

Mr. Jay Honeycutt

Oral History

Kennedy Space Center

Interviewed August 2, 2004

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All Points Logistics

1 [Chatter at beginning]

2 Unknown: So, we are here at Kennedy Space Center with Jay Honeycutt on August 2,
3 2004. Mr. Honeycutt, as you know, we are doing a history of Kennedy, but we thought
4 we would start by asking you a little bit about your own personal background and how
5 you came into the Space Program, if you would.

6

7 Honeycutt: Well, I was raised in Louisiana and when I got out of school I was drafted
8 into the Army and I was stationed at Redstone Arsenal in (???) 27), Alabama and worked
9 in, on the ballistic missile agency. Just, it was in the early 60's, just right after NASA
10 broke away from the Army and was formed as a separate agency. And just about the
11 time I was getting out of the service, they were forming the center down at Houston and I
12 remember being raised in Louisiana, and North Alabama was a little far north and cold
13 for me, so I had no great motivation to work in the Space Program as much as I did to
14 move to where it was a little warmer climate. So, I picked Houston because it was the
15 warmer one. It was starting up and I was able to get a job there without recognizing that
16 when I was looking for a warm climate, I didn't really want one quite that warm. But, I
17 was there for really the beginning of the Apollo Program. I worked all the way
18 throughout the Apollo Program in the flight operations under Dr. Christopher Crabb in
19 Houston. And, stayed in mission operations through the beginning of the Shuttle
20 Program, at which time I took the first of two assignments that I had at NASA
21 Headquarters. I went up to work for John Yardley, who was the associate administrator
22 for space flight for the first couple, three Shuttle flights and then went back to Houston
23 into the Shuttle program office and worked there until, until actually, I came down here

24 in 1989 to be the Director of Shuttle Management Operations under Jim McCartney. He
25 was the Center Director at that time.

26

27 Unkown: Your background before you went to Redstone. Had you studied engineering?

28

29 Honeycutt: Yeah. A little.

30

31 Unkown: At that point, did you know much about space?

32

33 Honeycutt: Actually, the John Glenn hadn't even and Sheppard hadn't flown yet. I was
34 actually just trying to get out of school.

35

36 Unkown: When you were at Redstone, that was when Wernher von Braun, I guess was
37 there.

38

39 Honeycutt: Well, and General Maderes was there.

40

41 Unkown: Yeah. But you were in the military...

42

43 Honeycutt: I was in the Army – the Army side. And what they had done, they had taken
44 essentially the model of ADMA and essentially cut it in two and half of it stayed with the
45 Army and the other half of it went to NASA. So I was in the guidance and control area.

46 There was also a sister organization within NASA. There was guidance and control.

47 And they did that for all the various disciplines of rocketry.

48

49 Unknown: Ok. So, you'd already done some work with people.

50

51 Honeycutt: Yes.

52

53 Unknown: Alright. And then your work, when you first went to JSC, could you sort of

54 give just a brief...

55

56 Honeycutt: Yeah. I went into Flight Operations, into the mission simulation area within

57 the mission control center. So, my responsibility was to train the flight control team and

58 then train the flight control team to work with the flight crew. Flight crew basically

59 received their mission-specific training, if you will, down here with the simulators that

60 were in the O&C building at that time, and the mission control team was in Houston at

61 the mission control center. And we had them all hooked together with middle-60's state-

62 of-the-art data transmission and computer technology and our job was to train the two to

63 work together as a team. So, we would put in various scenarios that would require the

64 ground and the crew to recognize some problem and the work their way through it. So, I

65 worked all the Apollo in that capacity.

66

67 Unknown: Ok. And then when you went to Headquarters, what was...

68

69 Honeycutt: First time up there I worked with John Yardley as sort of, commonly known
70 as a (??? 111), but a technical intern, I guess, would be a more professional name for it.
71 And I worked with John as he really led the NASA team into the final stages of the
72 development of the Shuttle. The Shuttle system. And then I got ready for the first flight.
73 And I did technical jobs for him and reviewed stuff for him and went to all his meetings
74 and sort of learned the process of being a senior manager from...

75

76 Unknown: I'm just curious. What's the, since you already had the experience, a lot of
77 experience, at Johnson, the difference between the perspective of something like the
78 Shuttle Program from the center versus Headquarters.

79

80 Honeycutt: Well, it's not unlike the relationship between the field and the headquarters in
81 any organization that I have observed. You know, the center position starts with, you
82 know, send money and leave me alone and the headquarter position is, you know, "We
83 keep sending those guys money and they don't do what we tell them to." So it's been a
84 growing experience for the centers and the Headquarters to work more closely together
85 and form a better team, which I was able to observe over my career. It started out, pretty
86 much, two separate things and built into the Shuttle Program, has built itself into a
87 common team, if you will.

88

89 Unknown: Would you say then, that in the 60's, with the Apollo Program, it was the
90 centers were more independent and then as you got into Shuttle that...

91

92 Honeycutt: To a degree, although I have to admit that I spent the entire in the control
93 center. I had a little room about this size with a headset strapped on training flight crews
94 and flight controllers six days a week and on the seventh day we figured out what we
95 were going to do next week. And my boss, who was a great boss, said, "You go do that.
96 Let me worry about both the people in the headquarters in Houston, in Building 1, or the
97 people out at Headquarters in Washington." He said, "Let me deal with those guys and
98 you go train people, because that's what I want you to do." And I, the good news was I
99 didn't have to be involved in some of those things. The bad news is that I came out of
100 the Apollo Program without a real appreciation of that side of the business, which is
101 equally important to the... you know, troops in the field with the headsets on have an
102 important job, but the managers do as well. And the ability of a second-line manager to
103 get along with his center director and center management and to get along with NASA
104 Headquarters in Washington is equally important. And I kind of came out of Apollo
105 without that experience. And it was not until I went to Washington to work for John
106 Yardley, that I really began to get an appreciation of not only the importance of it, but the
107 difficulty of it, as well as the value of what those people bring to the party, if you will.

108

109 Unknown: Since you've had both experiences, how would you characterize your kind of
110 realization of what the Headquarters kind of was bringing to NASA?

111

112 Honeycutt: Well, the folks in the trenches have the most fun because they don't have the
113 worries of, "How are we going to get this thing funded? How are we going to keep it
114 funded? How are we going to get along with the other people that are in?" As I did it

115 more often I began to realize that the real challenge is that side of it. How we are going
116 to make sure we get our program defined, how we are going to get it supported within the
117 center, how are we going to go with the center to Headquarters to keep it funded, how are
118 we going to keep it funded, how are we going to make sure we meet our schedule dates,
119 how do we make sure that the product that we deliver isn't unacceptable., if you will.
120 And I found that that was much more of a challenge to me and much more interesting
121 side of the thing, although, the fun, if you will, is really in there with the slugging it out
122 with the troops in the trenches.

123

124 Unknown: Yeah. I'm asking you this question because it's something I want to really get
125 to, which I think is really crucial to the history of Kennedy, and I think you were kind of
126 the key player in this, but before I get to that: Could you also kind of characterize a little
127 bit again, unlike a lot of people you had a lot of experience both at JSC and at KSC, a
128 little bit of the differences in obviously location, work, and I think culture, probably...

129

130 Honeycutt: Every center is different. I also had a brief hitch at Marshall. Actually, while
131 I was down here the deputy director of Marshall had a, went off to school somewhere and
132 I got to go up there and be acting Center Deputy Director for about four months. So, I
133 kind of got a view of them as well. But each center is different. Has its own, I hesitate to
134 use the word "culture" because it is not a, perhaps as popular a term as it once was within
135 the Agency. But each center is different. Houston is, although they've been responsible
136 for the development of a tremendous amount of hardware, including the orbiter, Houston
137 is, if you get to 40,000 feet and look down is really an ops center. The astronauts are

138 there and the mission control center is there. Their expertise from an engineering point of
139 view is in program management and how do you conceive, design, and build big,
140 complex elements of flight hardware. They're an ops center from a sort of a mentality
141 born because they think operations, even the development people, try to develop the
142 hardware from the point of view of the flight crew or the flight control team, so it's user-
143 friendly, if you will. Kennedy, pretty much purely ops and processing. Send us your
144 hardware, give us a set of general guidelines on how do you want us to check it out, how
145 do you want us to prepare it for launch, and we'll go do that and we'll deliver it to T
146 minus zero, a product that has met your requirements and is ready to go from an
147 operations point of view. Marshall sort of more a development mentality, which is a lot
148 of von Braun and his team's influence still at the center. And they're very capable and
149 very disciplined engineering team that the designs flight hardware and ensures that it
150 operates properly. Headquarters, pretty much a classical headquarters thing. You've got
151 sort of three disparate centers, how are we going to keep them melded together in one
152 team that's pointed, one of my more favorite expressions is all pulling on the rope in the
153 same directions so that we can get this thing ready, get it flown, get it, the mission
154 objectives achieved and then get it back on the ground.

