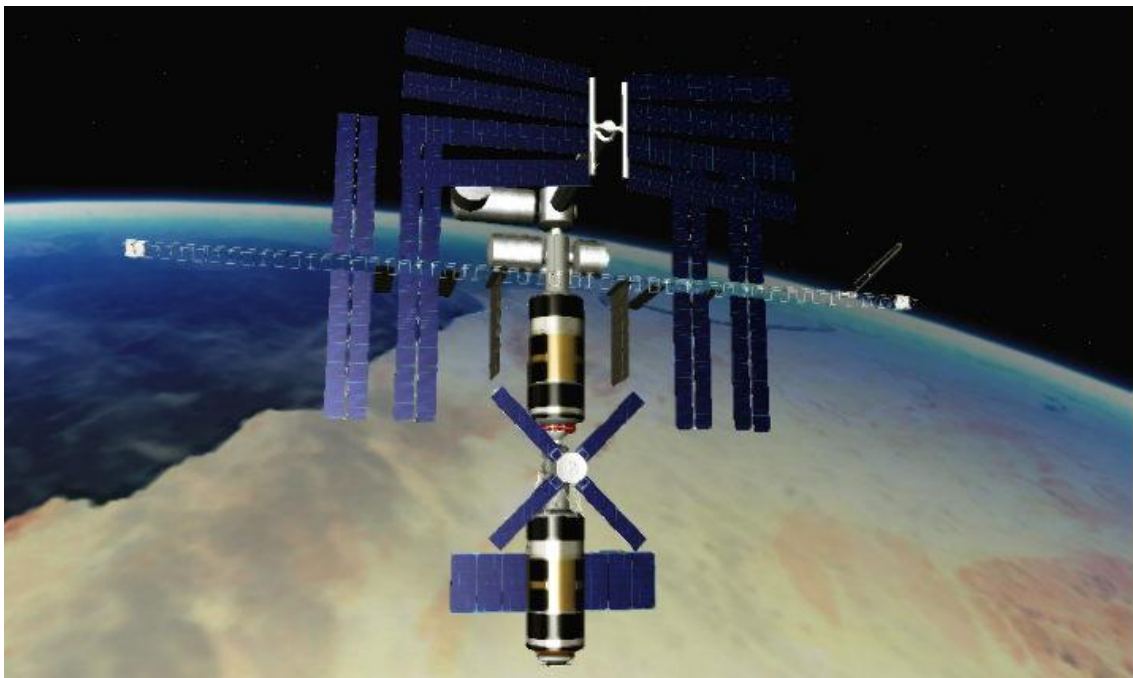# Skylab-Columbia Space Station (SCSS III-B)
for Orbiter v060504

10, August 2006

www.simnasa.org

SCSS III-B: Phase I & II & RTM RETROFIT COMPLETE

0. Contents

1. Introduction

Skylab was launched on 11 March 2003. Its purpose was to serve as an orbital platform to observe both Earth and solar events. In June of 2003 SimNASA expanded the role of Skylab to become a working scientific as well port of call orbital platform. This included the addition of the **Columbia** module in August of 2003. Subsequently the station was renamed **S**kylab-**C**olumbia **S**pace **S**tation (**SCSS**) and the construction **PHASE I** was officially concluded.

PHASE II of SCSS development was next: with the addition of the multi-docking port **Nexus** module, SCSS increased its operational and research capabilities with **two Science** modules, one **Airlock**, the **Hydroponics** module and one extra **Solar Array** set.

Phase III started a new expansion phase making Skylab-Columbia to assume an important role (together with the sister LOLS) in SimNASA's Return to Moon effort: the commonly called **RTM Retrofit** included the extension of main truss and installation of docking ports on it. The latest update was the installation of a big and flexible **Robotic Arm** in anticipation of STS retirement and having in mind eventual SCSS future upgrades.

	Module(s)	Mission(s)	Date
PHASE I			
I-A	SKYLAB	SV	Mar, 2003
II-B (SCSS)	COLUMBIA	SV	Jun, 2003
PHASE II			
II-A	NEXUS (core module for phase II expansion)	STS-1	Dec, 2004
II-B	SCIENCE I + AIRLOCK	STS-3	Feb, 2004
II-C	SCIENCE II + HYDROPHONICS	STS-2 + AESC-2*	May, 2004
II-D	SOLAR ARRAYS (+ above modules in final position)	STS-4	May, 2004
PHASE III			
III-A	RTM RETROFIT (truss extension, 2 extra docking ports)	STS-5	Aug, 2004
III-B	ROBOTIC ARM	STS-14	Apr, 2006

Note: additional SCSS building phases might be scheduled and be about docking ports upgrades, better propellant storage / refuelling systems, artificial gravity area to extend crew stay and reconditioning of crews on long duration missions, etc.

