

**NASA JOHNSON SPACE CENTER ORAL HISTORY PROJECT
EDITED ORAL HISTORY TRANSCRIPT**

DAVID WILSON
INTERVIEWED BY JENNIFER ROSS-NAZZAL
CHANTILLY, VIRGINIA – 22 MARCH 2012

ROSS-NAZZAL: Today is March 22, 2012. This interview with Dave Wilson is being conducted at the [Smithsonian National Air and Space Museum] Steven F. Udvar-Hazy Center in Chantilly, Virginia, for the JSC Oral History Project. The interviewer is Jennifer Ross-Nazzal, assisted by Rebecca Wright. Thanks again for joining us this morning.

WILSON: Oh, you're welcome.

ROSS-NAZZAL: We certainly appreciate you taking time out of your schedule. Tell us how you became involved with the preservation efforts on the [OV (orbiter vehicle)-101] *Enterprise*.

WILSON: The project was going for a couple months with a very limited crew on it, probably three, four, maybe five people here at the Hazy Center, and I was out at the [Paul E.] Garber [Preservation, Restoration, and Storage] Facility. Since I'm the person that does a lot of the ordering on the paints and supplies, I was in constant contact with Ed [Edward M.] Mautner. He was the lead on the project, and I was hearing that they felt kind of overwhelmed. They had a lot of work to do, they had a limited timeframe to get it done, and it just didn't seem like they had the manpower available.

I approached my supervisor and volunteered to go onto the project because I felt like I could probably make a difference. He was a little bit surprised, actually. It was obvious that he

didn't consider me as a person he was going to put on the project, but he was glad to accept and sent me out to work on the project. I think that the crew out here was pretty happy to have one additional person. Even though it probably still wasn't enough people, they were happy just to have a few more hands out here.

At that point, they were still in the process of cleaning the exterior. They had already started the prep work on the side walls and had experimented a little bit on the cargo bay doors but hadn't gotten too far there. In the months leading up to that, I had heard that they were having a lot of problems getting a consistent finish on the side walls with the methods that they were using. I'd send them out various grits of sandpaper, and I kept hearing back that they weren't making much progress. I really didn't understand what the problem was, but it became obvious the first day that I went up and started trying to do some sanding on the side walls.

Thinking that it was a space artifact, I thought it would have a polyurethane or some sort of aerospace coating, but what we failed to take into account was that prior to being given to the Smithsonian, it was at the World's Fair [1984 Louisiana World Exposition], and apparently they had done a spruce-up on it to make it look better. They had painted a lot of the exterior surfaces, the side walls and the upper doors, with latex paint. We found that in some areas there was actually five layers of latex paint, and it just doesn't sand anything like an aerospace-type coating.

Here I was sending all these fairly fine grits, and they really weren't even putting a dent into the surface that needed to be prepped. We went from a 400-grit paper down to eventually having us start with an 80-grit paper, which is a very aggressive grit that you would probably never consider using on something like this, and then we'd step up eventually to 180- and 220-grit paper to finish it out with.

I probably worked for the first three weeks to a month on just sanding the side walls. We were using a random orbital sander. Myself, Ed, and Tony [Anthony W. Carp] took turns. We had a special setup that really only allowed two sanders to work at the same time. It had a special dust collection system, and it had a limited run of hose, so we had to work side-by-side. Early on, it was primarily Tony Carp and myself that were side-by-side on the side walls.

It was interesting because we'd get into sort of a groove. It was almost like one person didn't want to stop first to take a break, so we were seeing who could outdo the other person, who would be the first one to actually take a break. We'd sit there sanding, and I'd see him kind of looking at me, and I could tell he wanted to take a break but he didn't want to be the first one to stop, and I'd keep going. We kept pushing each other, and as a result of that I think we probably covered a lot more ground than we normally would have if we were working individually. The fact that we were side-by-side kind of made us push each other.

And it was fun. The project as a whole was pretty demanding physically, and I think it was one of the reasons why some of the other folks in the shop probably weren't enthusiastic to volunteer. Thinking about the overall project and what it meant, it was something that I felt like I wanted to get involved in. I wanted to be part of it because I saw it as a once-in-a-lifetime opportunity, and it's something that we could be proud of in years to come and something that we'd talk about a lot, and we do.