155

156 Unknown: The difference, it's interesting you say that JSC is an operations center
157 because, you know, as I've been studying this that's kind of the way I've been thinking of
158 it, though it's sometimes not characterized that way.

159

160 Honeycutt: No.

161

162 Unknown: And I guess it's partly because, you said, they did develop things like the
163 orbiter and were heavily involved....

164

165 Honeycutt: The Command Service Module and the LEM module...

166

167 Unknown: Right. Were all...

168

169 Honeycutt: Right. Mercury before that and Gemini.

170

171 Unknown: You're right, obviously. The whole mission aspect of that. The difference
172 between that and the way you've so characterized that, and again I would agree Marshall,
173 you think of designing engines.

174

175 Honeycutt: Yeah.

176

177 Unknown: The difference in terms of outlook or mentality, what in your experience does
178 that lead to?

179

180 Honeycutt: Well, engineers are engineers. And development engineers, in my
181 experience, are all pretty much the same. You know, I mean, they are discipline oriented,
182 they are process oriented, their mentality is, "It needs to be right. It needs to be part of
183 the specifications. We need to be comfortable with it that it's passed the proper testing.

184 We need to understand all the data. Any anomalies that are against us, specifications of
185 why did they occur and do we understand them.” Ops folks are the same but there is the
186 added element of, “Yeah, but lets get to the point, get an answer to this thing so we can
187 get on with it because we are trying to do our work to a schedule.” I never, in 37 years
188 with the Agency, observed anybody cutting any corners in that process that said, “Well,
189 even though we don’t want spend this we need to go ahead and approve it because we
190 want to get to the launch date or whatever the thing was.” I never observed that. When I
191 came down here, my two chief folks were Bob Seek, who was launch director and was
192 essentially in charge of operations, and Bob Lyon, who was the director of engineering
193 for the Shuttle Program, at that time is now with the United Space Aliance as their chief
194 engineer. And I would get the two of them in a room and tell them that, you know, “Bob
195 Seek, you’re in charge, but Bob Lyon you are responsible for ensuring that this hardware
196 is, you know, you’ve got 51 percent of the vote from a technical point-of-view, but Bob
197 is in charge of getting us, Bob Seek is in charge of getting us to the launch pad and your
198 job is to help him get there.” And Bob Lyon, knowing that at any point he could raise a
199 flag and say, “Hey, there is something here we don’t understand.” And knowing I was
200 going to support him in that...

201

202 Unknown: Right.

203

204 Honeycutt: ...Had the, I guess, was in the comfort zone if you will, which allowed him to
205 work with Bob in a supportive role. Bob seek in a supportive role rather than an
206 adversarial one, which historically, engineering and operations tend to get a little bit

207 grindy sometimes and, you know, come on, come on, come one, you guys are in too big
208 of a hurry, debates that went on. And I think we had with those two in those jobs, we had
209 the right balance between ops and engineering that was necessary to ensure that we got to
210 the launch pad on schedule, but when we got there we knew the hardware was ready to
211 go fly and there weren't some (??? 310) against it that were, that we didn't really
212 understand.

213

214 Unknown: Ok. Well, since you are talking about coming here, I guess, this would be the
215 chance to tell us a little bit about your experience. How did you, first of all, how did you
216 get here? What did you find when you were out here? And then we can go on from
217 there.

218

219 Honeycutt: Well, I came down here after the second flight following Challenger, which
220 was... 103 flew first, 104 flew second, and then... which was 26 and 27 and then 29 was
221 the re-flight of 103. And I came in-between the first flight of 104 and the second flight of
222 103. And, the team down here was not as good as it could be with regard to meeting
223 schedule, I guess would be a good way... Work would just sort of come in, anybody that
224 could bring in more work... I had been in Houston and I was a deputy manager in the
225 Shuttle Program office and work would come in and Kennedy would say they could
226 accept it and we'd approve it and it would come down here. But the ability to understand
227 what was actually being worked on and how one job related to another one was not as
228 good as it could be. So, about the same time as I came down here, Lockheed brought
229 (??? 333) Patterson in from the West Coast as their launch site manager. So, Dan and I

230 together sort of began to work on how to better a) identify the work that has to be done,
231 which the program office controls, how good are our procedures that allow us to do that
232 work, how good are we at figuring out how many labor hours it's going to take to do it,
233 and then how good are we at counting them, if you will, and understanding how much
234 had been done, how much labor had been expended and against that, what was the
235 desired end date and what was left to do and did we have the labor to apply to it to make
236 sure we got to this date. Because if you didn't you had to go take it from another vehicle,
237 and as soon as you took it from another vehicle it automatically became behind, if you
238 will. And, so, we took awhile to do that. We started in with every one of the procedures
239 and who's in charge of this procedure. We assigned a person to each one and then we
240 gave them a target of, go figure out how to make your part of this process more efficient.

241

242 Unknown: General McCartney asked you to come here? Was he the one...

243

244 Honeycutt: Yeah.

245

246 Unknown: ... to be head of the Shuttle Program.

247

248 Honeycutt: Yeah, Tom Altman was the director of Shuttle Management Operations and
249 then part way through that they made him deputy Center director.

250

251 Unknown: I see.

252

253 Honeycutt: And, part way through that they decided that he couldn't do both. So, Bob
254 Crippen was down here as the Shuttle Program manager in the job that Bill Parsons has,
255 well he was the next level up from the job that Bill Parsons has now. And I had known
256 John McCartney from when he was in the Air Force and out at Space Division at Los
257 Angeles. I had done some work with him in when Shuttle, early in Shuttle the Air Force
258 was going to fly on Shuttle and I did some work him. So, he knew who I was, but I think
259 he and Crippen decided that, you know, I ought to be one of the candidates at least for the
260 job. So I came down and talked to them.

261

262 Unknown: Did they specifically talk about the need to sort of reorganize the work?

263

264 Honeycutt: No, no. It was more... The relationship between the center management and
265 these jobs and these are the people that you hang over. At that point, both Shuttle
266 Operations and the logistics of support for orbiter were both in the same organizations.
267 There was almost a thousand civil servants and almost a billion dollar worth of budget
268 responsibility. And, I think the Lockheed contract at that time was like 8,000 heads and
269 the Rockwell was another 800 or 1,000. So I mean, it was a big great... they have since
270 reorganized and split up and downsized and made it a more manageable...

271

272 Unknown: Ok.

273

274 Honeycutt: A more manageable size, but the...

275

276 Unknown: As you know we talked to Roy Thorpe, and one of the things that came out in
277 his interview discussing this period was that a lot of it was to get the number of hours, I
278 mean part of it was just to get the number of hours spent on processing and orbiter down.
279 I take it that some of the problem was that you would get bottlenecks or critical paths.

280

281 Honeycutt: Yeah, there were, the ability to integrate work was not as good as it ought to
282 have been. In particular, between the orbiter hardware and the thermal protection system.
283 They were like two sort of separate things and they scheduled their work pretty much
284 separately. So, you might have a schedule that has hydraulics up on the vehicle, which
285 means when you have hydraulics up on the vehicle nobody else can really do much work
286 because the ailerons might move or the body flap might move, or some other safety
287 concerns relative to hydraulics. So, you might have from 8 to noon on the first shift
288 hydraulics are up and here come the tile team in and they were going to do some tile
289 work on the body flap. Well, they couldn't. So they'd have to sit there and then they'd
290 go back to a scheduling meeting and try to reschedule and it might be 2 to 3 days before
291 they could get back on the schedule. So, we put a lot of emphasis on, if you will, an
292 integrated schedule so that when the tile guys showed up, in fact, they could get access to
293 the vehicle and there wasn't, the bay wasn't closed or hydraulics weren't up or some (???)
294 405) that pulled them in from doing their work.

