could be Microsoft Flight Simulator files, but of course also replacement files you created yourself. By deselecting option choices the original MSFS files are restored. In case, you created your own replacement files, please make a backup first, before you start experimenting with Feature Panel

On every menu option screen you see selection buttons with links to our website (button: “visit our website”); this manual in English (button: “Scenery manual English”); the manual in Dutch; a button for heliport information and a finally button to close the menu option screen (button: “Close”). Note: the changes you make in Feature Panel will only become active after clicking the button bar “Apply changes” and not by clicking the button bar “Close”.

4.2.1 Menu subject option: NL2000 Gliding

This subject option screen has been added specifically for FS glider pilots. In Flight Simulator you can choose, by means of the option “select flight”, from a number of glider flights made by the team, under the caption “NL2000 glider”. At the start of the flight the glider is already at altitude and in flight.

Figure 4.1: NL2000 Gliding options

The option buttons on this menu sheet allow you to select the following:

- Thermals, placed in the airspace between Salland en Teuge.
- Thermals, placed in the airspace between Teuge and Terlet.
- Thermals, placed in the airspace between Terlet, Soesterberg and Hilversum.

Click the button bar “Apply changes” to save and activate your selected options.

Note: These thermals enable you to fly to and from an airport. During engine propelled flights we advise you to un-select this option.

4.2.2 Menu subject option: NL2000 AI Aircraft

This subject option screen enables you to select a number of options to create dynamic aircraft traffic in your flying environment. For GA en AI air traffic there is a separate menu option screen (see page 13).

Figure 4.2: NL2000 AI Aircraft options.

- AI Traffic – chopper
  This option will activate helicopter traffic between various airports and heliports, including military-, civilian- and helicopter traffic including MEDVAC services.

- AI Traffic - airliners
  This option activates ATC guided civilian air traffic from and to various airports.

- AI Traffic – Military F16
  F16 flights will be activated at several air bases such as Twente AB (EHTW) and Leeuwarden AB (EHLW). A F16 aircraft model has been installed during installation.

- AI Traffic – Ships
  Activating this option will simulate cargo- and passenger ship traffic on various water ways in the NL2000 scenery.

Always click the button bar “Apply changes” to save and activate your selected options.

4.2.3 Menu subject option: NL2000 AI traffic (GA)

Using the selections on this option screen you can enliven your flying environment by adding dynamic general aviation (AG) aircraft.

Figure 4.3: NL2000 Ai aircraft (GA) options.

You can select the following options:

- Touch and go

  By clicking the selection boxes to the right you activate “touch & go” flights at the smaller airfields in The Netherlands for which these are created. These flights are programmed to take place as in real time. Most flights are scheduled on the weekends between 10:00 and 13:00 UTC (winter time = UTC+1, summer time = UTC+2).

  - EHAL: Ameland
  - EHBD: Budel
  - EHDR: Drachten
  - EHGG: Groningen
  - EHHO: Hoogeveen
  - EHHV: Hiversum
  - EHLE: Lelystad
  - EHMZ: Midden-Zeeland
  - EHRD: Rotterdam
  - EHSE Seppe
  - EHTE: Terlet
  - EHTX: Texel
  - EHTW: Twente

- Use AI Traffic General aviation (small engine aircraft aviation)
  By clicking this selection box you will encounter AI Traffic en route between Dutch airfields, for which these are created. These AI aircraft fly only to and from smaller airfields.

- EHAM General Aviation
  This will activate small engine aircraft traffic as business-, sport- and private flights to Amsterdam Schiphol Airport (EHAM)
  This option can have a negative influence on your frame rates.

Always click the button bar “Apply changes” to save and activate your selected options.

4.2.4 Menu subject option: NL2000 Scenery

Using the option choices offered on this menu screen, you can enable a number of extra features of the NL2000 scenery. These options increase the reality factor, but depending on your computer system, can affect your frame rates.

Figure 4.4: NL2000 Scenery options

- Use NL2000 Educational scenery
  Activation will show the names of cities during flight in the scenery. Fun to exercise your topographic knowledge and it is an additional tool to orientate yourself.

- Use NL2000 Night scenery
  Activation will show city and street lights at night in NL2000. As this is realized by means of an extra scenery layer it could influence the frame rate. When you fly mainly during day light, we advise you to leave this option off.

- FS2004 vertex level
  Activating this option you increase the setting “terrain_max_vertex_level” in the configuration file of FS2004. This increases the level of detail of the mesh scenery in NL2000. Flying across the borders of the Netherlands this may cause the “canyon” effect of river beds and valleys. If this happens de-activation of this option will restore your previous setting.

- Use NL2000 flatten water scenery
  Activation of this option will replace some FS2004 files resulting in a more realistic depiction of rivers and lakes in general, also outside the Netherlands.

- Use NL2000 Trees scenery
  This option activates additional 3D trees in the scenery. It will affect the frame rate.

- Use NL2000 General objects scenery
  Activation of this option will add general objects into the scenery, such as windmills and antennas. All with realistic object heights. It will affect the frame rate.

- Use NL2000 Generic buildings
  Activation of this option will add many generic buildings into the scenery. It will affect the frame rate.

- Use NL2000 Complex objects
  Activation of this option will place extra, more complex objects, such as ships into the scenery. It will affect the frame rate.

Click the button bar “Apply changes” to save and activate your selected options.

4.2.5 Menu subject option: NL2000 EHAM

With the selection of options on this menu screen you can make the tarmac lines at Schiphol Airport more realistic. Changing these settings will also affect the frame rates. The loading into pc memory may already be noticeable at a distance of 20nm during approach of EHAM.

Figure 4.5: NL2000 EHAM options

- Use NL2000 EHAM White parking lot markings
  This activates depiction of parking lot markings for ground vehicles.

- Use NL2000 EHAM White road markings
  This activates depiction of road markings at air side.

- Use NL2000 EHAM Red safety lines
  This activates depiction of red safety lines on the tarmac. Within these locations it is not permitted to park and load for ground vehicles. These safety lines can be found in close surroundings of the gates.

- Use NL2000 EHAM White tow lines
  This activates depiction of white tow lines, which are directional guiding lines for push-back maneuvers from the parking position at the gate.

Click the button bar “Apply changes” to save and activate your selected options.

4.2.6 Menu subject options: NL2000 Misc

The options on this menu screen add various details to the NL2000 scenery.

Figure 4.6: NL2000 Miscellaneous options.

- Use NL2000 EHAM splash screen
  Select this option when you want to activate the specially created “The Netherlands 2000 scenery, version 3.0” splash screen to appear upon start of Flight Simulator.