There's not too many people that can say that they painted a Space Shuttle. Sometimes you get in conversations and people ask you what do you do for a living, and you start telling them, "Well, you know, we painted the Space Shuttle," and you get that funny look like, "Is this guy pulling my leg, or is this for real?"

ROSS-NAZZAL: Had you been a space nut prior to this?

WILSON: Not really. I'm probably more of an airplane person than a space person, but beyond that, I'm a paint person. My specialty area is painting. I knew that this project was going to require a great deal of painting, and it was probably going to be something unique compared to what we had done in the past, and I just felt like I'd wanted to be a part of it.

ROSS-NAZZAL: What other projects had you worked on before you started working on *Enterprise*?

WILSON: One of the first projects that I got on when I started working at the Smithsonian was the restoration of the Hawker Hurricane [aircraft], and that's on display out here at the Hazy Center now. That was one of the last full-up restorations that we've done at the Garber Facility before we did the switchover to getting everything prepped for the Hazy Center. Hopefully in the near future we'll shift into full-up restorations again.

Aside from that, I'd worked on the [Stinson] L-5 [Sentinel aircraft], we did an overall paint job on that. I'd done some work on the Dornier Do 335 [Pfeil aircraft], some paint work on the [Curtiss] P-40 [Warhawk aircraft] that's hanging out in the museum. Also the Heinkel [He] 219 [Uhu aircraft] fuselage, which has this interrupter pattern, camouflage on it. That was an interesting project that I worked on, and did most of the painting on that. Ed Mautner and myself did the camouflage on the top of it. He took one side and I took the other, and it was another interesting and fun project.

ROSS-NAZZAL: What lessons learned from those projects did you take to this project, or was it something completely different?

WILSON: I think just knowing what goes into the preparation for a large-scale project helped for planning for the *Enterprise*, but it was a totally different animal in a way. We ended up using rollers and rolling the paint on the *Enterprise* rather than spraying it. I think that was the biggest difference, whereas everything else we had done was all spray application.

ROSS-NAZZAL: Tell us, how long did it take you to finally get all that latex paint off?

WILSON: Oh, boy. It took months and months of work. The side walls were probably the easiest because they were mostly flat and it was all done with a random orbital sander, which wasn't too bad, but when we got to the cargo bay doors, that was the real challenge. Part of the stipulation we had was that they were still considered flightworthy spares, so we had limitations on what sort of abrasive we could use or the type of equipment we could use on it.

Early on we were told we couldn't put any weight on the doors, we couldn't walk on the doors. Somewhere down the line in the initial processes of doing the stripping, we found that we couldn't get past actually getting out and standing on the doors. There was no way we could do it. Leaning over the scaffold and the odd position that it would put you in, it was just physically impossible.

We had that discussion among us on the team, and we still weren't sure if we could get around it. Then a couple days later it got to the point where I realized I just can't do this, I can't get to these areas. I think I was the first person that stepped down on the doors and squatted

down and started scraping. About 10 or 15 minutes later I heard this, "Hey, you're on the doors. What are you doing on there? I thought you couldn't do that." I said, "Well, I'm doing it. I don't see how we can get around it." And then slowly after that everybody followed suit because they realized that was so much easier than what we had been doing. We kept it spread out, we tried not to concentrate the load in any one area.

The stripping of the paint on the doors was all done with a heat gun and a putty knife. Somebody within our group came up with the idea. I think it might have been Steve Kautner, who's moved on to another job. We found that was really the only effective method, to use a heat gun and then work a small area and scrape it with a putty knife. It was really time-consuming, and it was really hard on our hands.

One of the biggest problems I saw with the whole project was that short-term it had really wrecked my hands, and a lot of people were having the same problem. It continued for almost a year and a half after that project was done. I was really concerned that it was carpal tunnel [syndrome] and that it was going to be a constant thing I was going to have to deal with, but slowly but surely it subsided. Then after a year and a half or so, my hands feel like they're back to normal. It was tough sitting there scraping all day long for eight hours a day. We'd try to switch the putty knife back and forth from hand to hand, but that only gave a little bit of relief.

The whole process was tedious, and it was tough because the skin was such a thin layer of aluminum over a composite, that if you concentrated the heat in any one area for too long it would actually blister the top skin. We did do that in quite a few areas before we got the hang of it. In a very short period of time we got the method down. It took each person a little bit longer, depending on the way each person worked, but we very quickly kind of got the hang of it and were able to move through it without doing any damage to anything.