295

296 Unknown: You know, this is before of course you got here, but we've looked at the first
297 up to Challenger and at that time there is a lot of discussion of processing turnover and
298 trying to get the number of hours down so they can get the flight rate up. Is it simply the

299 work that had been done then hadn't progressed far enough, or was it a really kind of a
300 change of philosophy?

301

302 Honeycutt: Well, there's a little bit of, I don't really know about what went on before, but
303 what I was told was that prior to Challenger the solution was to just apply more bodies.

304

305 Unknown: Ok.

306

307 Honeycutt: What we tried to do was let's emphasize making the work less labor intensive.
308 One of the most successful things that we did was, we took every one of the process and
309 procedures, of which at that point there were, I believe, one and a quarter million
310 procedural steps that had to get executed between the time the wheels stopped rolling and
311 you got to T minus zero for the next time on that vehicle. And they took about one and a
312 quarter million labor hours to get done. Which is a lot of people working a lot, I mean
313 overtime was 10 to 12 percent, three shifts a day, seven days week, and still, you know,
314 running on the beach with backpack on kind of results. You just couldn't get there. So,
315 it was pretty clear that just more labor wasn't going to do it. We got to work smarter and
316 try to better manage the work. So, we took every one of those procedures that had this
317 one and quarter million steps and they were broken into bite-size chunks. Made sure that
318 every one of them had someone assigned as responsible engineer for the content of that
319 document and then we challenged each one of them, go take 30 percent of the labor hours
320 out and we set up a review board that I started out chairing with Dan Patterson, Bob
321 Lyon, and Bob Seek and the Lockheed chief engineer of Horace Lambert. I mean, we

322 had these senior team sat there and made each one of these guys come through and tell us
323 what they were going to do in order to get... Well the first two or three said, "Well, we
324 can't do it. I mean, it's as good as it can get." Well, that's the wrong answer, why can't
325 you make it better. "Well, we don't have this piece of ground hardware." "Ok, what
326 does it take to get that piece of ground hardware?" "Well, these guys got to... this
327 change request has to be approved." So I established a policy that said we'll just approve
328 the changes that are hanging the system up. This board has the ability to approve it.

329

330 Unknown: Right.

331

332 Honeycutt: And we approved them on the spot. Well, after about a dozen or so guys
333 came in and they got beat up for not having their answer, they began to get the idea that
334 a) we are serious, b) that there was process that allowed the things that were hang-ups to
335 get approved and they didn't go to the bottom of the list, they went to the top of them.
336 And that, hey, those guys are serious about this, that you could just see the mindset of the
337 team change and all. And then pretty soon we stopped having the board even meet. I
338 mean, they just sort of took them, the Lockheed and NASA engineers working together
339 just took their book, if you will, and began to look for opportunities. So, we got, we got
340 from over, you know, I mean this was not done over a weekend. It took a year plus to get
341 there but we cut that million and a quarter labor hours pretty much in half. I think the
342 best we ever did was somewhere around 550,000 -- 600,000 for a flow. So, it worked
343 because they had the opportunity to do it. They saw that management was supporting
344 them and, equally important, we never let the pressure up on them.

345

346 Unknown: Tell me a little bit about organization, because I'm getting the sense that some
347 of this, you know, I don't want to draw an organizational chart, but, you know, you were
348 suggesting some of it was just people and working with people, but it does seem like
349 something about the nature of the organization was a little bit different. Like you
350 mention being able to approve expenditures on a piece of equipment that might be
351 ground-support equipment, but if you don't have that, it's going to interfere with Shuttle
352 flow. So you have, you were kind of able to bring together...

353

354 Honeycutt: I mean, I had a budget. It was a substantial budget when you're paying for
355 8,000 heads on one contract and 1,000 on the another, but included in that was several
356 million dollars for ground-support equipment that fit Kennedy's needs. That you didn't
357 need to go to the program to, if we wanted to do something with a crane, or we had a
358 piece of lift equipment that needed to be modified. We had the authority to do that within
359 the center, didn't have to go to the program. If we wanted to change, if you would move
360 this thing from here to here on the orbiter we could cut out ten hours per flow, we
361 couldn't do that. If it was flight hardware, we had to go back to the program with a
362 recommendation that they move it from here to here and here's the benefits that would
363 accrue from there, but we couldn't approve it. But the internal stuff, we could approve.

364

365 Unknown: Right.

366

367 Honeycutt: I could approve that at the center and I had a sort of classical organization
368 engineering operations, support and a program office that Roy Thorp ran for me in my
369 time here and Bob Seek ran ops and Bob Lyon in engineering. And then Lockheed, who
370 at that time was our processing contractor, this is prior to the USA thing, they had
371 essentially a mirror organization with the ops, engineering, program office, and then
372 under those would be ground support equipment and logistics support and that kind of
373 stuff.

374

375 Unknown: Ok. I'm trying to understand the organization, is that something that changed
376 when you got here or is that pretty much the way it was?

377

378 Honeycutt: No, it was pretty much... a few of the people changed. And primarily, the
379 contractor changed their people when they brought in Dan Patterson in, who had worked
380 on, he was sort of the ops manager of the 117 Stealth Fighter production program out in
381 Palm Bay. Also, he was very knowledgeable of, sort of, production line operations,
382 which we were trying to get to with three vehicles and flow. And I think that one of the
383 things that helped as much as anything was the fact that both Dan and I came at the same
384 time, and we both came from off the center so brought some different ideas, not
385 necessarily any better ones, just different ones. And we weren't bogged down by the ,
386 "Well, we've always done it this way" mentality, which to some degree at that time you
387 found. You know, their dad did it this way and, you know, now I'm out here and we're
388 still doing it that way and we're not willing to consider that there is another way. So he
389 and I both sort of pushed on, "We've always done it that way."

390

391 Unknown: Well, what you're suggesting, which is interesting now, is that a lot of key
392 changes take place, it's kind of subtle change more in approach and attitude then it
393 seems, this get backs to what is becoming one of the eternal questions of the history here,
394 and that is the difference between the sort of hands-on civil servants do the work and the
395 contractors and program management kind of approach. My sense is that's kind of one of
396 the battles you were sort of wrestling with.

397

398 Honeycutt: Yeah, and to a degree I had been exposed to that in Houston with the control
399 center. The other parts of the center in Houston were pretty, I mean, you could tell where
400 the line was between engineering and Rockwell, for example, over development. But in
401 the control center, generally the people out in the front room were government and the
402 people in the back rooms were contractors. But that wasn't always the case, and you still
403 had to look at them to see what badge they had on, to know, because you couldn't tell.
404 Which is kind of they way it was down here early on, and everybody through their badge,
405 you know, when they went through the badge board out here they just put their badge up
406 and then they became one when they got inside the fence. The contracting rules, as much
407 as anything, began to effect that relationship because the contracts began to be written
408 more on a performance-based sort of manner, so the contractor is responsible for this.
409 Well, the government folks were accustomed to, one guy held the wrench and, you know,
410 one guy held a hammer, and what we began to ask the contractor to do, sort of, said,
411 "Give me the hammer back. Because you can watch me hammer, but you can't do that
412 anymore because I'm responsible for this work and I'm graded on it." So, that makes,

413 it's probably interesting, some of the people who spent their entire career here probably
414 have a different view of that than I do. But, if you're going ask the contractor to do
415 something and you're going to grade him on his ability to do it, which is going to
416 determine what sort of award fee score he's going to gets which, I mean, it's a closed
417 loop which determines how well their management is viewed, by not only the customer,
418 but their own management. You can't do it for them or tell them how to do it because in
419 the end it's their thing that you have to deal with. Plus, if you grew up with being in the
420 middle of that loop, it's hard to extract yourself from it. And that was a concern with the
421 civil service community and to a degree still is down there. You know, it was a lot better
422 back in Apollo when we were all one team. Well, we're still all one team, it's just that
423 the rules have changed a little bit. A body shop contractor is permitted by this agency, or
424 mostly in another one, so you can't have a NASA engineer with four or five technicians
425 to go send off to put on this job, because how are you going to evaluate them and
426 determine the responsibility for doing that job.