- Use NL2000 NAVAIDS
  Selecting this option will replace the standard FS2004 Navaids by specially developed ones for NL2000 version 3.0.

- Use NL2000 water textures
  Use this option to replace the standard FS2004 water texture by one that “fits” our scenery better.

- Use NL2000 runway lights textures
  This option replaces the standard FS2004 runway lighting by one that is more realistic.

- NAS EHVB Valkenburg active
  This option activates Valkenburg (EHVB) Navy Airbase. This base has been non-operational for some time.

Note: Once selected and later deselected all original files are restored.

Click the button bar “Apply changes” to save and activate your selected options.

4.2.7 Menu subject option: NL2000 Log

On this menu screen logged –installation and -option selection changes are made visible. Experienced PC users can use this menu in case error messages occur.

Figure 4.7: NL2000 Log options

Clicking the option “Copy action list to file” will copy the action list, which is shown on this screen, to the Featurepanel.log file. This file shows the history of made changes and can be used to e-mail to inform the NL2000 Team and aid in trouble shooting.

5. FS2004 PROGRAM SETTINGS

In this chapter we want to give a number of tips regarding the usage of the NL2000 scenery in FS2004.

We do not intend to give a “standard set of settings” in FS2004. We only want to give guidance towards optimal settings for your system.
The results may vary depending on the used pc-system.

First we give you a number of settings in FS2004 which offer as realistic as possible a scenery rendition. Be aware: changes in the settings may affect your frame rates.

Next (see chapter 5.2) we give you hints about how to increase processor power and secondary increase frame rates by leaving out (for many less interesting) options in FS2004.

5.1 Settings for realistic scenery rendering (only for hi-end systems)

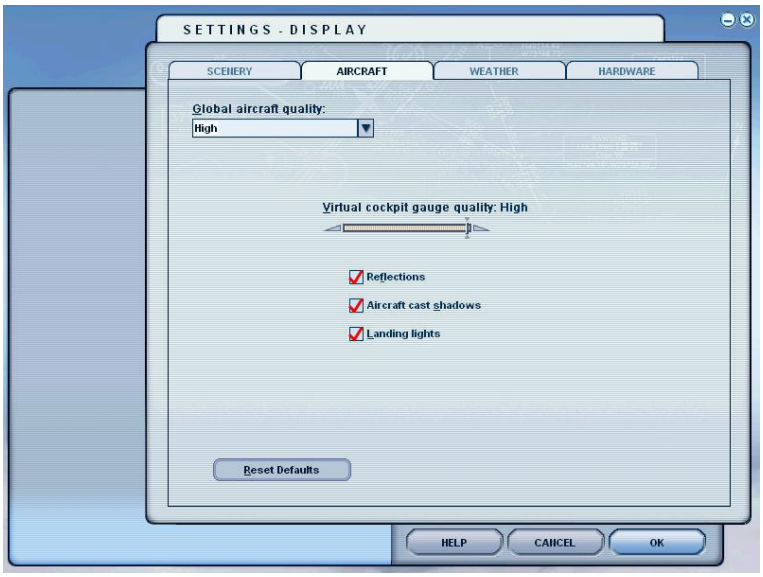


Figure 5.1: Aircraft display options

Above shown settings give the most realistic rendering of aircraft and aircraft traffic.

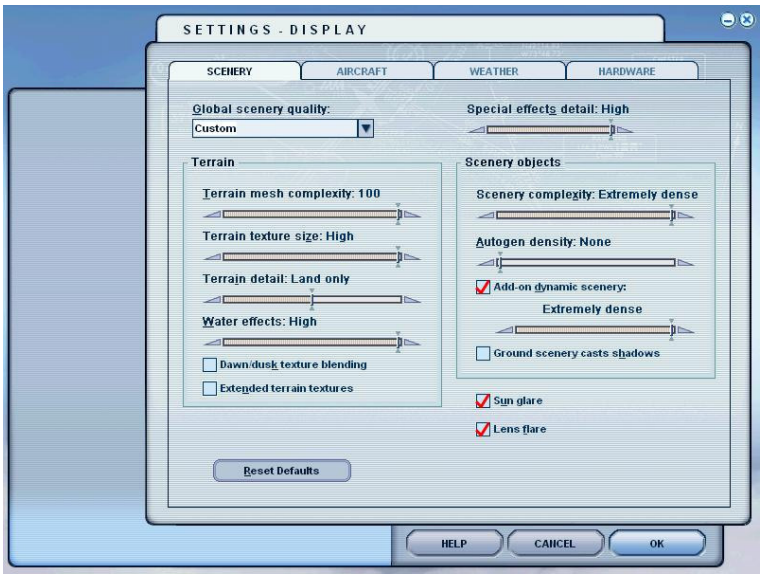


Figure 5.2: Scenery display options.

Above shown display settings are the optimal configuration for rendering the NL2000 scenery.

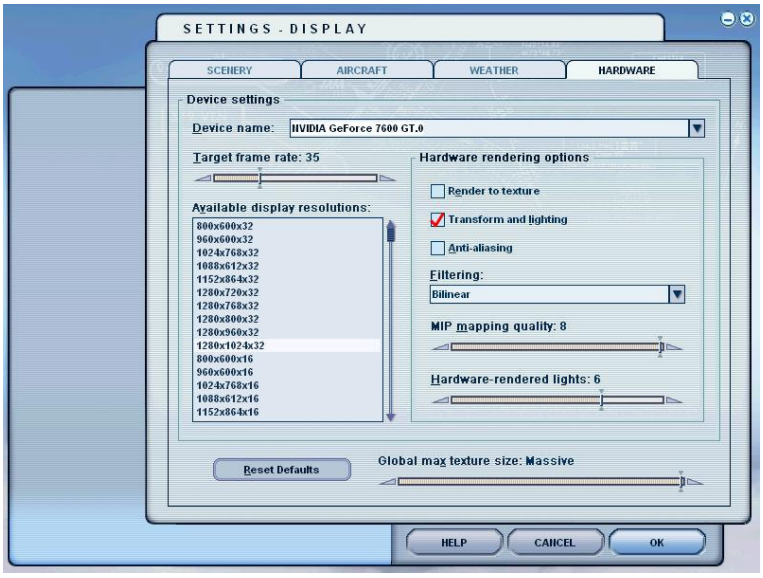


Figure 5.3: Display hardware options

Most of above option settings depend more or less on the video card and monitor used. When you use a hi-end video card, then you can also activate the “Anti-aliasing” option.

It may be necessary to activate the option “Render to texture”, when using certain video cards.