ROSS-NAZZAL: Were you wearing any special clothing or respirators as you were working this process?

WILSON: When we did the sanding we had a half-mask respirator on, and most of us wore a Tyvek suit just to keep us clean. There was a lot of dust and residue that you were kicking up. When we got to the scraping on the doors, we mostly wore a half-mask respirator because we were getting a lot of vapors from the heat gun process. We wore gloves to protect our hands. Some of us did wear Tyvek suits as well, just to keep clean. Really the important thing was the respirator and safety glasses, and then the gloves because of the heat buildup on the skin. It dissipated pretty quick, but if you were to get up against the heat gun, it'd give you a pretty nasty burn.

ROSS-NAZZAL: And you were doing this while the public was watching?

WILSON: Yes, it was kind of neat. They had built a framework of scaffolding over the *Enterprise*, and it kind of looked like giant monkey bars. So here we were, traversing this every day, up and down, and down for breaks and then back up again. When we were up on the top of the scaffolding and working on the doors, we had to wear a harness as well.

We had a full harness with a tether to one of the scaffolds, just in case we were to slip. It was a long ways down from the cargo bay doors down to the floor. It was a little bit cumbersome, and it made things a little bit difficult, but I think we all coped with it pretty good.

You got used to it after a while. There were certain limitations, but it's something that became second nature after a while.

ROSS-NAZZAL: Once you finally scraped off all that paint, were you in discussions with NASA or USA [United Space Alliance] about what type of paint to use, or did you have an idea of what you should be using given your expertise?

WILSON: I did have some discussions with some of the folks at [NASA] Kennedy [Space Center, Florida]. I got the original spec [specification] on the paint, which was a urethane paint, and got the original color. It was actually a variation of Insignia White. From there I concluded that a comparable paint, a polyurethane, would be the way to go. We've had a longstanding relationship with PPG [Industries] paints here at the Smithsonian, and in the past they've given us a lot of support and donated materials.

I started contacting the people that I knew at PPG, and found out that PPG had recently acquired PRC-DeSoto, which is an aerospace military coatings company. It was an area they were a little light on in their product line. PPG more concentrated on automotive paints, but they had taken over the PRC-DeSoto line to give them the market for military coatings. My contact here in PPG put me in touch with a rep [representative] out on the West Coast.

His name was Duane Utter, and he was one of the managers for military coatings and specialty coatings. In discussions with him I was trying to figure out how we were actually going to apply the paint. We knew we had to do it in the museum because the Shuttle was already here, and I didn't think there was any way with the square footage that we had to cover that we could actually do it by spraying. There'd be too much overspray, too much fumes that

we wouldn't be able to exhaust, so I was looking for some sort of alternative way that we could do it.

When I got in touch with Duane, he mentioned that on large airliners they had a specialty product, a flow additive that they add to the paint. It actually allows you to roll the paint on with a low-nap foam roller. I'd never heard of such a thing. It was kind of intriguing, but I was skeptical at first because all my expertise had been in spraying. I'd never had really much experience with rolling paint except for house paint. I never would have thought that you could have rolled a polyurethane or an aerospace paint.

My initial thought was it seemed like a ridiculous idea, but the more that I looked into it—he sent me some tech [technical] sheets on it and some shots of some guys rolling an airliner out on a pad somewhere—and I thought, you know, maybe there's some merit in this. This actually looks like it might be the perfect solution for what we're doing. Obviously you'd get some vapors coming off, but you have no actual overspray, and there'd be a lot less hazards to work with than trying to spray it.

So we talked it through, and he decided that he would offer some samples for us to try. He sent me out a gallon of white paint, a gallon of the roll additive, and the reducers and hardeners and all that went into the paint. I set off at Garber doing some test panels, trying to figure out how this stuff would work.

There was certain ratios to mix the hardener and the paint and the reducer in, and then you had a range of options on the flow additive, different amounts to give you different flow characteristics. I just started experimenting with different amounts. My main concern was on the side walls. Being that it was a vertical surface, I knew that was where it was going to run the most.

I did all my test panels vertically because I knew if I got it to work well vertically that the sections of the door, which curve up from almost vertical to almost horizontal, wouldn't be a problem. I found that the ratio that worked the best was about six ounces of roll additive to a mixed gallon of paint. That was what we ended up going with, and no reducer for the whole mix. We found that the roll additive actually acted as a reducer, and that the reducer that they recommended wasn't needed at all.