427

428 Unknown: Right.

429

430 Honeycutt: Right. So that causes you to then put a contractor engineer with some
431 contractor techs to go do the work and then the government has oversight responsibility
432 to ensure they put the eyes on the job to make sure it gets done so they can then do the
433 proper evaluation of not only the hardware, but the performance of the contractor, as
434 well. When you throw them all into one team it's a lot more fun for the government guy,
435 but the contracting rules don't allow you to really do that anymore.

436

437 Unknown: So, it sounds like what you are saying is that this change in approach, because
438 as you said there's always been contractors, that's not new.

439

440 Honeycutt: Right, Yeah.

441

442 Unknown: The SPC contract, before the SFOC, but the difference is the emphasis is on
443 performance-based.

444

445 Honeycutt: Right.

446

447 Unknown: Forces you to sort of change.

448

449 Honeycutt: Yeah, to sort of extract the government people from doing to an oversight
450 role. And I mean, there's not really any other way to do it, even though they will allege
451 that, boy, back in the old days it was a lot, you know, it was a lot better.

452

453 Unknown: The sort of origins of that change. Is that, was that a change in sort of
454 contractor philosophy or is it something that had been more learned from the ground up.

455 What did you, how did you, what sort of told you that this is what you had to do?

456

457 Honeycutt: Well, I didn't, I mean, it was here when I got here. It just wasn't, I guess,
458 accepted to the degree that it needed to be to make it more efficient. And that resulted a

459 little bit in some, you know, adversarial relationships between the government folks and
460 some of the contractor folks, which we worked on. I mean, some of that's there, still
461 there. And some of it's due out. I mean you don't want, for a little brother-in-law
462 arrangement where I know Ken's going to do this so I don't have to bother with it. I
463 mean, you know, you have to be able, and be willing to say, "You didn't do that right.
464 You're my buddy, but I'm sorry you didn't do it right and we're going to have to do it
465 over or I'm going to have to write this thing up to say...." You know, the government
466 still has the final responsibility for assuring that you did this work right and they have to
467 be willing to step up to that. And even though we are forcing them together to work as a
468 team, in the end, they have to have the ability and the willingness to say, "Well, that's not
469 right and you have to go fix it."

470

471 Unknown: Another issue that comes with performance-based contracts is how do you
472 evaluate those contracts. How do make that evaluation objective? Is that a concern you
473 had to work on?

474

475 Honeycutt: One of the most difficult things that we as government people have to do,
476 how do you tell them what you want them to do and then determine that they did it to the
477 degree necessary to be successful. And you start with anywhere from five to ten general
478 criteria that says, you know, you need to do these things, but you can't tell them
479 everything. So, you have to be able, and you don't want to tell them nothing, so you
480 can't be delivering me a vehicle ready to go to (??? 600), and that's it. You got to give
481 them a sufficient amount of direction, these are the things I want you to do. For example,

482 I want you to go over the next two periods, I want you to get 30 percent of the labor out
483 of your processes and procedures. I want you to meet your scheduled targets 95 percent
484 of the time. You know, kind of general guideline, all of which are pointed towards
485 making them better at the end of this six-month period than they were at the end of the
486 last one. And then, what can I do to make them better at the end of the next one than they
487 were, really to make us better as a processing team. The difficulty is when you're sitting,
488 when I was the contractor officer's technical rep, so I had to go to Andy Pickett, who was
489 the fleet attorney official for the center at that time every, at the end of every one of these
490 six-month periods and tell Andy how they did. And what score we are recommending
491 that they get and then he, with other members of senior staff, would determine what they
492 won. Well, you turn a bunch of people loose out here in these processing facilities, to ask
493 them to get up to 25,000 or 30,000 feet and sort of look at this processing team as a team
494 and how did they do is harder than you think it is. Because they're down where the
495 rubber meets the road and what I used to tell them was, "Look, if someone kicked can of
496 paint over in the OPF floor, don't write that up in the thing, just get it cleaned up and go
497 on. If that caused them to spill on the tires and you had to change out four tires, write
498 that up because that's significant. And don't waste all your energy writing up things that,
499 because when you write them up they go into the report, it goes through the contractor
500 and the contractor's manager..."

501

502 ... get them to sort of back off and look at this thing as a process and how they are doing
503 process-wise. Are they managing their process, are they meeting their dates, are they, is

504 the hardware come out... one of the things that you have the opportunity to do when you
505 roll from an OPF to a VAB to a pad...

506

507 [chatter about changing tapes]

508

509 Honeycutt: One of the things you have the opportunity to do when you move from
510 facility to facility is take work with you that you didn't get completed. Traveling paper I
511 called it. Well, if you were supposed to do it in the OPF and you didn't, and you took it
512 with you and you got to do it in the VAB or the pad, well, the work is planned in each of
513 those facilities to essentially be full, so whatever you bring with you has an impact. If
514 you take it out to the pad, it is also an impact. So, one of the things you grade them on is,
515 well how much traveling work went on. Did they get everything done that they were
516 supposed to have done, and if not, was it our fault? Did we give them work at the last
517 minute? Did we give them additional requirements during the flow that caused them to
518 not get it all done? And so, technically was it our fault? Because each time we went into
519 one of these things, we had things that were called launch site flow reviews in which we,
520 the program, in conjunction with the program office, we determined what work needed to
521 be done on this flow, what modifications were going to be done, what things that broke
522 from the last flight are we going to get fixed, et cetera, et cetera...

523

524 Unknown: Right.

525

526 Honeycutt: And how much of the available time does doing that work take up, because
527 we only have so much time, we only have so many labor hours to expend on that time,
528 what extra work... if you give me extra work what am I going, am I going to work more
529 overtime, am I going to take some people off another vehicle? What am I going to do?

530

531 Unknown: Ok, so this is interesting. Because, again, one of the questions that we are
532 wrestling with here, coming back to the idea of hands-on civil servant work, which you
533 know goes right back to von Braun, I guess, and that sort of engineering tradition. It
534 seems like what you are saying now, is that to do the sort of contractor, or performance-
535 based contractor approach, is that the civil servants, the NASA people need to develop a
536 different form of knowledge. They don't need the hands-on knowledge.

537

538 Honeycutt: Right.

539

540 Unknown: They need maybe the 35,000-foot view or the integrated view rather than the
541 how do you turn this bolt view.

542

543 Honeycutt: And that's my view. Now, I can say everybody didn't share that.

544

545 Unknown: We talked to Tip Talone.

546

547 Honeycutt: But, that's the view I have because I think that's the best way that you can
548 manage the process, manage the contractor. These are huge contracts.

549

550 Unknown: Right.

551

552 Honeycutt: I mean, even today, although the USA work force is probably half of what it
553 was in those days, it's still 3,500 or 4,000 people, which is a lot of people all running
554 around here at LC-39 doing stuff that you got to make sure is necessary and that they're
555 doing it in, as part of pulling the rope in the same direction and not just off doing work to
556 do work.

557

558 Unknown: Well, I mean, you know, good or bad, it's a different form of knowledge at the
559 very least.

560

561 Honeycutt: Yeah. Absolutely. Yeah.

562

563 Unknown: I mean one of the things that we asked Roy Thorpe was, you know, how do
564 you maintain sort of the corporate knowledge to how to do X, Y, or Z if you're not
565 involved right there with the contractors. So you're saying that, you're agreeable, get
566 enough perspective to understand the work without necessarily doing the work.

567

568 Honeycutt: Yeah. And that's a big issue. If you haven't done it, how do you have a
569 sense of what it takes to do it.

570

571 Unknown: Right.

572

573 Honeycutt: And we struggle with that, but in the end if you did it another way then you
574 don't have a mechanism for managing the process.

575

576 Unknown: Now coming out of this, and what I would call a shift toward metric
577 evaluation, resulted in the first 100-percent score for a performance review contract.