5.2 Settings for an optimal frame rate

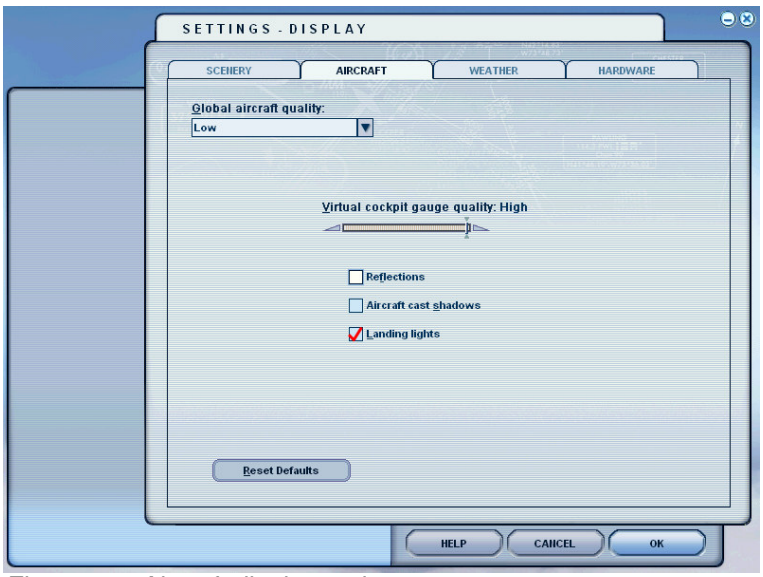


Figure 5.4: Aircraft display options

De-activating the above options “reflections” en “shadows” on the aircraft display options screen will decrease the system load.

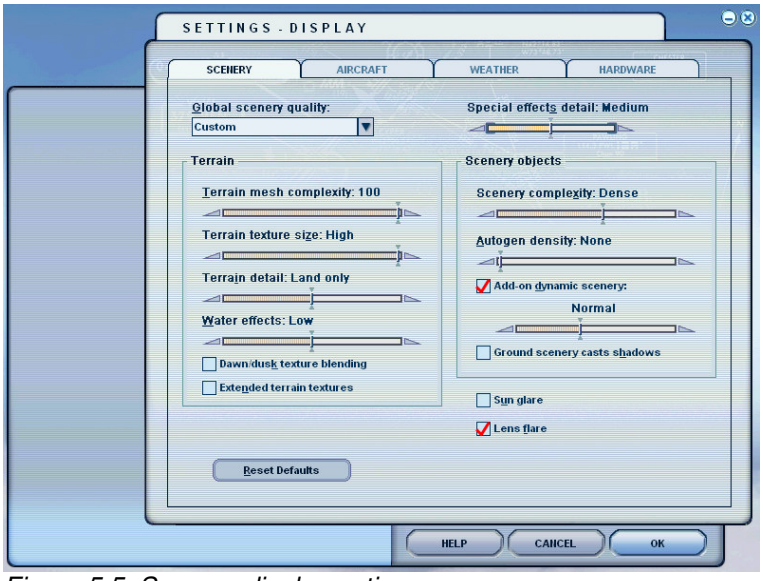


Figure 5.5: Scenery display options

You can fine tune the settings on the scenery display screen pictured above, but be aware that this may affect display quality and thus realism. Therefore the option “Lens flare” is intentionally a suggestion to select as it does improve realism dramatically.

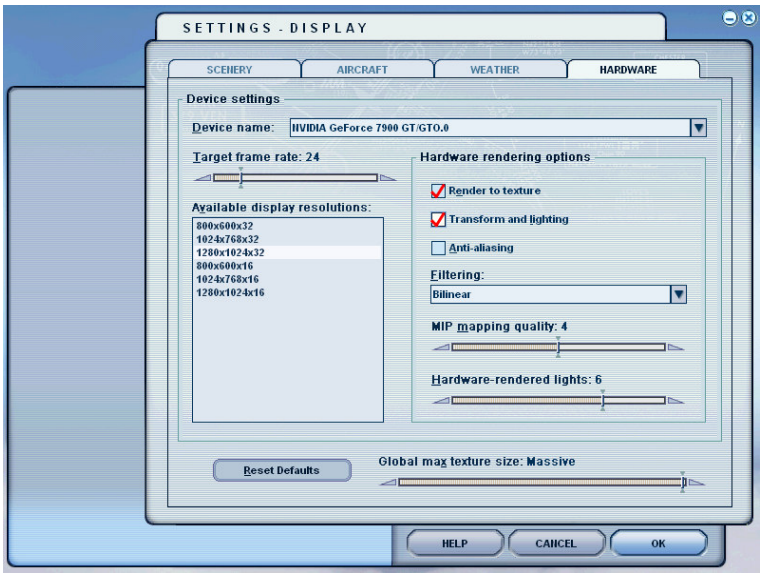


Figure 5.6: Display hardware options

Most of above option settings depend more or less on the video card and monitor used.
By de-activating the option “Anti-aliasing” a major gain in frame rates can be obtained. (This is not applicable to hi-end video cards)
Note: The option slider “Global max texture size” **must** be set to **massive**.

6. ACKNOWLEDGEMENTS

6.1 Release history

Version 3.0 release date June 2007
Version 2.9 release date April 10, 2004
Version 2.1 release date January 27, 2002
Version 2.0 release date October 13, 2001
Version 1.0 release date December 17, 2000

6.2 Software, macro's and utilities

The Netherlands 2000 scenery, version 3.0 was realized with the use of the following software and utilities:

- SCASM by Manfred Moldenhauer
- Airport of Ton Hiscox, Pascal Meziat and Brian Williams
- Adobe PhotoShop
- Abacus FS Design Studio
- GMax
- AutoCad
- Various tools by Martin Wright
- SCDIS by Takuya Murakam
- BGLAnalyse by Winfried Orthmann
- VectorEditor by Guido van Wijngaarden (NL2000 team)
- Various tools by Arno Gerretsen (NL2000 team)
- FS Scenery Creator
- NOVA and NOVASIM by Rafael Garcia Sanchez
- FS Scenery Creator by Derek Leung
- Paint Shop Pro by JASC, Inc
- Microsoft Visual Studio .NET 2005
- Flightsimulator Fs2004 SDK tools

In the process of realizing this scenery, the team also used a number of freeware API's. Our thanks go to the makers of these macros. We have honored the rules of copyright. In most cases we asked permission from the makers. In the case of questions about the usage of these macros or in the case of abuse of the rules of copyright please contact the team at our website.