ROSS-NAZZAL: Did you have to prime the vehicle as well?

WILSON: Yes. One of Duane's recommendations was to use an aerospace or military epoxy primer that they have. It was called an Eco-prime, and it's basically a chromated epoxy. They used it primarily for military applications like naval aircraft where corrosion resistance was an issue. Knowing that the cargo bay doors were aluminum and we were going to be painting the bare aluminum, I wanted to make sure that the topcoat had a good base to bite into. I was concerned that we needed a very good epoxy primer that we could put on as a base, so the Eco-prime ended up being the perfect solution.

We actually were able to put the roll additive into the primer as well, about the same ratio that we used in the topcoat, and applied it very similarly. I did the same kind of test panels first, applied the primer and then went with their recommendation, a five-hour flash time, and then we were able to topcoat it.

When we actually did the Shuttle, we found out that we really couldn't do the priming and the painting all in one day because it would push us too far into the early morning hours. The fear was that the hangar wouldn't evacuate the fumes well enough before the public got

there the next morning. We were trying to limit the amount of time that we actually were painting in the evening, to give us plenty of time between the time we knocked off painting and the time the public arrived, so that the hangar would be well cleared of any vapors or fumes for safety purposes.

ROSS-NAZZAL: There's also some foam and wood, I understand, on the vehicle. Did those present any challenges since you're also working with aluminum?

WILSON: Yes, they did. The *Enterprise*, being that it doesn't really have any real tiles on it, is all simulated with foam tiles. What NASA had devised for painting that originally is a 3M product called EC-2241, a specialty elastomeric paint that they used.

They took this base product, which was white and color, and then they added a ground mica material to it to give it a certain sheen, as well as what they call a Degussa [phonetic] powder, which is a flattening powder. Then you mix it all by a certain weight, and that would give you the material that they applied as a topcoat on the white foam tiles. To do the black it was the same mix, but then they added a carbon black powder that gave it that black look.

I had received the tech sheets from Kennedy on how they originally formulated it. We followed it through, and I found that when you did the black paint, adding the carbon powder actually made it very coarse and gritty. We found that the way to get around that was after you'd mixed the whole thing, to strain it through a heavy bronze filter. That actually gave you some very workable material where otherwise it was almost unworkable, it was too lumpy.

ROSS-NAZZAL: And the wood, did you treat it in any different fashion?

WILSON: We did have wood on the OMS [orbital maneuvering system] pods. They were units that were made to simulate the original pods, but they were really just mock-ups of the originals. They were in pretty poor shape. We had a lot of problems with some mold on the interior of the pods. When we brought them into the shop at Garber, we ended up completely rebuilding them.

A lot of the wood structure had some rot in it, and the mold had become an issue early on. We thought it was a possible health risk, and we actually had our safety people come in and do an assessment of the mold to make sure it wasn't too dangerous. It was deemed that it wasn't the type that was of great concern, so we went about removing all the rotten members out of the OMS pods and replacing them with new.

For the exterior skin of the pods we used a lot of West System epoxy, which is a common epoxy that's used to do the exterior of wooden hulls on boats. We found that to be very effective. We mixed the West System epoxy with microballoons and found that was very workable. We could mix it almost to a molasses consistency and spread it out over the surface of the pod, and then come back usually within about 24 hours and do the final sanding and shaping of the outer skin of the pods.

From there we actually used the same paint that we used on the cargo bay doors and the side walls. We used the Eco-prime primer and then topcoated it with the military spec polyurethane in the same fashion. It was all roller-applied, except there were a few pockets on the pods which made it really hard to get into with a roller. We mixed it in a spray gun, and then sprayed into those areas after we had rolled the exterior surfaces, just to make it a cohesive paint surface on the exterior.

ROSS-NAZZAL: How long did it take you to paint the entire vehicle?

WILSON: The actual painting process was about four nights total, but it was spread over about a two-week period. We started with the cargo bay doors first. We started from the left rear, did one side and worked from the rear to the front, and then went to the right rear and worked from the rear to the front of the vehicle.

We found that working in teams of four was the best way of going about it. We had two people stationed at the bottom of the doors and two people at the upper end of the doors. There were seams that went vertically on the doors that separated it into sections, and we tackled each section individually, all four of us tackling it at once. We had the two people at the top start at the center, the two people at the bottom start at the center, and then we worked from the center to the top and to the bottom, respectively.