578

579 Honeycutt: Right, which was my last one. But, there's, I mean, there's metrics around
580 here that show how good this... When I first got down here, and Patterson first got down
581 here, the suggested fly rate was 12 a year. We could do 4 and not all that efficiently
582 when we did 4, but we thought we had to get to 12. So, it was a great environment to be
583 in because we knew we weren't going to get any more people, so we had to figure how
584 can we do 12 with what we've got, even though we can only do 4 today. And the answer
585 was get more efficient. So, there was goal of achieving, that we were trying to achieve,
586 that made the work force get behind it and push forward to do it. And then you know we
587 got to about 8 or so and they cut the goal off. And they said, "Now you only have to do
588 8. You don't have to do 12. And you can do 8." So now it became a question of we're
589 going to take your money away, which on this contract meant take people away, so the
590 mentality, the motivation, the mindset, flipped over from we got to work really hard to
591 get there to well, you know, every time we get a little, every time we cut out 2,000 hours
592 of work we can cut one belly button off this thing. So, you know, the motivation changed
593 significantly and it became much more of a challenge to continue to go after efficiencies

594 and to drive the metrics, the processing metrics down because now the end result was
595 different than it had been. This happened in about '93 or so, somewhere along in there.

596

597 Unknown: Two questions on that. I guess one is the whole philosophy you're describing,
598 is that something you studied by looking at models elsewhere, is it something that came
599 from industry, or where, what was the sort of, I guess, intellectual environment in which
600 these issues of how to do contracting were discussed.

601

602 Honeycutt: Well, I mean, I don't... It wasn't rocket science. It was pretty easy at first. I
603 mean, it was look, we got to be able to do this and we can't, so how, you know, how are
604 we going to do it? And I coined a couple of slogans to help the work force with. One of
605 which was, you know, "Here's how we can, not how we can't." Because invariably
606 they'd come in and say, you know, we'd love to do this but we can't because of these.
607 Why don't you go out and come back and tell me what do I need to do to do this. The
608 other was there was mind set down here of if you accepted work that was in the serial
609 path, which could potentially move the schedule out (bad, bad), if it parallel work they
610 would just accept it without complaining much about it. Well, you know, work is work.
611 If I got to spend an hour on a serial task or an hour on a parallel task it's still an hour that
612 has to be worked and if it's on a parallel task it can't be applied to the serial task and
613 therefore, you know, all work needs to be scrutinized and reviewed no matter what. And,
614 I mean, it was mostly simple things. I mean, we made them integrate the schedules
615 because we, as we discussed a little earlier, you know, the heart of the vehicle and the tile

616 were out in two different worlds. Force them together, well, heck, we got better when we
617 did that.

618

619 Unknown: So, no one else came up with a suggestion like, well ok, we got either a fly
620 rate we have to meet or a budget constraint. Instead of doing it your way, how about if
621 we do it this way. There were no real...

622

623 Honeycutt: Yeah. I mean, yeah. So, I mean we had, yeah, I mean everybody had ideas
624 passing, but a lot of ideas from the airplane business that helped. People in Houston
625 helped. One of the defining moments for our processing team was early on, if there was
626 any deviation to the hardware or any change that had to be made, the prime was in the
627 serial path for approving the paper. So, if you had a problem on the floor and something
628 broke and you wanted to write a deviation or whatever to the procedure, you had to stop,
629 go find a prime, the development contractor. In some cases they may be on the West
630 Coast, three-hour time differences would get you out of sync. It might be two days
631 before and approval comes back to do it. Well, after much hard work and many
632 briefings, we got the program and the primes to agree that they would review the paper in
633 parallel, not serial, and if they didn't agree with it we agreed we'd go back and, you
634 know, change it, but assume you're going to agree with what we've done because you do,
635 you know, what we recommend you've done it 99 percent of the time anyway.

636

637 Unknown: Right.

638

639 Honeycutt: Let us keep going and then you come along in parallel and review it. Well,
640 huge, huge step not only in time but in the confidence that it put on our folks on the floor,
641 the Lockheed engineers as well as the NASA engineers. It brought a sense of confidence
642 to them that look, you know, the best way to build confidence in people is give them
643 responsibility and now, suddenly, they had the responsibility to decide that this was the
644 way were gong to do it, because if we had to go back it would, hey, I don't want to be the
645 one who said, you know, we were going to go forward. So, it did a lot for the
646 development of our team here, both government and contractor, and improved the
647 processing as well. But it was, I mean, you know, pretty, I mean it was anything
648 sophisticated about it. You know, essentially it was let's do a better job at defining what
649 the work is. Let's do a better job of defining how many labor hours it's going to take to
650 do it. Let's do a better job of managing the allocation of those hours, because we have
651 three vehicles in flow. And then let's do a better job of scheduling the work and a better
652 job of oversight of what they're doing and we'll be better.

653

654 Unknown: I mean, I don't want to put you on the spot, but it sounds then like what you're
655 saying is a lot of the reason that it didn't change before is that people just tend to sort of
656 do what they've been trained to do.

657

658 Honeycutt: There was a little bit of that, but more importantly, I think, was prior to
659 Challenger there was so much emphasis placed on, by the contractor, placed on
660 scheduling and actually by the system. I shouldn't say by the contractor. But by the
661 system both here and at the program office was launch, launch, launch, launch.

662

663 Unknown: Right.

664

665 Honeycutt: So, the motivation was to launch, launch, launch, launch, launch. And then
666 Challenger came along and everybody said, “Ohhhh, bad bad bad.” You got to
667 understand what the work is. You got to do a better job of making sure we don’t make a
668 mistake. A lot of the players changed. A lot of the processes changed. A lot of the
669 direction that the team got, and they were, it was one of these kind of things and they
670 were sort of, turned a corner after Challenger, but they were still trying to recover from
671 Challenger. Recover from all the additional players, all additional rules, the uncertainty
672 of where we were really going here was just a turbulent set of times and, you know, we
673 were able to sort of bring it a little better into focus of where are we and where are we
674 trying to get. Based on a significant improvement in contractor personnel and their
675 performance and a little bit more willingness to give them a little more opportunity to
676 manage their own processes, that I attribute the success to that as much as anything.

677

678 Unknown: Do you have any thoughts on Dan Golden’s...

679

680 Honeycutt: Dan was not a, Dan didn’t, Kennedy is a, is not a, is a, you know, a unit or
681 dimensional center. I mean, we process process and launch hardware. That’s what we
682 do. We don’t end up in food fights with other centers. We don’t end up competing with
683 other centers for work or money. We’re pretty straight forward sort of thing. So Dan
684 didn’t, when required to spend a great deal of time with us negotiating with between us

685 and other centers or between us and headquarters, because, I mean, this is my view again,
686 but we had a defined role. We had a mutually acknowledged set of resources in order to
687 work for that goal. We didn't have big budget issues with them. And we generally
688 performed and the launch days didn't typically slip because of Kennedy performance,
689 hardware that was in orbit generally performed as anticipated. So, we didn't generate a
690 lot of issues for Dan so he didn't spend a lot of time... Which, you know, is always the
691 goal of a center director. Keeps the administrator focused on somebody else. And we
692 were reasonably successful in doing that. His big thing was, there was a time in his
693 tenure when Jim Beggs was the administrator he decided that, this is back around STS-
694 001, that NASA needed to get into today's times so we did away with the NASA emblem
695 and he invented this thing was affectionately know as the worm, which is a thing that
696 looks like this which you've probably seen. And about halfway through his term, Dan
697 decided to get rid of the "worm" and to go back to the one that they use now, which is
698 also affectionately known as the "meatball." And one of his more favorite things to do
699 would be to come visit your center and spot a worm that you hadn't, and if you go into
700 the headquarters building from this direction and you go across the tracks and take that
701 first right and then the left that takes you down in front of the building. Well, there on
702 your left there's a hedge and somebody, McCartney or Cripp or somebody, had grown
703 the hedge in the shape of the worm and they just drove Dan crazy. So I kept after the
704 roads and grounds people to put me, make an A out of that thing, and they'd keep
705 planting this hedge and then keep dying. And it would always die just before Dan was
706 going to come down here. And he always said, "That's illegal." And there was also one
707 above the overpass there when you come in from State Road 3 thing and when it goes out

708 to the Visitor's Center and I went under the damn thing every day, two years, every day.
709 And damn if he didn't come down here and spot one about this big sitting up there. Dan
710 says, "See there's one. There's one." Well, other than that, dealing with the worm, I
711 didn't have trouble dealing with Dan, because we pretty much, I mean, our approach was
712 if we don't give him something to worry about then he's not going to worry about us
713 because the rest of the guys are giving him a lot to do. So we pretty much tried to do that
714 and were reasonably successful.