6.3 Source information

Actigate	- moving gates at EHAM
A.W. de Zeeuw (www.skylinecity.info)	- source Nationale Nederlanden building Rotterdam.
B. de Jong and Pieter Bruinink	- information about Ameland Airport.
Bert de Bruin/Heinko Richter	- AI helicopter EC135 tweaks
Brian Blankenstein	- digital underground info of Amsterdam Airport Schiphol
Captain Slug	- Bucker Model.
Chris Lampard	- Cessna Model.
Chris Bijlart	- ATR42, Eurowings and 737 KLM models.
Dhr. Bosman	- Architect of Rotterdam airport terminal building.
Bill Anderson	- SAS MD83 model.
David "Opa" Marshall	- AI helicopter S300C
Directie and staff	- cooperation and assistance during photo session at Teuge Airport
Doug Callihan	- AI helicopter S61
Ed Stevenhage	- calculation method of RD-coordinates.
Ed de Bruin	- information about Texel Airport.
Garry Lewis	- F100, F50 KLMuk and 757 British Airways models.
Gerard van der Wel	- Europort chemical industry
Gert Curtiss van Lingen	- Ground controller at Eelde
Harry Muilman	- Photographs of Malden glider field
Harry Noordhof and Erik Nijeboer	- testing of Salland scenery
Herman Quee	- underground information
Holger Sandmann	- AI helicopter B206
Hrvoje Kovacevic	- AI F16
J. Katers	- Oil plants in the North Sea
Jaap de Baare	- gate-guard Neptune
Jack Gryskiewicz	- photographs of Maastricht Aachen Airport and help with many other things.
Jasper Grannetia and Harry Noordhof	- all photographs, help and info about Salland Aeroclub Salland (ACS) and members of gliding club Lemelerveld
Jelle Broersma	- help with ULV Drachten
Jerry Arzdorf	- ULA Model
John de Langristin	- car macros
Christian Friedrich	- car macros
John Vrbanac	- helipad api
Jon Murchison	- AI AIS aircrafts
Jon Patch and Joerg Dannenberg	- windsock
Joost Schalekamp	- underground information
Jordan Moore	- AI GJSAR helicopter
Jorrit van Dommelen	- Aviodrome, the T2 hangar and Schiphol 1928 Building, Lelystad.
K.Furuya	- AI helicopter S76
K.M. Meesters	- information about Hoogeveen Airport.
Lars Christian Hoff	- 747 KLM model.
Lynn and Bill Lyons	- AI little custom boats
Luchtverkeersleiding Nederland (LVNL)	- support in various aspects.
Maarten van Hagen	- information about Ultra Light fields.
Manfred Moldenhauer	- usage of his assembler program SCASM.
Marcel Verdult	- Fire department at Rotterdam Airport.

Marco Brombacher	- Spiritual father and builder of the Hydro-start winch
Marco van Middelkoop (Aerophoto-Schiphol)	- various high resolution photographs
Marco Ponsen	- signs inventory of Amsterdam Airport Schiphol
Martijn van de Spreng (arnhem.nederlandonline.net)	- Digital photography of Arnhem used in macros.
Max Roodveldt	- Grob Model.
Max Aardema	- information about Drachten Airport.
Mike Hill	- AI HMS Endeavour
Mitsuya Hamaguchi	- AI Big Cruiser and Hovercraft
Olfert Cleveringa	- information about Hoogeveen Airport.
Paul Koopman	- basis model Firefly at EHAM
Paul Maartens	- Eindhoven city objects
Peter Wilding	- water textures
René van der Velde	- information about the TV tower of Smilde
Rijkswaterstaat & DOSBOUW	- issue "The storm surge barrier in the Eastern Scheldt"
Simon Paul	- contribution to Maastricht Aachen Airport.
Sjaak Putz	- photographs of Maastricht Aachen Airport
Steve Chase	- Designer of oilrig- and ship with helicopter pad macros.
The Freeware Works	- DC-10 Northwest model.
Tom Woods and Mark Adams	- AI Apache and Chinook helicopter
Ton van Bochhove	- AI-Fokkers
Winfried Orthmann and Gunter Scherrer	- macros of ships

6.4 The Netherlands 2000 Scenery Design Team

Version 3.0 is a production by:

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DEEL II FLYING OVER THE NETHERLANDS

Of course beautiful scenery is even more fun, when you can use it in an optimal fashion. Additional information provided in part II, will help you prepare and execute your flights over The Netherlands as realistic as possible.

Flying over the Netherlands with Microsoft Flightsimulator truly becomes “as real as it gets”!

Following is the included information:

- *Airports*
  An overview of the airports in The Netherlands 2000 scenery, including the field specific information tables about length, direction and runway ILS.

- *VOR beacons*
  An overview of all VOR beacons in the scenery, including a table with frequencies and exact locations.

- *NDB beacons*
  An overview of all NDB’s in de scenery, including a table with frequencies and exact locations. In a separate table the NDB’s of the oil drilling platforms in the North Sea are mentioned.

- *VFR maps*
  Actual flight maps of the Netherlands can be found at: http://www.ais-netherlands.nl