We found that the key to the whole rolling process was going through a dry rolling application. We would put a medium to wet coat on, we'd roll out about a 10- to 12-foot square area, and then we'd take the roller and ring it out in the roller pan to where it was almost dry. Then we'd go back over top the area that we had just rolled and found that that was the key to making sure that we didn't have any sags or runs starting. That gave us a consistent finish that looked very much like a spray finish.

The first night we did the priming of the cargo bay doors, we did both sides in one evening. Then we let it sit for 24 hours, came back the next evening and we did the application of the topcoat, the white. Did one coat, then took a look at it when we were done and determined that one coat gave full coverage, looked very consistent. We were satisfied that one coat was enough for the cargo bay doors.

Then we continued to do some prep work on the side walls, and came back three or four days later to do the side wall paint application. We did the priming of both sides in one evening, then came back the next evening and did the application of the white. The side walls were a little different in that we didn't completely strip them to bare aluminum like we had on the cargo bay doors.

Essentially we had a bunch of spots where we had gone down to bare aluminum, and spot-primed with this Eco-prime on those bare aluminum spots. Because of the nature of the primer, it was actually a bright greenish yellow color, so we weren't sure how that was going to cover. We did one application of the white topcoat, and it almost covered. It was so close, but when we stood back you could just faintly see a little splotchiness here and there.

It took us probably two or three hours' worth of application to get both sides done. It was like midnight or 12:30, and the four of us were there. The three guys turned and looked at me and said, "What do you think? Is that going to do it?" I looked at it and I said, "No, I don't think so. I think we're going to have to put a second coat on." Everybody was pretty good with that. I think they wanted to go home, but they knew that we needed to do it, and everybody dug in.

We went down and mixed another batch of paint and started putting that second application on. It ended up that we didn't get out of there till about 3:00 or 4:00 in the morning, but it was well worth it. The second coat made a huge difference. I don't think we would have been satisfied if we had walked away with only that one coat.

ROSS-NAZZAL: Did you have them run through a practice session, to try this on the ground before going up on the vehicle? Or did you just assume everybody was going to be a good painter?

WILSON: I was probably the only one that did practice on my test pieces. That practice was really for the purpose of getting the roller additive right, knowing that the mix was going to work the way we wanted it to. We didn't do a dry run at all as far as how we were going to apply it.

We did get together right before we actually went up and started painting the first coat and decided how we would break it up into teams and how big of an area we would try to do at a time, but we learned as we went. We figured the primer coat probably wasn't as critical as the topcoat, so we had a little bit of time to practice. We knew if we had to, on the primer coat we could come back and sand it if it didn't come out the way we wanted it to.

Luckily it went very well. The first coat went on pretty smooth. We figured out pretty quick that the dry-rolling was really the way that perfected it. We started out on the first major section and didn't do the dry roll, and we were having problems with some sags and such. Then we thought, wonder if we dry-roll this if that would work. We tried and went back over a little section and saw that that really smoothed it out.

We were able to go back on that first section before it had a chance to set, dry-roll the whole thing, and then stand back and realize this is what we have to do for the whole process. This is the only way that's going to make it come out right. Went from there and used that process on the whole rest of the Shuttle.

ROSS-NAZZAL: What kind of prep did you have to do on the vehicle as you were painting it?

WILSON: Prior to the actual application of the cargo bay doors, after we were completely done stripping it—we're down to bare aluminum now, this was with the scrapers—it still left a little bit of residue here and there. So we ended up making our own sanding pads out of Scotch-Brite pads. We took square pads, cut them down to rounds, and then we made a special backing plate so we could apply them onto six-inch random orbital sanders.

Then we very carefully went over all the cargo bay doors to get any last-minute residue off little places that we couldn't get to. Once we did that we were pretty satisfied that we had a nice consistent finish to apply paint to. We used a PPG product, DX330, which is a wax and grease remover called Acryli-Clean.

Because of the sheer size, of the square footage of the doors that we were going to need to preclean—everybody got up there, took a section. We had our Tyvek suits on, we had booties on, and we had gloves on so that we weren't touching it and leaving fingerprints. Then we went through with the DX330 with rags. We'd do a wipe-down and then wipe off with a clean rag. Go through the whole procedure as prescribed by the manufacturer, which is essentially to not let the cleaner dry on its own; you wipe it off before it has a chance to air dry.