715

716 Unknown: Becoming Center director. I've talked a little bit about those years already,
717 but how did that come about?

718

719 Honeycutt: Let's see... Waynes Littles was the Associate Administrator at that time, and
720 Cripp was the Center Director, and Cripp decided he was going to go do something else
721 and Wayne offered me the job. But I don't know how I never did even how they got to
722 that point. But I had known Wayne since Skylab days and he actually said earlier that the
723 Deputy Director of Marshall went off to school, and actually it was Wayne, so I had gone
724 up there and done his job for three or four months and I guess he thought he could trust
725 me to, because the Center Director's reported in to the AA's at that time, so he was, we
726 dealt with Dan but our reporting chain was up through the Associate Administrator.

727

728 Unknow: Ok. It's during that time when you're director of the SFOC, I guess.

729

730 Honeycutt: Yeah.

731

732 Unknown: Ok. Tell me if I'm wrong. It sounds like from everything you've said so far
733 that really the flight operations contract is a culmination of all the changes that went
734 before, more the a new departure.

735

736 Honeycutt: Well, essentially when they formed USA, they took the Lockheed contract
737 that was down here and the Rockwell contract that was in Houston and they put them
738 together. Rockwell had been doing that work for years and years. Lockheed had been
739 doing the work for years and years. They rolled the logistics contract which was
740 Rockwell into the work down here and they rolled two or three other things that were in
741 Houston and into that. But, essentially it was, they just took the two pieces and put them
742 together and the Lockheed people stayed down here and they pretty much continued to do
743 what they had been doing and same thing for the folks in Houston. They've since done a
744 little bit of sending people back and forth, but essentially it's still what used to be Shuttle
745 Processing and Logistics and what used to be Operations Support and even though
746 they've become Boeing and Lockheed became Lockheed Martin. And I mean it is pretty
747 much the same. And I was a supporter of the USA concept and still am. When (??? 350)
748 did talk to (??? 351) did the review team I participated in that and helped him where I
749 could and I think it was the right thing to have done and that it's been successful. I'm
750 comfortable with USA. Now I say that because I'm on their advisory board so I see the
751 inside of USA and I keep pretty close tabs on what they're doing, but I, you know, I think
752 it was the right thing to have done from a management point of view because it just
753 makes it easier for Bill Parsons to manage his program. And I think the additions, the

754 other contractors that they've brought in, have been good. And from my knothole, at
755 least, the transition was reasonably painless. A lot of, I think, it was a little bit of contract
756 squabbling that the upper levels with the NASA people, but I think that is pretty well all
757 washed out and I'm just comfortable with it. Still am.

758

759 Unknown: The SFOC contract, compared with the Shuttle Processing contract, the
760 Shuttle Processing contract was huge, a couple thousand pages, whereas the SFOC
761 contract was only three or four hundred. Yet it covered much more. What were the
762 intellectual ideas that enabled a relatively less detailed contract?

763

764 Honeycutt: I think in a single term it'd be performance based contracting. That you
765 didn't have to go into as much detail because they had more overall responsibility for the
766 management of the efforts; so therefore, you don't have break it down into the level of
767 detail that the SPC contract was written to. Because, I mean, they got down into some
768 pretty detailed passages of you will do this and you will do that.

769

770 Unknown: So you're not trying to tell the contractor how best to organize to do the work
771 as long as they meet certain criteria.

772

773 Honeycutt: Right. Performance goals.

774

775 Unknown: Performance goals, right.

776

777 Honeycutt: And although there's been some back and forth with is performance goal, are
778 performance goals the best way to particularly post-accident thing, are performance goals
779 really the best way to do it. And I think probably they are as long you've got the
780 appropriate caveats in it relative to safety and those kind of things. Because they got, you
781 deliver flightware to the vehicle within x days of the dates established at the launch site
782 flow review, launch within x days of beginning terminal count, and there are those kinds
783 of performance features in that contract that bring, I mean, they're almost incentive
784 rewards that bring substantial amounts of money to the USA when they meet those goals
785 and there's some back and forth about whether that's really the way you want to do it, but
786 when you get, when it gets down here that's sort of something they worry about and our
787 Houston, and you know, and the ability to understand the work, have a defined set of
788 tasks and a schedule against those I think are pretty straight forward and understood by
789 the folks down here.

790

791 Unknown: I'm thinking the other side of that, I guess, is that if you take the civil servants
792 out of that kind of hands-on work and telling them exactly how to do their job, that they
793 should then, the NASA civil servants, KSC people, would be, I assume trying to do
794 current development and research to figure out ways to improve it's processing, improve
795 the process or launch, you know, things like that, is that...

796

797 Honeycutt: No, I mean, that's what they do. They got ops engineers that are thinking
798 exactly about those things. They got engineers over here, processing engineers, that are
799 constantly thinking about how can we do this, very, very bright people on the NASA

800 team down here, as well on the flight team and if an opening. I mean, the rewarding
801 thing even in the environment they are now in, if there's an ability to hire you don't have
802 any trouble hiring. And if you look at the attrition rate, at an industry that runs anywhere
803 between 6 and 10 percent, they're like 2 or 1 ½, or something. You know, I mean, when
804 people come into this program they stay and when an opening occurs, it's not hard to hire
805 somebody in to do it. So they're some very bright motivated people here who I think are
806 better understanding there little piece of the puzzle, and doing a tremendous job of
807 working together to get us to eliminate ...

808

809 Unknown: So then, if that's what a NASA development engineer does, how does that
810 kind of go into the, get built into the kind of the contractor side? Or is it because there's
811 a person that is over in the contractor that they would communicate with?

812

813 Honeycutt: Sure, yeah. I mean, they both sign the paper. There's USA engineering.
814 There's NASA engineering. USA Ops. NASA Ops. So they, I mean, they work
815 together and they have to work together and it's good, I mean, there's just enough of this
816 to keep, you know, you sign for me I'm going to go get something to eat. There's none
817 of that. And it's clear when, you know the paper trail that goes with these things is clear.
818 So, I mean, there's no fuzz on what you're signing for and who signed it. So, if
819 somewhere down the line in a review of that stuff you find that it wasn't done right you
820 can quickly trace back to where that happened and whose responsibility it was.

821

822 Unknown2: [possibly a third person here? Unrecognized voice and no introduction]
823 Yeah, during the same time period that you were working with SFOC, you had another
824 issue that was becoming increasingly important for Kennedy Space Center: Space
825 Station. Can you tell us a little about your involvement in Space Station and what
826 Kennedy's role was there?

827

828 Honeycutt: Yeah, there were actually there were two issues in that time frame. One was
829 that, the emerging emergence of station and the other was head count. And one of the
830 things that Dan wanted to do, was he said, "Well, you know, we need to take you down to
831 that point we were like 2,000 -- 2,100 civil servants. We need to take you down to 1,000
832 people." His only real battle that I had with him, and I told him, "Well, I can't do that.
833 You know, what are you going to change in my charter or my responsibilities that I don't
834 have to do anymore because..." "Well, nothing. You know, you still got to get launch
835 vehicles to the pad ready to go." "What I can do is I can go to 200 and I can go out here
836 at the front gate and tack a sign up that says 'The Merrit Island Launch Facility: Operated
837 for NASA by United Space Alliance.'" You know, I know how to do that. I'll take a
838 couple hundred people and I'll do the contracts and the budget and that kind of stuff and
839 just let them do it all. I may not need 2,100 people but I need 1,700 or 1,800 somewhere.
840 And fortunately I prevailed and in it. So he cut me that 1,700 but at least I prevailed.
841 Now that was just, just as that was happening George Abbey took over the center in
842 Houston and he inherited Space Station, which was in a bit of disarray would be an
843 understatement I would say, but was also in this programmatic ship and shoot approach
844 that said look, "These contractors know how to build hardware. We are going to build

845 them in their factory. We're going to ship them to Florida and put them in a Space
846 Shuttle and we're going to launch them. There's no checkout required and we're be able
847 to do it incrementally and there's no integrated testing necessary."