Information about airports

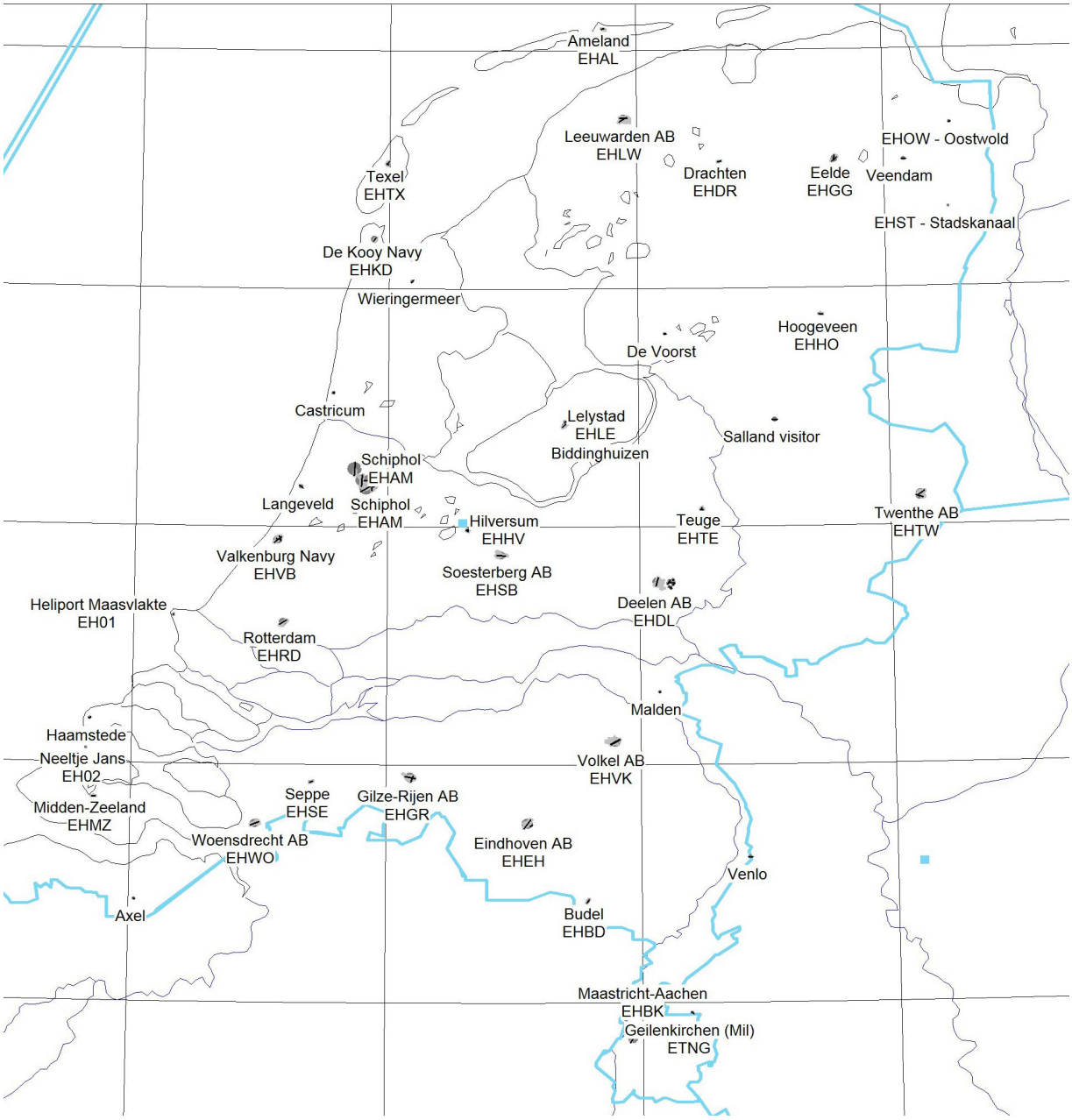

Figure 1: Map view of most airports, which are included in the Netherlands 2000 scenery.

Ameland

ICAO-ID	Elevation	Latitude	Longitude	Tower freq
EHAL	11 ft.	N53:27:06	E05:40:38	118.35

Runway	Length (meters)	ILS freq.	Surface	Direction
09	800		Grass	087
27	800		Grass	267

Amsterdam Schiphol Airport

ICAO-ID	Elevation	Latitude	Longitude	Tower freq
EHAM	0	N52:18:29	E04:45:51	119.225 primary

Runway	Length (meters)	ILS freq.	Surface	Direction
36R	3400	111.95	Asphalt	003
18L	3400		Asphalt	183
36C	3300	108.75	Asphalt	003
18C	3300	109.5	Asphalt	183
36L	3800		Asphalt	003
18R	3800	110.10	Asphalt	183
04	2014		Asphalt	041
22	2014	109.15	Asphalt	221
06	3500	110.55	Asphalt	058
24	3500		Asphalt	238
09	3453		Asphalt	087
27	3453	111.55	Asphalt	267

Budel (Weert)

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
EHBD	114 ft	N51:15:16	E05:36:03	122.15

Runway	Length (meters)	ILS freq.	Surface	Direction
03L	1199		Asphalt	030
21R	1199		Asphalt	210
03R	300		Grass	030
21L	300		Grass	210

Burgh Haamstede

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	0	N51:42:36	E003:42:40	

Runway	Length (meters)	ILS freq.	Surface	Direction
06	749.81		Grass	
24	749.81		Grass	

De Kooy

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
EHKD	0	N52:55:28	E04:46:51	120.125

Runway	Length (meters)	ILS freq.	Surface	Direction
04	1275		Concrete	038
22	1275	109.7	Concrete	218

Deelen

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
EHDL	0	N52:03	E05:52	122.10

Runway	Length (meters)	ILS freq.	Surface	Direction
02	2950		Asphalt	
20	2950		Asphalt	

Drachten

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
EHDR	0	N53:07:05	E06:07:45	

Runway	Length (meters)	ILS freq.	Surface	Direction
08	950		Asphalt	077
26	950		Asphalt	257

Eelde (Groningen)

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
EHGG	0	N53:07:30	E06:35:00	118.70

Runway	Length (meters)	ILS freq.	Surface	Direction
05	1800		Asphalt	053
23	1800	109.90	Asphalt	233
01	1500		Asphalt	009
19	1500		Asphalt	189

Eindhoven

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
EHEH	74 ft.	N51:27:00	E05:22:28	131.00

Runway	Length (meters)	ILS freq.	Surface	Direction
04	3000	109.75	Asphalt	035
22	3000	109.75	Asphalt	215

Gilze-Rijen

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
EHGR	0	N51:34	E04:56	

Runway	Length (meters)	ILS freq.	Surface	Direction
10	2780		Asphalt	179
28	2780	110.7	Asphalt	359
02	2000		Asphalt	123
20	2000		Asphalt	303

Hilversum

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
EHHV	3 ft.	N52:11:31	E05:08:49	131.025

Runway	Length (meters)	ILS freq.	Surface	Direction
18	700		Grass	179
36	700		Grass	359
13	660		Grass	123
31	660		Grass	303
07	600		Grass	068
25	600		Grass	248

Hoogeveen

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
EHHO	40 ft.	N52:43:51	E06:30:58	127.35

Runway	Length (meters)	ILS freq.	Surface	Direction
10	1080		Grass	094
28	1080		Grass	274

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Leeuwarden

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
EHLW	0	N53:13	E05:45	

Runway	Length (meters)	ILS freq.	Surface	Direction
06	2703		Asphalt	
24	2703		Asphalt	
09	1994		Asphalt	
27	1994		Asphalt	

Lelystad

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
EHLE	-13 ft.	N52:27:37	E05:31:38	123.675

Runway	Length (meters)	ILS freq.	Surface	Direction
05	1250		Asphalt	048
23	1250		Asphalt	228
B05	300		Grass	048
B23	300		Grass	228
C05	430		Grass	048
C23	430		Grass	228

Lemelerveld glider strip

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
------	0	N52:28	E06:20	

Runway	Length (meters)	ILS freq.	Surface	Direction
09	1160		Grass	
27	1160		Grass	