2. Installation

It should be relatively easy to install these files:

Step1
Just unzip it into your main Orbiter2006 directory (keeping the folder structure).

Step2 – Possible Overwrite Alert!

Modules\SimNASA\spacecraft03.dll

(Vinka's spacecraft3.dll): this is **OK**.

There might be other overwriting alerts such as in SimNASA's Modules, Config, Scenarios, Textures, Meshes, etc folders: this should be **OK** if you installed a previous version of this addon or other SimNASA zip files (check the zip's timestamps).

Step3 – Included / Required Addons

Vinka's Multistage and Spacecraft.dll: http://users.swing.be/vinka/
- **All necessary generic dlls and / or respective cfg to run SCSS III-B and its robotic arm + EVA are included** inside this SimNASA addon package's directory structure (thanks Vinka!). However, if you wish to have the full generic dll packages and related documentation, please download them from Vinka's site.

Dansteph's Orbiter Sound: http://orbiter.dansteph.com
- Required **IF** wanting to have sound (highly recommended!)

SimNASA / Other Required Addons:

   http://www.simnasa.org/cgi-bin/yabb/YaBB.pl?board=Gen;action=display;num=1152806010

Next is a list of the Skylab-Columbia Phase III-B related files included in:
SimNASA_20060810_AresI_SCSSIII-B.zip

Doc\SimNASA\Stations\SCSS_20060810_III-B.doc
Scenarios\SimNASA\Description.txt
Scenarios\SimNASA\Stations\Description.txt
Scenarios\SimNASA\Stations\SCSS III-B (demo scenarios)\Description.txt
Scenarios\SimNASA\Stations\ SCSS III-B (demo scenarios)\SCSS III-B and STS visit.scn
Modules\SimNASA\spacecraft03.dll
Config\SimNASA\Stations\MPLM_Rafaello.cfg
Config\SimNASA\Stations\SCSS\SCSS_III-B.cfg
Config\SimNASA\Stations\SCSS\SCSS_arm.cfg
Config\Spacecraft\[SN]SCSS_arm.ini
Config\SimNASA\Astronauts\EVA_SCSS_EMU1.cfg
Config\SimNASA\Astronauts\EVA_SCSS_EMU2.cfg

Meshes\SimNASA\Stations\MPLM_Rafaello.msh
Meshes\SimNASA\Stations\SCSS\SCSS_III-B.msh
Meshes\SimNASA\Stations\SCSS\SCSS_arm.msh
Meshes\SimNASA\Astronauts\EVA_SCSS_EMU1.msh
Meshes\SimNASA\Astronauts\EVA_SCSS_EMU2.msh
Textures\SimNASA\gen_gold.dds
Textures\SimNASA\gen_solpan.dds
Textures\SimNASA\Stations\MPLM_Rafaello.dds
Textures\SimNASA\Stations\gen_Module1.dds
Textures\SimNASA\Stations\SCSS\SCSS_arm.dds
Textures\SimNASA\Stations\SCSS\SCSS_III-B.dds
Textures\SimNASA\Astronauts\EMUFabric.dds
Textures\SimNASA\Astronauts\EMUFlag_US.dds
Textures\SimNASA\Astronauts\EMUFlag_INT.dds
Textures\SimNASA\Astronauts\EMUPatch_SCSS1.dds
Textures\SimNASA\Astronauts\EMUPatch_SCSS2.dds
Textures\SimNASA\Astronauts\EMUMain_SCSS1.dds
Textures\SimNASA\Astronauts\EMUMain_SCSS2.dds

3. Uninstalling

It should also be relatively easy to remove these files:

Step1
Just search all folders called **SimNASA** and look at the list on the previous page.