848

849 Unknown2: Now this is all in the design.

850

851 Honeycutt: This is all of these design guys. "Don't worry, we can build this stuff
852 wherever it has to be built. It doesn't need to be, you don't even need to verify that it
853 didn't get damaged in shipping. Just ship her down there, launch her, and then when we
854 launch the next piece we'll ship it down. We'll launch it. We're put them together in
855 orbit and everything is going to work. No problem." Well, George didn't come to town
856 on a truckload of watermelons, and he you know, he immediately said, "This is a foolish
857 thing." And, I mean, I've known George for 20 years before he even got that job and I
858 suspect he had his hand in me getting this one. I don't know exactly how but I'm sure
859 because he was working for Golden in those days. But he called up and said, "Look, I
860 got all these engineers in Houston but none of them really know hardware. They know
861 schematics and they know viewgraphs but they haven't lived with hardware like you
862 guys have and what I would like for you to do is to help me get this hardware out of the
863 factory because, virtually every piece was late and I need your guys to go into these
864 factories and help push this hardware out and, AND you need to establish a method to
865 test this stuff when it gets down there. And oh by the way, I want to plug multiple units
866 together to, you know, so we can test more than one thing." And this was you know, like
867 thank you, George because it immediately said there was a big job here for us and an

868 opportunity to put some of guys in the factory hands-on with the real hardware and we'll
869 be able for them to develop the kind of expertise we were talking about earlier when you
870 asked the question about how do they get this. Well, here was a way to do that. So, he
871 said, "Well, who are you going to put in charge of that?" and I said, "Well, there's only
872 one guy who could do that job and that's Talone." So, I called Talone and we got him
873 over to the office and, you've talked to Tip, you know, so you can imagine, "I don't want
874 to do that. I want to stay where I am. Blah Blah (505)." And, I keep telling him that,
875 "You act like, you know, you got a choice here. No. You don't have a choice. I've
876 already told George it's going to be you. He's already told Golden so the question is..."
877

878 Unknown2: Now did you really lock him out of his office? That's what he told me.

879

880 Honeycutt: Well, essentially. We're, you know, I mean, absolutely best of friends and
881 have been for a long time. So, I said, "What I will assure you is, that you've got 15 first
882 round draft choices. Take your pick and anybody you say you want you can have
883 because we're going to make this thing work." Well, I mean, he heard 30 first round
884 draft choices and all and of course he knew everybody on the center so he knew, the first
885 guy he took was Bill Parsons. And we sent, and the first piece of hardware that was
886 supposed to come out was the node that Boeing was building up in Huntsville in that
887 factory right off the thing. So, the first guy off was Bill. The next guy he took was (???
888 518) and we sent him out to RocketDyne for the power module thing and he just clicked
889 right down. I mean, there went Jennifer Coonz and Romenalla. I mean, he just took 30
890 first round draft choices. But it was a great opportunity for them, a tremendous

891 contribution to the program. As a matter of fact, probably the reason the hardware got
892 out of the factories. George was the enforcing function, I mean, if George hadn't given
893 that job to us I'm not sure Space Station would be built today. But, the combination of
894 Eddy and his leadership of the program and Tip and his people for bringing the hardware
895 down and then we got this building built and we got the integrated test capability. I
896 mean, as much as anything, a defining contribution to, I mean they, Tip and his team are
897 just on a magnificent job.

898

899 Unknown: So, I guess this is where you really wanted your best, wanted your best KSC
900 people really right there. Not like the Shuttle contract where it's more routine.

901

902 Honeycutt: Right. Because we were development managers I'll guess.

903

904 Unknown: But development managers that were taking to the point where it is going to
905 be launched.

906

907 Honeycutt: Right. So, I mean it was a great, I mean, he did an exceptional job and still is
908 doing a great job. But that made Station really happen. They did great.

909

910 Unknown: If, we got something you might have thought about, from a KSC perspective,
911 since we've kind of studied the whole history, it seems like one could make that the case
912 that in other projects, even Shuttle, they tend to leave KSC out until the very end and then
913 we start to try and process it and that's where we start to notice that the design and the

914 actual work sometimes don't meet as easily as you hope. Is that something maybe in the
915 future, you know, NASA should think more about having an integrated involvement with
916 all the centers.

917

918 Honeycutt: Well, we decided not to wait. If you go into and look in the NASA
919 organization now you'll be astounded the number of responsible positions that are
920 populated by former KSC people. Bill Parsons running the Shuttle Program. Dave Key
921 is running the Marshall center. A couple of people in the astronaut office. Half a dozen
922 people at headquarters in both Station and Shuttle and the new lunar, Mars Exploration
923 Office. Everyday Lisa Rowe is now the deputy at Langley right off his (??? 555).
924 Everyday another KSC person becomes a responsible person somewhere within the
925 agency and they bring that with them. There are Kennedy people at Stennis, there are
926 Kennedy people at Johnson, there are Kennedy people at Marshall, Langley, Goddard has
927 got 2 or 3 folks at Goddard that worked at Kennedy. Headquarters got a slew of them.
928 So I feel, one of the things I feel the best about in my watch down here is when I sit back
929 and look at the young people that we had then that are now taking over some very
930 responsible positions. You know, I take a day in particular, I mean, there are two of the
931 most influential people in the Shuttle Program and they are both graduates of our team
932 down here.

933

934 Unknown: Do you have more questions Shuttle, ah, Station because you're working on
935 that.

936

937 Unknown2: Sure. One group in particular didn't necessarily, weren't necessarily ready
938 for the prime time selection. There was a group that was known in Shuttle working on
939 Space Lab as Level 4 experiment integration. Many of them appear to end up in Space
940 Station Integration. Now, level 4 experiment integration had mostly NASA engineers
941 with a few technicians, primarily because they didn't have the budget to have a
942 contractor. Do you see their hands-on experience as playing a crucial role?

943

944 Honeycutt: Sure. Yeah. Absolutely. And I mean, if there were, don't get me wrong, if
945 we can get our NASA, our young NASA engineers that kind of experience it's
946 invaluable. The issue is can you do it in the context and the framework of the big
947 contracts. Because if you take Space Lab Level 4 Integration, it's a nice little thing, you
948 can call it out and put over here and say, "I 'm going to use that as a development bed for
949 my young engineers," and I'm going to tell the contractor that you provide 4 or 5 ot
950 however many it takes to go over there and help them do that. But my express purpose is
951 developmental for these people. To scale this up to the Shuttle Process or the USA, that's
952 where you run into, in my judgment, you run into something more difficult to do. I
953 mean, we were able to do that with Tip's work at Station because it was started out with
954 only a dozen or so folks. You could do it with a Level 4 Integration stuff because it was
955 a small and well contained area. When you, I mean, my problem is when you start to
956 scale that out to, first of all you maybe have a hundred or two hundred people in
957 engineering here while the contractors got six or seven hundred or a thousand doing the
958 same work. Well, so you can't, I mean, you can't let the, civil servants can't do it all, so
959 how are going to pick what piece of it and if you can find a piece that you can carve out

960 than that's a good thing to do. But to say that I'm going to do it across the contract there
961 isn't enough of them.

962

963 Unknown2: Right.

964

965 Honeycutt: And aside from the other contractual issues that you have in a performance
966 based environment there's just not enough of them.

967

968 Unknown: Yeah. That's a very good point. It's sort of like you can take one type of
969 organization that works great on one scale doesn't necessarily mean it's going to work for
970 all.

971

972 Honeycutt: Yeah, but I mean if you want to rebuild the engine on your car, if you do it
973 you're going to learn a lot more about engines than if you watch me do it. I mean, I don't
974 have any issue with that. It's just if you take the car to Mr. Goodwrench and you say,
975 "I'm going to pay you \$500 to rebuild but get out of the way I'm going to take that (???
976 607)." Then, that's a different thing.

977

978 Unknown2: Now, another way you can transfer knowledge is by having a flow of
979 workers going between NASA and the contractor. NASA people going to work for the
980 contractor. Contractor people coming to work for NASA. Do you see that as being a
981 part of the plan?

982

983 Honeycutt: I've always encouraged that and it's a little easier to do now that the
984 government is on a different retirement system than they used to be. They're kind of like
985 in a, now the government guys are all in a like 401k, so becoming... Like I was. I mean,
986 I had to be 55 with so many years of service to get a retirement. They don't have that
987 same constraint so it's a little easier for them to go from the government to the contractor.