Maastricht-Aachen (Beek)

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
EHBK	375 ft.	N50:54:57	E05:46:37	119.475

Runway	Length (meters)	ILS freq.	Surface	Direction
03	2500	111.55	Asphalt	033
21	2500	111.55	Asphalt	213

Midden-Zeeland (Middelburg)

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
EHMZ	6 ft.	N51:30:44	E03:43:52	119.25

Runway	Length (meters)	ILS freq.	Surface	Direction
09	1000		Grass	088
27	1000		Grass	268

Noordoostpolder (Emmeloord)

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
EHNP	0	N52:43:48	E05:44:48	

Runway	Length (meters)	ILS freq.	Surface	Direction
09	725		Grass	091
27	725		Grass	271

Rotterdam airport (Zestienhoven)

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
EHRD	-15 ft.	N51:57:25	E04:26:14	118.20
Runway	**Length (meters)**	**ILS freq.**	**Surface**	**Direction**
06	2200		Asphalt	067
24	2200	108.30	Asphalt	237

Seppe

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
EHSE	30 ft.	N51:33:17	E04:33:09	120.65

Runway	Length (meters)	ILS freq.	Surface	Direction
07	830		Asphalt	066
25	830		Asphalt	246

Soesterberg

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
EHSB	0	N52:07	E05:16	129.925

Runway	Length (meters)	ILS freq.	Surface	Direction
09	2135		Asphalt	
27	2135		Asphalt	

Teuge (Deventer)

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
EHTG	17 ft.	N52:14:41	E06:02:48	121.00

Runway	Length (meters)	ILS freq.	Surface	Direction
09	730		Asphalt	086
27	730		Asphalt	266
03	700		Grass	027
21	700		Grass	207

Texel

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
EHTX	2 ft.	N53:06:55	E04:50:01	119.30

Runway	Length (meters)	ILS freq.	Surface	Direction
04	1115		Grass	036
22	1115		Grass	216
13	630		Grass	126
31	630		Grass	306

Twente

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
EHTW	0	N52:16	E06:53	119.95

Runway	Length (meters)	ILS freq.	Surface	Direction
06	2988		Asphalt	
24	2988		Asphalt	
11	2000		Asphalt	
29	2000		Asphalt	

Volkel

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
EHVK	0	N51:39	E05:42	133.425

Runway	Length (meters)	ILS freq.	Surface	Direction
06L	2890		Asphalt	
24R	2890		Asphalt	
06R	2801		Asphalt	
24L	2801		Asphalt	

Woensdrecht

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
EHWO	0	N51:27	E04:20	118.97

Runway	Length (meters)	ILS freq.	Surface	Direction
07	2438		Asphalt	
25	2438		Asphalt	

Heliports

Amsterdam / VU-hospital

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	126 ft.	52°20'04"N	004°51'33"E	

Beverwijk / Red Cross hospital

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	68 ft.	52°28'45"N	004°39'05"E	

Den Haag / Red Cross hospital

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	12 ft.	52°04'52"N	004°15'56"E	

Den Haag / Haaglanden / Loc. Westeinde

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	186 ft.	52°04'27"N	004°18'00"E	

Dokkum / Hospital Talma Sionsberg

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	0 ft.	53°19'10"N	005°59'50"E	

Enschede / Medical Spectrum Twente

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	176 ft.	52°12'58"N	006°53'28"E	

Goes / Oosterschelde Hospital

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	30 ft.	51°29'05"N	003°54'40"E	

Groningen / UMC

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	80 ft.	53°13'19"N	006°34'34"E	

Leeuwarden / MCLeeuwarden Loc. South

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	46 ft.	53°11'18"N	005°48'11"E	

Leiden / UMC

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	168 ft.	52°09'59"N	004°28'40"E	

Maastricht / Academic hospital

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	159 ft.	50°50'04"N	005°42'45"E	

Meppel / Care combination Noorderboog

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	6 ft.	52°41'21"N	006°12'46"E	

Rotterdam / Erasmus MC

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	34.4 ft.	51°54'36"N	004°28'15"E	

Rotterdam / MC Rijnmond Loc. South

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	42 ft.	51°53'08"N	004°30'11"E*	

Sneek / Antonius hospital

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	14 ft.	53°02'05"N	005°38'23"E	

Terneuzen / hosp. Zeeuws Vlaanderen

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	6 ft.	51°18'30"N	003°51'45"E	

Tiel / Hospital Rivierenland

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	21 ft.	51°53'23"N	005°24'50"E	

Tilburg / St. Elisabeth hospital

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	18 ft.	51°32'20"N	005°06'17"E	

Utrecht / UMC

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	91 ft.	52°05'12"N	005°10'53"E	

Veldhoven / Maxima MC

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	62 ft.	51°24'18"N	005°25'11"E	

Venlo / VieCuri MC of Noord-Limburg

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	58 ft.	51°21'30"N	006°09'09"E	

Winterswijk / Reg hosp Queen Beatrix

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	100 ft.	51°58'47"N	006°42'01"E	

Zwolle / Isala Clinics Loc. Sophia

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	5 ft.	52°30'51"N	006°07'39"E	