\Doc, \Config, \Modules, \Meshes, \Textures, \Sound, \Scenarios

Please note that a few of those files might be shared with other SimNASA addons (for example, textures, cfgs, etc): therefore it does not make much sense to give more detailed uninstall instructions. This is an addon package built for SimNASA operations: if wanting to uninstall a specific component you will probably will end up by removing all related files…

Step2 – Remember the **Overwrite Alert!**

Modules\SimNASA\spacecraft03.dll

If you are not a developer, perhaps the best is to leave it there or you can remove both if you are sure that will not need them on those positions for generic based dll addons (from SimNASA, other authors)…

Step3 – Required / Included Addons

Vinka's Multistage and Spacecraft.dll: http://users.swing.be/vinka/
- The files Included (thanks Vinka) inside this addon's directory structure **are removed if deleting them from Modules\SimNASA and if reading Step2 above**.

IMPORTANT!!!

Make sure that you will not need them on those positions (for example, if using other SimNASA addons)

IMPORTANT!!!

Make sure that you will not need them on those positions also for other addons.

If you installed the full packages / docs (from Vinka's site), **please refer to that addon support site / docs / zip**

Dansteph's Orbiter Sound: http://orbiter.dansteph.com
- Required IF wanting to have sound. Are you sure that you really want to remove this!?
Please refer to that addon support site / docs / zip.

4. Skylab-Columbia III-B

Skylab-Columbia pages at SimNASA: **http://simnasa.org/scss/**

The goal of Skylab-Columbia: to expand our understanding of the Earth and prepare for the further exploration of space by extending our knowledge of the solar system and its long-term effects on man. Initial Skylab crews inhabited the space station for short periods while conducting a number of scientific studies of both Earth and Solar observation. The initials crews consisted of three person crews and then expand to five-person crew during the second phase when the Columbia module was joined to the original Skylab module. After the successful matting of these two modules Skylab took on the name of Skylab-Columbia Space Station (SCSS).
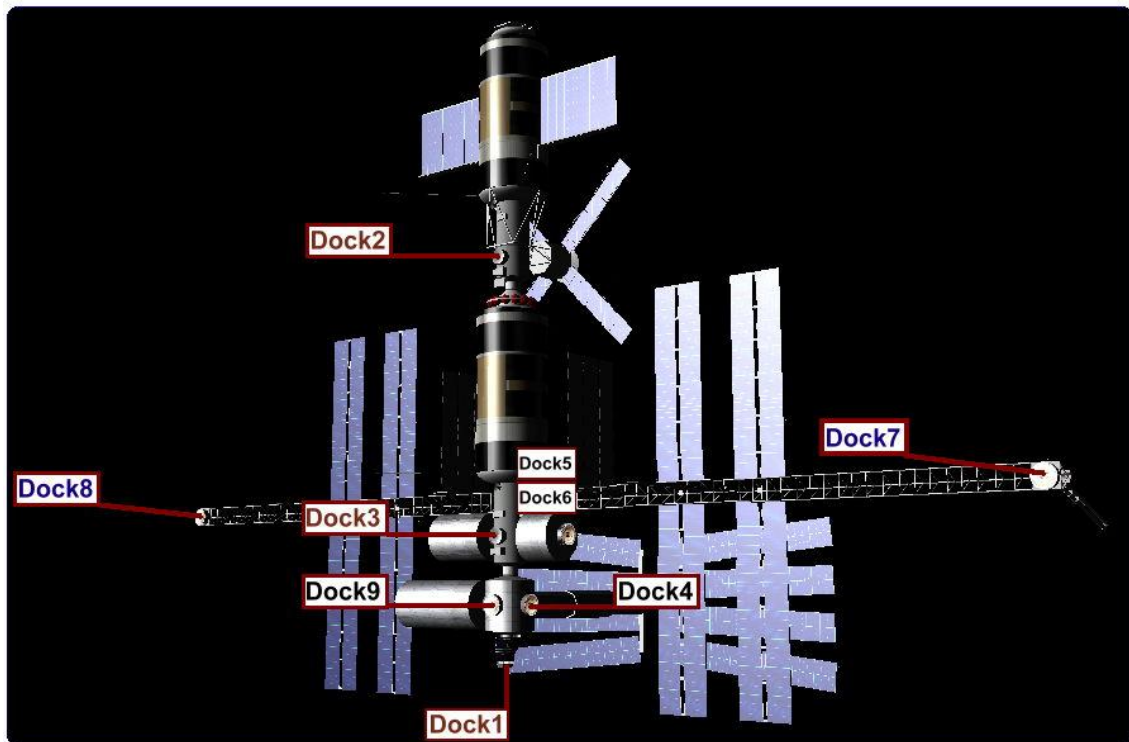
Now used as both a scientific research platform and training environment for future career astronauts, the Skylab-Columbia Space Station continues to provide a valuable resource to SimNASA in the further exploration of space. It is the first destination in manned spaceflight for Earth studies, Lunar exploration, Mars missions, and beyond!