Once we had the doors all clean, we used an Alodine [chromate conversion coating] on them. This was done with a sponge mop. We were scratching our heads about a month before we actually got to this, and we were trying to figure out how we were going to Alodine the whole surface.

Reading some of the tech sheets on the Alodine, they recommended on large areas that you could use sponges. We thought about that and then realized, what about sponge mops. Maybe that would actually work better, because you've got that long handle, and if you get the

kind that has an attachment where it wrings out the sponge, that would be perfect. The access we had to them from the scaffolding, we could actually reach everything we needed to do without actually standing on the doors.

So that was what we did. Ahead of schedule, about a month before the actual application, I sat down and started ordering all these supplies. We got six buckets and we got the sponge mops and got the Alodine. The process we used, we poured the Alodine full strength into the buckets. Decided that was probably the best way to do it, not to dilute it. We used a Henkel product, 1201 GL Alodine.

We, again, got a couple people top and a couple people bottom on the scaffolds, started at the middle, and we worked our way top and bottom. Applied it one application. It has a tendency to want to bead up. The trick is keeping the surface wet, so we would apply it, wring it out in the bucket, and then apply another coat on it. Do that continuously for about five minutes, which is the dwell time on it, trying to keep the surface completely wet the whole time so that it doesn't develop a dry spot.

Then after that five minutes we wring it out in a clean bucket of water, go over it with the mops. Work this time from top to bottom, let the water run to the bottom, and we catch it with a sponge mop so it didn't pool up at the bottom and run down the sides of the Shuttle. We'd keep doing that until the water sheeted clear over the Alodine. That's when you know you have a good bite to it, then it's thoroughly rinsed off.

We were very careful after we applied the Alodine not to touch it with our hands, because we didn't want to leave fingerprints or anything that would cause an adhesion problem. I think maybe a day or two went by between the Alodineing process and the actual first topcoating of the primer on the cargo bay doors.

On the side walls, most of the surfaces were just sanded paint. We had a few breakthrough areas where we went to the bare aluminum. We spot-Alodined those areas, and used the same process where we wash it with clean water. In those areas we were able to just use a handheld sponge. That was the way we tackled the prep work on the bare aluminum surfaces.

The rest of the painted surfaces, they're wiped down with this DX330 Acryli-Clean, which is what it's made for. There, again, each person would tackle an area and we would go at it with a wet rag of Acryli-Clean, then a dry clean rag that we would wipe it down following the prescribed method.

ROSS-NAZZAL: How much paint did you guys end up using?

WILSON: I had to do the figuring initially on how much square footage that we thought we would cover. Dealing with PRC-DeSoto—who I might mention actually donated the paint to us. After I initially talked to Duane Utter, he alluded to the fact that they might possibly be able to work out a donation. I got in touch with our development office, and a couple of the folks there started dealing with Duane out on the West Coast. They were able to come to an agreement that they would donate all the materials we needed.

I was having a hard time finding at the shop a scale drawing of the *Enterprise*, or something that I could figure the square footage. I ended up finding a 1/72nd scale model that had been sitting around in our conference room for years. I took that, and took all the measurements of the side walls and the cargo bay doors, and then multiplied it up by 72. It was about 4,275 square feet that I ended up figuring.

I sent that information to PRC-DeSoto and I let them tell us how much paint we were going to need. They ended up sending us 20 gallons of the white and 10 gallons of the primer. We only ended up using about half the amount that they sent us. I'm not sure if that was because they were anticipating we were going to have to roll on two coats on all the surfaces, and we ended up on the cargo bay doors with only one coat versus the two on the side walls, or if when they did their calculations they were actually thinking of a spraying application rather than the roller application. For whatever reason, we only ended up using about half the material that they actually sent us, so we still have a lot of that stuff left over.

ROSS-NAZZAL: Is that going up to the Intrepid [Sea, Air & Space Museum, New York City]?

WILSON: Yes, we're sending a lot of the leftover materials up there with them so that they'll have that to do touch-ups and any refurbishment work that they might have to do. Hopefully there won't be many touch-ups to do once it gets up there.

ROSS-NAZZAL: You've done a lot of work. Ed had mentioned you guys also found different tracings of the NASA worm and different paints for the *Enterprise* that they painted on originally.