Dordrecht / A.Schweizer hospital

ICAO-ID	Elevation	Latitude	Longitude	TOWER freq
	6 ft.	51°46'58"N	004°39'10"E	

VOR and TACAN BEACONS

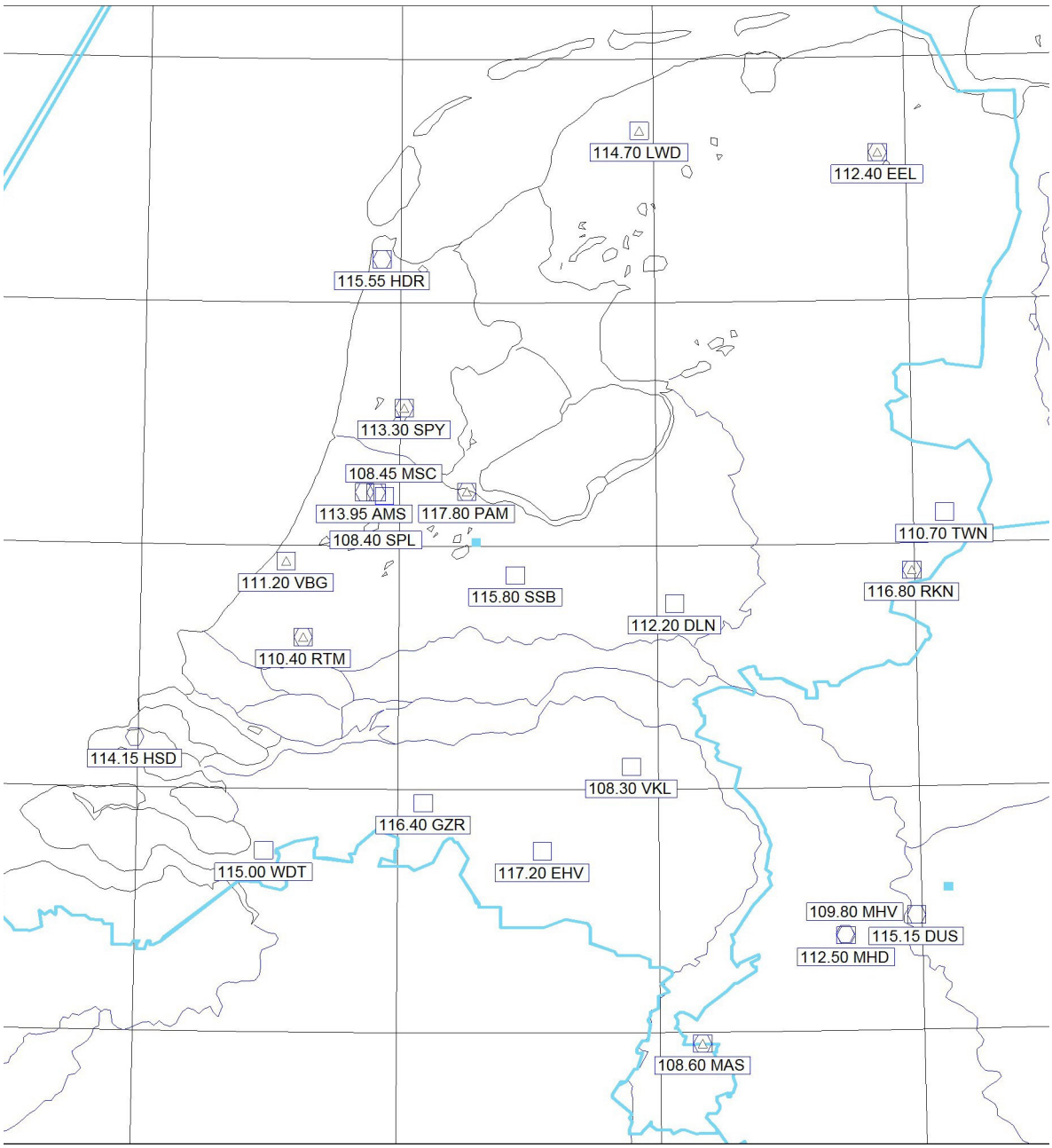

Figure 2: Map view of VOR beacons

VOR-ID	Frequency	Rng.	Magvar	Lat	Long
AMS	113.950	60	0.54 W	N52:19:57.51	E004:42:20.37
FRT (DME only)	(117.15)	70	1.00W	N52:00:15.65	E004:46:08.87
HDR	115.550	120	0.54 W	N52:54:24.68	E004:45:56.60
EEL	112.400	150	0.18 W	N53:09:50.06	E006:40:00.03
HSD	114.150	80	1.30 W	N51:43:21.80	E003:51:29.45
MAS	108.600	40	0.24 W	N50:58:18.99	E005:57:37.54
PAM	117.800	120	0.48 W	N52:20:05.14	E005:05:31.78
RKN	116.800	80	0.06 W	N52:07:59.51	E006:45:49.96
RTM	110.400	50	1.00 W	N51:58:25.31	E004:28:51.49
SPL	108.400	60	0.54 W	N52:19:55.72	E004:44:59.58
SPY	113.300	120	0.54 W	N52:32:25.01	E004:51:13.61

