VM 4204 Final Project:
KAMOV HELIX HELICOPTER (KA-25/27)

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The project consisted of creating a recognizable likeness of the Russian-built Helix. The Helix is small – only measuring 11.7 meters long and approximately 2 meters wide. There are five viewpoints, with the most interesting being the view of the pilots – their expressionless faces don't convey their actual fear of flying.

Design Approach:

The model consists five extrusions: two semicircular (unit circle) extrusions forming the bottom and top of the cockpit area and three circular extrusions for the tail pylon and main and aft fuselage. The cockpit extrusions are scaled along eleven spine points. We used data from the text for dimensions of unit circle (nine points for each half) and mapped the cockpit on graph paper. Two separate extrusions were used for upper and lower cockpit to allow separate coloring (semi-transparent vs. solid) for each half.

The main fuselage and tail boom area are also an extrusion of the unit circle; both are scaled appropriately requiring two and five spine points, respectively. The remaining nodes: horizontal tail-plane, rudders, landing gear, engines, flotation gear, windows, rotors, etc. are the result of the necessary combinations of basic shapes, rotated and scaled as appropriate.

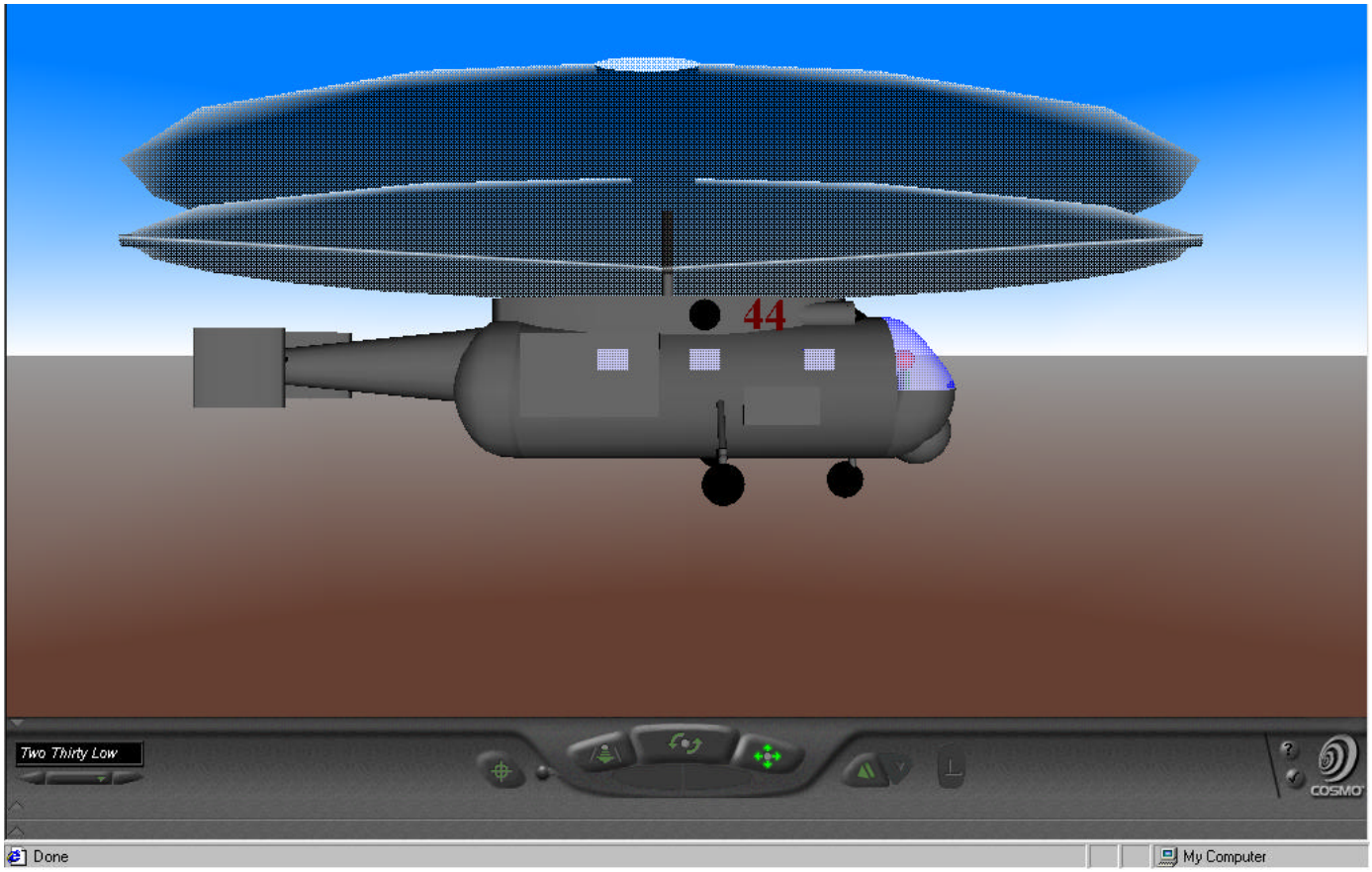
Problems:

1. Limited profile images of the helicopter
2. Difficult to accurately map complex contours – we kept it relatively simple.
3. Difficulty getting routes and sensors to work for spinning rotors (used semi-transparent disk used to simulate rotation).
4. When editing extrusion data, the "cross-section" block did not pop up in a window making it difficult to edit data. Computers in lab were not updated with latest X3D-edit version and personal computers were "finicky" when trying to update versions.

Lessons Learned:

To get more accurate dimensions, should have used techniques of others by perhaps mapping the object onto a grid like that used in on of the advanced photo-editing software.

Sources: http://avia.russian.ee/helix/ka-27.html
Jane's Military Aircraft website and text materials.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