4.1) Docking Ports

Note: docking ports type / visual definitions will perhaps have be reviewed(?) in a later occasion in order to make a more coherent implementation with SimNASA's past, present and future. Such different systems could then be properly and further documented in this sub-section. Not 100% sure but it seems that some docking port orientations could be tweaked too.

4.1.1 - Port Identification
Currently SCSS consists of nine ports. Only 3+2 of these ports are "dockable" by spacecraft, and two for use with the AIRLOCK module. The other ports are reserved for future components and modules as they are brought up by the STS fleet and USF. Out of the three "dockable" ports, only one is currently available for the STS fleet. The other two are for the Apollo Escape System.

Orbiter ID	CFG ID	Description	System (proposal)
Dock 1	0	Main docking ports (STS). (located at the front end of SCSS)	APAS89
Dock 2	1	Emergency port #1. (located at the juncture of the Skylab and Columbia module)	Apollo Advanced (capable of liquid transfer)
Dock 3	2	Emergency port #2. (located at the underbelly of the Columbia module neck)	Apollo Advanced (capable of liquid transfer)
Dock 4	3	Cargo Module port #1 (Nexus module, port near Airlock)	CBM
Dock 5	4	Airlock Module ports (EVA) (located inside of Airlock Module)	/
Dock 6	5		/
Dock 7	6	**RTM** port #1	APAS/LIDS/new
Dock 8	7	**RTM** port #2	APAS/LIDS/new
Dock 9	8	Cargo Module port #2 (located below Nexus module)	CBM

4.2) Extra Vehicular Activity (EVA)

Two generic EVA EMU suits are included with SCSS III-B (inside the airlock):
- EVA1 has blue strips (USA flag)
- EVA2 has red strips (International = Olympics flag).

These suits could also be attached / docked to the current MMU hardware (stored in an external shielded area near the airlock) or to a new, more advanced MMU configuration, for example, with a small robotic arm included produced by SimNASA ☺

4.3) Robotic Arm

Operation: see Vinka's documentation for details.

Summary:
Spacebar: (de-)activate
shift-num4 / shift-num6: cycle through joints/movements
shift-num8 / shift-num2: move joint
A: attach / detach

Based on Papyref arm
Modified by Frank Inklaar
SimNASA internal use only!

(C) Papyref 2006 and (C) SimNASA 2006

5. Legal Stuff, Credits and Thanks

Other very important notes:

About all files: do not make money with them!

And, the usual:
Use all these files at your own risk!
SimNASA is not liable for any bad stuff that happens!
(CTD, data loss, health problems, etc)

If seeing any incorrect information or if you feel there is a missing credit please email so that it can be solved as soon as possible. Thanks!

Components	Author and/or Origin and/or + Info
Modules\SimNASA\spacecraft03.dll	**Vinka**'s generic DLL http://users.swing.be/vinka/
Original SCSS package / SimNASA logo	**Brad Hodges** (aka **Brad**) www.simnasa.org
SCSS Arm adaptation (original by **Papyref**)	**Frank Inklar** (aka **Frank**)
Original EVA EMU dev zip: http://www.orbithangar.com/searchid.php?ID=2105	**Jógvan Trondesen** (aka **c3po**)
Materials, textures, path updates + new documentation / comments, etc	**António Maia** (aka **simcosmos**) http://simcosmos.planetaclix.pt

Extra Credits and Final Thanks

Beyond all mentions made in the previous page I would also like to thank:

Dr. Martin Schweiger (and all collaborators)
http://www.medphys.ucl.ac.uk/~martins/orbit/orbit.html

Daniel Polli aka Dansteph for Orbiter Sound
http://orbiter.dansteph.com

R. Steven Glanville
anim8or - not the heaviest 3D editor around
and that is why I love it
http://www.anim8or.com

Martin Wright
DXTBmp, cool to convert dds
http://www.mnwright.btinternet.co.uk

Thanks also to **SimNASA** people and to the **Orbiter Community** in general.