NDB's

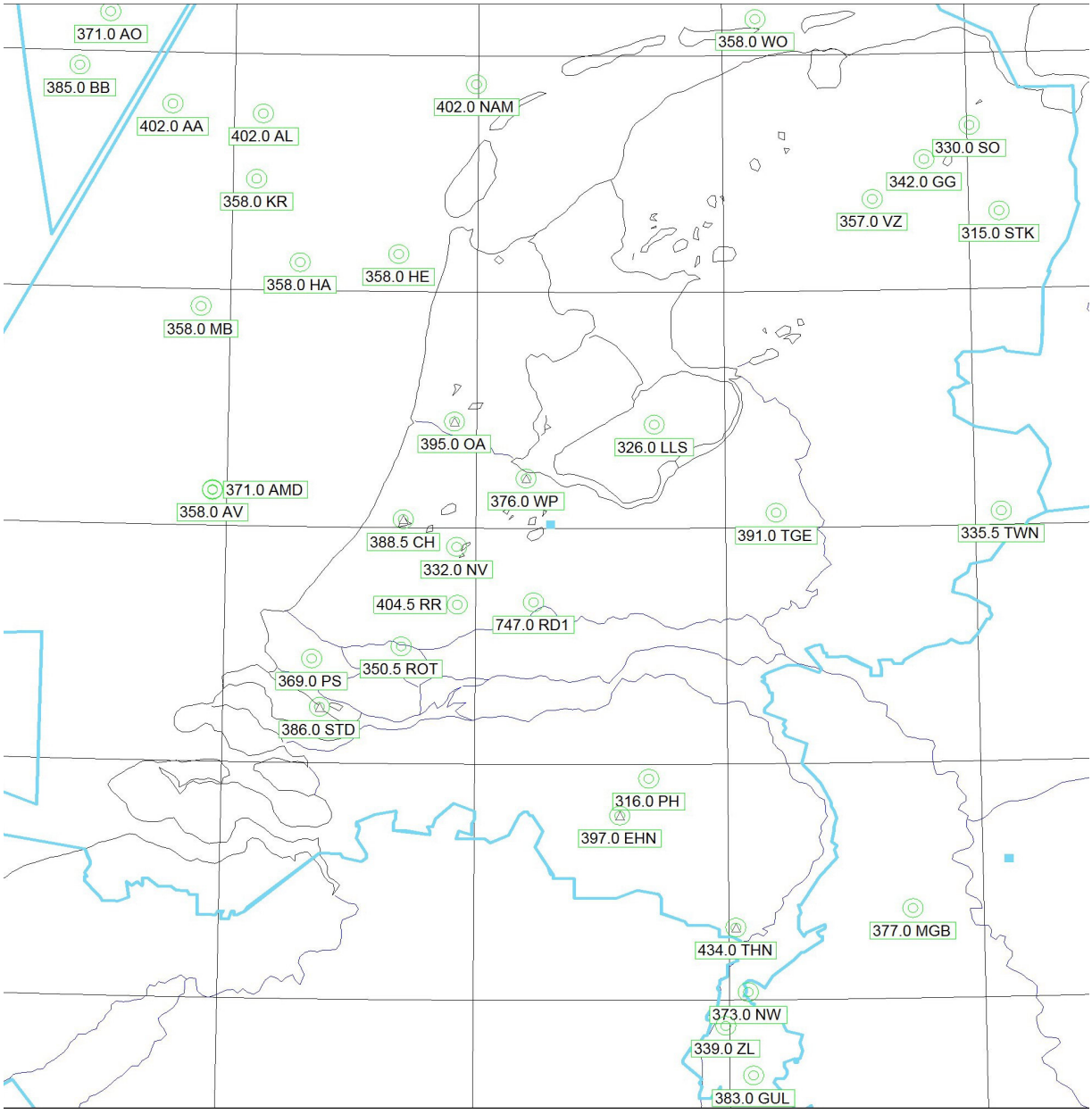

Figure 3: Map view of non-directional beacons (NDB's)

NDB-ID	Frequency	Rng.	Lat	Long
ROT	350.5	25	N51:53:51	E004:33:15
EHN	397	25	N51:28:04	E005:23:41
STD	386	15	N51:44:28	E004:14:36
THN	434	25	N51:11:00	E005:50:00
TWN	335.5	25	N52:16:04	E006:52:34
SO	330	15	N53:12:55	E006:47:07
VZ	357	15	N53:01:54	E006:23:46
OA	395	15	N52:28:13	E004:45:12
GG	342	15	N53:07:51	E006:36:11
STK	315	25	N52:59:48	E006:53:44
LLS	326	25	N52:27:46	E005:31:55
WP	376	15	N52:19:34	E005:01:59
TGE	391	25	N52:14:14	E06:00:12
CH	388.5	15	N52:13:14	E004:33:27
NV	332	15	N52:09:05	E004:45:53
RR	404.5	15	N52:00:16	E004:46:09
PS	369	15	N51:51:51	E004:12:38
NW	373	15	N51:01:10	E005:52:42
ZL	339	15	N50:56:02	E005:47:33
GUL	383	25	N50:48:26	E005:53:44

Oilrig-ID	NDB-Freq.	Range	NDB-ID	Lat	Long
AME-2					
AWG-1	358	50	WO	N53:29:31	E05:56:25
D15-FA-1	358	50	DIV	N54:19:32	E02:56:09
F3-FB-1	402	50	WG	N54:51:09	E04:41:41
F15-A	335	50	ZT	N54:12:57	E04:49:38
HAVEN-A	334	50	ZT	N52:58:20	E04:06:22
HELDER-A	358	50	HF	N52:55:13	E04:05:53
HELDER-B					
HELM-A	358	50	HA	N52:52:16	E04:08:30
HOORN-A	358	50	HO	N52:55:27	E04:09:00
J6-A	424	50	UZ	N53:49:24	E02:56:38
K5-A	393	50	EKP	N53:41:44	E03:20:20
K5-D	392	50	EKD	N53:41:27	E03:29:14
K6-D	323	50	KZ	N53:40:30	E03:49:42
K6-DN	323	50	ZD	N53:43:32	E03:48:16
K6-N	432	50	ZR	N53:41:55	E03:44:52
K6-PC	323	50	ZP	N53:41:54	E03:52:08
K6-T	323	50	ZQ	N53:45:38	E03:52:10
K7-FA-1	371	50	KO	N53:34:19	E03:18:13
K8-FA-1	371	50	AO	N53:29:57	E03:22:08
K8-FA-2	371	50	WA	N53:30:52	E03:25:03
K8-FA-3	371	50	NQ	N53:32:29	E03:25:20
K9-AB-A					
K9C-A					
K10-B	385	50	BB	N53:21:42	E03:15:09
K10-C					
K10-V					
K11-FA-1	371	50	WB	N53:26:55	E03:20:29
K12-A					
K12-B	402	50	KB	N53:20:27	E03:53:37
K12-C					
K12-D					
K12-E					
K13-A	385	50	PK	N53:13:02	E03:13:08
K13-B					
K13-C					
K13-D					
K14-FA-1	402	50	AA	N53:16:07	E03:37:34
K15-FA-1	402	50	AL	N53:14:50	E03:59:10
K15-FB-1	402	50	NO	N53:16:32	E03:52:19
K15-FC-1					
K15-FG-1					
K18	358	50	KR	N53:04:53	E03:57:51
L2-FA-1	358	50	WC	N53:57:38	E04:29:47
L4-A	323	50	RH	N53:43:28	E04:05:51
L4-B	323	50	EC	N53:40:34	E04:00:04
L5-FA-1	323	50	TJ	N53:48:39	E04:21:04
L7-A	323	50	EK	N53:35:58	E04:04:56
L7-B	323	50	AR	N53:36:30	E04:12:19
L7-H	323	50	AY	N53:37:27	E04:08:37
L7-N	323	50	PM	N53:34:21	E04:10:31
L7-PQC	323	50	AW	N53:32:14	E04:12:08
L8-A					
L8-G	323	50	LB	N53:34:51	E04:36:13
L8-H					
L8-P					
L10-A	323	50	PO	N53:24:11	E04:12:02
L10-B					

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Oilrig-ID	NDB-Freq.	Range	NDB-ID	Lat	Long
L10-C					
L10-D					
L10-E					
L10-F					
L10-G					
L10-K					
L10-L					
L11-A					
L11-B	323	50	HX	N53:28:21	E04:29:22
L13-FC-1	402	50	FC	N53:17:00	E04:12:30
L13-FD-1					
L13-FE-1					
L15-FA-1	402	50	NAM	N53:19:38	E04:49:51
L16	358	50	CF	N53:00:51	E04:12:58
P6-A	358	50	MB	N52:45:19	E03:45:22
P6-B					
P9-A					
P12-C	358	50	MD	N52:24:21	E03:51:49
P12-SW					
P14-A					
P15-A					
P15-B	358	50	TF	N52:18:26	E03:46:39
P15-C	358	50	AV	N52:17:25	E03:48:58
P15-D	371	50	AMD	N52:17:21	E03:48:57
P15-E	371	50	AME	N52:10:18	E03:52:04
P15-F	371	50	AMF	N52:18:21	E03:41:06
P15-G	371	50	AMO	N52:13:21	E03:44:22
P18-A	371	50	AMP	N52:07:37	E03:56:16
Q8A	358	50	HE	N52:53:41	E04:31:44