

Rockwell Space Shuttle

History: By the end of the 1960s when Project Apollo had achieved its goal and was being cut back, those in favour of the development of space travel tried to identify and promote more practical uses of space than spectacular space missions. They chose to develop the idea of space as the place for scientific and industrial experimentation and development and suggested the best way to achieve these new goals was by frequent and perhaps permanent habitation of low-earth orbit. To do that they needed a space transport system to easily and efficiently get people and their equipment to and from orbit. Something simpler and cheaper than the big one-shot rockets seemed to be needed and the idea of the 'space shuttle' began to emerge as the United States major space effort following Apollo.

The formal decision to proceed with this next step was announced by President Nixon on 5 January 1972. The notion of what the space shuttle should do was one thing, developing a machine to do it was entirely a different thing. It had to be big enough to carry large payloads into orbit, it had to be able to fly like an aeroplane, it had to sustain all the strains and stresses of take-off and it also to return safely from orbit. Talk about complex... The end result of all the technical, political and financial compromises was something that added up to a two stage rocket with a big throw-away fuel tank and refurbishable solid fuel boosters and then the space vehicle itself. It was neither as simple, reusable or inexpensive as its proponents had suggested.

To test many of the facilities that would be used by operational space shuttles and to test its aerodynamic capabilities NASA ordered a relatively inexpensive and simplified version of the shuttle called OV-101. It lacked the rocket propulsion systems and most of the navigation and life support systems that would be fitted to operational shuttles. Originally it was to be called the *Constitution* but fans of the science fiction tv show Star Trek lobbied the US government so it was renamed the *Enterprise*. Final assembly was completed in March 1975 and it was rolled out on 17 September 1976.

The *Enterprise* could never go into space but it could fly and was used to test the flight characteristics of shuttles. It took off mounted on the back of a Boeing 747 and then flew off its carrier to make gliding descents and landings. Following a series of ground and air tests the *Enterprise* made five free flights between 12 August 1977 and 26 October 1977. Next it was used in a series on vibration testes and after that it went to the Kennedy Space Centre where it was test mated with the large fuel tank and dummy boosters and rolled to the launch pad on 1 May 1979. After numerous tests the *Enterprise* was rolled back to the assembly building on 23 June 1979 and demated from the external tank and boosters. It was then stored for several years before being flown on its Boeing 747 carrier in 1983 to air shows in France, Germany, Italy, England and Canada and put on display at the New Orleans World Fair in 1984. In 1985 it was donated to the National Air and Space Museum and flown to Dulles Airport for storage. In November 2003 the refurbished *Enterprise* was rolled out, ready to go on permanent display at the new NASM display centre at Dulles.



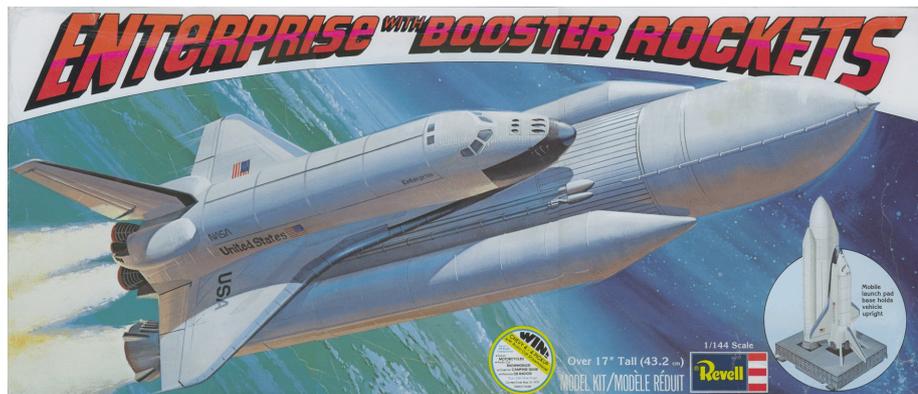
As for the operational space shuttle program, historians in the future will decide whether it was a worthwhile step or a massive waste of time and effort. The breathtaking complexity of the shuttle makes it highly vulnerable to all kinds of accidents and incidents. Taking-off and landing are the most dangerous parts of any flight so it should have been no surprise when tiny failures led to the loss of one in take-off and the loss of another during landing. The causes of those accidents have been traced back to what amount to only tiny irregularities in the overall space shuttle operation, but can also be traced back to the fundamental decisions forced on the design by the political and financial issues when the space shuttle system was designed. In the meantime the Russians have continued with a kind of space program using what amounts to old missile launchers, the Europeans have pushed multi-stage throw-away launchers to new levels of efficiency and the Chinese seem to have gone down that path as well.

The kit: Revell 1:144

There are several kits of the Space Shuttle around, only a few of them including the fuel tank and boosters. One or two kits are in 1:72 but the entire shuttle stack is quite large enough in 1:144. This kit includes a 'Space Lab' in the payload bay but it is fairly basic and would need a lot of work to include all the little fiddly details of the real thing. You won't find shuttle kits in the shops these days, I picked this one up at a swap & sell for a reasonable amount. The box is huge and even though some of the parts are big there was still lots of empty space left in it.

From the look of this kit it was released at about the same time the *Enterprise* was rolled out so it only has decals for the *Enterprise* early in its life, its refurbished appearance is closer to the way operational shuttles look rather than its original appearance. I imagine it would not be too difficult to make this kit as one of the operational shuttles, the main hurdle would be deciding what colour scheme to use because they seem to have evolved as shuttles have been refurbished between flights.

This kit appears to have been designed to attract kids interested in space ships rather than dedicated modellers. As a result construction is fairly simple and there is not much fine detail. The



only significant problem comes in trying to get the various parts of the shuttle to mate properly and the hinged doors to the cargo bay have no intention of lining up nicely if you want to make the model with the doors closed. Although the model is made in nice white plastic there are a number of spots that need a little attention and filler to smooth everything over so the whole thing needs to be painted. I spent a lot of time trying to work out what the Enterprise looked like while it was attached to the fuel tank and boosters and eventually came to the conclusion that the colour diagrams for the kit were as close as I was likely to get. The only necessary addition was the black bands around the boosters that were easily made using some blank decal film and my laser printer.

The kit comes with a huge block of plastic for a base that represents the mobile base on which the shuttle was taken out to the launch pad. I reckoned it would distract from the lines of the rest of the model so I tossed it out and stuck a bit of clear plastic sprue up one of the shuttle's rocket exhausts to make it stand up in the launch position. It looks fairly big and spectacular standing alongside almost any other 1:144 model.