WILSON: Yes. My recollection was when we sanded down there we weren't sure what we were finding. Ed went back and talked to Valerie Neal, who's the curator on the *Enterprise*, and they realized that what we were finding was one of the first iterations of the NASA worm logo. We hadn't realized right off the bat that there was a couple different renditions of that on the

Enterprise. We documented all that, we took tracings of each of the different variations, then we left it up to the curator to make the call as far as which version she wanted us to put back on the *Enterprise*.

We had a tracing, we'd hold it up, and then we transferred the tracing onto the *Enterprise* so we had a penciled outline. Then the actual application of the "*Enterprise*" and "NASA" were all hand-applied. We outlined it in black sign painter's paint, and then did an infill on it. We found that the sign painter's paint worked the best, although it was too glossy. We couldn't find anything that looked quite right, so I ended up using a PPG product with flattener that we added to it. Painted the whole thing, and we weren't quite satisfied with it. The problem with flattened paints when you paint by hand is that it's hard to get a real consistent application. It often looks splotchy, and it did a little bit. It wasn't too bad, but we just weren't satisfied with it.

After about two weeks of drying we decided to come back and we used a product called Soluvar that they use a lot for paintings conservation. It's a liquid clear coat. We put an application of that over all the letters, hand-applied, and that gave it a nice consistent sheen. It really made it look a lot more presentable than what we initially came up with, something that we thought was really acceptable once it was done, looked really nice.

ROSS-NAZZAL: Are you happy with the paint now that it's all finished?

WILSON: Yes, I was actually very surprised at how well it came out. There are certain areas if you get the lighting just right you can sort of see the brushstrokes in it, the roller marks. But most of the time when you're viewing it I don't think you'd have any idea that it was actually roller-applied. I don't think the public has got any idea that that's how we did it.

ROSS-NAZZAL: What are your feelings as *Enterprise* is set to go to New York?

WILSON: I'm a little sad in a way. It'll be neat to get the [OV-103] *Discovery*, but I think of all the work that we put into the *Enterprise*. I'm really proud of all the work we did, and I hate to see it go. It's nice to be able to look at it on a regular basis and think, "We did that." But it won't be too far away so hopefully we'll be able to visit it up there too.

ROSS-NAZZAL: I imagine they'll be calling on your expertise.

WILSON: Well, we're certainly always willing to help. If they need help with anything, that's what we're here for.

ROSS-NAZZAL: Rebecca, do you have any questions?

WRIGHT: I just have one. Is there a special memory that you have of working on that project?

WILSON: Probably the most memorable thing was an incident that happened one of the nights when we were painting. It was pretty late at night, the whole museum was shut down. Everything was dark except for the hangar itself where we were working. Oftentimes I would bring a radio in there, and we'd have the radio playing for background noise. Usually some classic rock station or something, just to help pass the time.

Here we are rolling paint, paying attention to what we're doing, then all of a sudden we notice down on the floor there's a SWAT [special weapons and tactics] team that's come into the hangar. Their stance, the way that they're moving around, they've got weapons in hand, it's like they're after somebody. We're whispering to each other, "Hey, what's going on down here?" Everybody looks, we stop what we're doing, "What's going on? Is there an intruder in here? Why have we not heard anything?"

After a minute or two a couple of the guys come over right underneath where we're painting, and they start whispering up to us. "Hey, did you see somebody come in here and hide? Did you see anything?" "No, we didn't see anything. No, nothing like that." Then one of the guys tells us that apparently their sergeant had come in and had hidden somewhere in the facility, and it was their job to find her. So here they are cheating, asking us if we knew where she went. We didn't. We had no idea where she was at.

It was unusual. It was tense there for a minute or so, because we thought "What the heck, are we going to have to be evacuated? What's going on here?" Then realized it's just a drill. Also thought it was kind of odd that nobody told us this was going on. We thought that if they knew it was planned they would have given us a heads up that something like that was going to happen.

WRIGHT: I can imagine being up there with all your paint supplies, thinking "I'm not leaving this."

WILSON: Right, "We're right in the middle of it, we can't stop now."

WRIGHT: Did you have any doubt that you'd make that deadline to have her ready?

WILSON: I didn't because I came into the project pretty late. I can understand why Ed and the other folks did, because it was such a huge tremendous project and it was four or five people they had on it initially. It just wasn't enough people for the scope of what had to be done. Then I came on board, and it wasn't very long after I was there, maybe a week, and another person came out, Bob Weihrauch. Then a couple weeks after that we got two or three more people.

Once we got everybody going on the project, and everybody was up there sanding and scraping, it was doable. Before that it was just too much to do for too few people. Especially, like I talked about, how intensive it was doing the scraping and how everybody was hurting after a while. If three or four people had to do all of that, it just would have killed everybody. Having it spread out to eight or nine people was a lot more doable than four people.

WRIGHT: A lot of your work, if I understand correctly, was not just doing the physical stuff. You were having to analyze where you were at that piece in time, then scope out what was going to be done a few days after, and make sure you had the supplies in. Did you do that every day, or was it just part of an ongoing project? How were you able to scale this out and make sure all this was done?

WILSON: We do that a lot actually on the projects that we work on on a normal basis. Everything we work on ends up being unique and different from the last project we worked on. You do an initial assessment of the work you're going to do—or you think you're going to do—what you're going to need and order those supplies. Then you get into it.

Oftentimes you find that the method you thought was going to work the best doesn't work so good. You have to change gears and decide what's a better way of doing this? Oftentimes that means going to a different type material or a different method. After a run of three or four days of trying different things and then realizing this isn't going to work, then we have to take a step back and talk, and decide what's the next logical way to try doing this? At that point we would decide, and one of us would step out and then go procure the supplies we needed to do it.

It was challenging because we were working here at Hazy, and everything else was going on at Garber. Logistically it made it a little bit challenging to get the materials from Garber out to here, get the orders from here to Garber, and then get all the paperwork processed and be able to pick up the supplies and get them from there to here. But it worked out. Just as you said, you have to plan ahead. I think we did that pretty good on this project. I don't think we had too many work stoppages because of lack of materials.

On the sanding, I didn't realize how tough the latex paint was. Here these guys were going at it for a couple weeks nonstop before I came out and realized, "Okay, I see the problem. This just isn't going to work, we're going to have to go to a coarser grit." If we hadn't stepped up to that it probably would have taken two or three times as much time to sand it down and get it prepped with the lighter-weight paper that we were using at the time.

WRIGHT: It's an amazing piece of work.

ROSS-NAZZAL: Is there anything you wanted to look at that we didn't talk about?

WILSON: I think I covered most of the paint application, which was the bulk of what I was involved in. I also worked on the OMS pods back at Garber, I volunteered for those too. Bob Weihrauch was initially tasked with doing those, and had worked on them for quite a while by himself. I think he was feeling a little bit overwhelmed with the whole project. It came time for the Christmas holidays, and Bob was off for two weeks.

I happened to be there and I decided I'll jump on this project with him and give him a hand. I tore the whole back section out of one of the pods and had it all laid out on the ground, and had it almost completely replicated by the time that he came back from vacation. I think he was pretty happy to see that he was going to get a little bit of help on the project.

It was not a great project, with all the rot and everything in the wood. I think some of the people didn't really want to tackle it, but it was all part of the overall scope of work that needed to be done. I just didn't think it was right to have one person saddled with doing the whole thing by himself. We ended up with about four people working on the pods after that.

ROSS-NAZZAL: Sounds like a big project of its own.

WILSON: It was, it was a lot of work.

ROSS-NAZZAL: Did you have any schematics from NASA in order to rebuild those?

WILSON: No, nothing. I don't think there was anything available. I don't remember now what the exact history of them was, whether it was actually NASA that built them or if they had them contracted out, but both of them were a little bit different. The construction was slightly

different inside, the bracing and such. We tried to replicate as much as possible the way they had originally done it.

We did make some improvements. We added some additional bracing inside just to make sure that if there was any rot that we couldn't see or couldn't get to, that they were plenty strong enough for when we had to hoist them up and put them onto the Shuttle. I ended up also being part of the team that installed the OMS pods after they were refurbished, and part of the team that took them off a couple months ago when we were getting ready for *Enterprise* to go.

ROSS-NAZZAL: A sad moment, bittersweet.

WILSON: Bittersweet, yes. It'll be neat to get *Discovery* in, but it will be sad to see *Enterprise* go.

ROSS-NAZZAL: Well, we thank you very much for your time this morning.

WILSON: Oh, you're welcome.

[End of interview]