988

989 Unknown: It's portable.

990

991 Honeycutt: Most contractors view going to the government as the thing that they want to
992 do. The problem with that is, there's not, the slots don't appear and it's not always as
993 good a deal. They say the grass is not always that much greener. And the contractors
994 always grass about, you know, "You're hiring my people." Because you know they only
995 hire the best ones. But there is a limited amount of that goes on and I think it's good. I
996 think it's, just like I think...

997

998

999 Honeycutt: ... because the center, I mean, I don't know what the other people's view is,
1000 but the center changed in the early '90's from sort of this hands-on, go do this stuff, to
1001 one of performance, you know, performance sort of oriented.

1002

1003 Unknown: Right.

1004

1005 Honeycutt: I think we saw that in the Shuttle world, we saw it in the payload world. I
1006 mean, John Conway, I don't know if you talked to John...

1007

1008 Unknown: We've talked to John several times.

1009

1010 Honeycutt: And his. When I was in Shuttle Operations for probably 45 or 50 launches
1011 and I never waited on John. I mean, you know, the payload hardware was always ready.
1012 If it was going to go in the OPF, he was ready when we had it on the schedule. If it was
1013 going to go in on the pad it was ready when we had it on the schedule. I mean, they
1014 they're tremendous performance in the organization.

1015

1016 Unknown: Yeah. It's funny because, I mean, Challenger just, no one could've predicted
1017 that was going to happen. If you in some ways, you can't, obviously, change things, but
1018 even if you take that out of the picture then you start to see this sort of trend in which,
1019 you know, the early flights there's lots of things that aren't figured out yet, by the time
1020 you get, as you said to the 90's, there's a lot of experience it seems like you can draw on.
1021 Really, I mean, a lot of people were thinking hard about how to do payloads and integrate
1022 the different steps, all the things you've been talking about.

1023

1024 Honeycutt: And you mention metrics earlier. I mean, this place is a gold mine for people
1025 that love metrics and love to manage by metrics because it's all hand-on labor and you
1026 can measure here about everything you do and you can plot it and you can just see if
1027 you're getting better or you're getting worse or where the hang-ups are. One of the

1028 Golden stories, when he first came onboard he was going around to the various centers
1029 and the first place he went I think was Ames and then he went to JPL and then he went to
1030 Marshall. And he just beat them up every place he went. “I’m going to change you guys.
1031 You’re going to manage all these processes.” And Jack Lee was the Director up at
1032 Marshall and I called him and he said, “Do you got any metrics?” And I said, “Yeah. I
1033 got metrics.” He said, “Show them to him.” So, sure enough, we had a killer set of
1034 metrics, and we got in bay three in a conference room up there and it was looking like
1035 one of those days, you know. Every time he asked a question that answer was always
1036 next and I mean he essentially left and didn’t come back for a year. He said, “I think you
1037 guys got a good handle on your stuff,” and he went away. But, I think once we
1038 acknowledged that was a tool we could use and learn from it and we put in a software
1039 system that helped collect the information and helped to get to the metrics in a much
1040 easier fashion than we really were off and running. Mary Ellis was really instrumental in
1041 developing that system.

1042

1043 Unknown: So, one of the points that I’m sure we talked to Roy Thorp about and Rob
1044 Phelps, and like Rob Phelps, you’re kind of confirming this, is that a lot of this really
1045 comes not even at the level of hardware or even software in the sense of like launch
1046 processing software but really at the level of administration and administrative tools.

1047

1048 Honeycutt: Yeah. I mean, we didn’t, not to say, we didn’t do anything that was hard. I
1049 mean, it was complicated in the sense of, mostly because of scale than, more than
1050 difficulty, degree of difficulty. Most of it is just common sense, and dedication, and

1051 focus. I mean, people say, what was it that really got all this stuff sort of pointed in the
1052 right direction. Focus and we never let up on the pressure. I mean, you couldn't come in
1053 and say, "Well, it's too hard. I can't do this." I mean, Patterson and I just didn't,
1054 remember, we didn't give them any relief. And they responded, I mean, to their, I mean,
1055 we didn't once say go do this, this, and this to fix it. We just sent them back. Very
1056 creative people. Very motivated. And once they got the message that, hey, this is the
1057 way we are going to do it they, I mean, they just took off and ran like sprinters.

1058

1059 Unknown: Do you want to ask anymore questions on your topic?

1060

1061 Unknown2: No, I think I've pretty well covered it.

1062

1063 Unknown: So, I thought just to finish up you could tell us what happened to Jay

1064 Honeycutt from the, I guess you retired in '97 from here...

1065

1066 Honeycutt: yeah, I went back out to Houston and went to work for Lockheed Martin and

1067 ended up the President of Lockheed Martin Space Operations and working pretty much

1068 NASA. All our contracts were with NASA and/or NOAA, but primarily NASA. And I

1069 retired at the end of June.

1070

1071 Unknown: Any difference when you left the door here and went into Lockheed Martin?

1072

1073 Honeycutt: From a management of people perspective, not really. From a management
1074 of technical issues, not substantial. From the financial side, night and day. I mean, P&L
1075 is responsibility causes you to think a different way. In the government you struggle to
1076 develop a budget and struggle harder to get it approved but once it's approved your just
1077 really managing to that budget that you have. When the boss is telling you that he
1078 expects order sales and profit to grow 15 to 20 percent a year, and oh by the way I'm not
1079 going to give you all that proposal money to bid everything that you might want to, you
1080 begin to look at the world from... you know one of my favorite expressions is that the
1081 view through the knothole depends on what side of the fence you're standing on. And
1082 when you're looking through the financial knothole it's quite a bit different then
1083 government. It tends to drive most of your thinking and most of your worries and issues
1084 are all around growing the business, not as much on, although the contractors are
1085 sometimes accused of being, you know, profit motivated or award fee motivated, that's
1086 not really the case. That's certainly not the case within Lockheed Martin. We are
1087 customer satisfaction is the driver for the way we tend to think. And from that, typically
1088 these other things fall out, but you're not trying to do a good job just for the bottom line.
1089 I mean, we're trying to make sure you're happy because we want a long term relationship
1090 and we want the ability to grow within your organization; therefore, we are motivated to
1091 do the best job that we can possibly do to performance, performance, performance. But,
1092 at the senior levels you almost have to delegate the performance of the contracts that you
1093 have in order to focus on the growth because as it rolls, as you know, as it rolls uphill,
1094 they become more and more focused on growth. And when you get to the quarterly
1095 report to Wall Street it's pretty much all about numbers.

1096

1097 Unknown: Someone has told us, or suggested, that the space business or at least the part
1098 that connects here to NASA is not a particularly profitable.

1099

1100 Honeycutt: It's not.

1101

1102 Unknown: It's not. But, so why does Lockheed Martin do it?

1103

1104 Honeycutt: As a matter of fact, the NASA customer is by far our least profitable. On the
1105 other hand it's an incredible amount of prestige that goes both internally and externally
1106 with working the NASA programs. There's a, it's a tremendous recruiting tool to be able
1107 to say if you want to come to work for me you are going to work on Space Station, Space
1108 Shuttle and whatever you get super high acceptance rates even though we probably pay in
1109 the lower third of starting salaries for fresh outs. The ability to use the NASA customer
1110 and the NASA expertise in other parts of the business is, you know, fast performance
1111 kinds of things, to be able to say this part of Lockheed Martin is not doing that but we
1112 have access, we're just one big happy corporation so you have access to not just this
1113 company that might be bidding on your job with the Army or your submarine or your
1114 tank or your airplane or whatever you got but also access to these folks that are doing this
1115 work with the NASA customer.

1116

1117 Unknown: Is there any, I know there's no way anyone knows this, I'm just curious is
1118 there any chance that contractors, you know, would be, come to the point where they
1119 don't want to do NASA work?

1120

1121 Honeycutt: Well, I used to debate that with Dan on occasion. Particularly within the
1122 NASA customer, that the award fee scores were so low, and I don't care what the reasons
1123 are if you get an 80 as an award fee score, when that rolls uphill in a corporation whose
1124 average award fee is in the middle 90's you're viewed as what's wrong with you and why
1125 aren't you doing a better job with your customer. And I debated with him on more than
1126 one occasion that the risk we are running with our philosophy is that we will run the big
1127 boys out and you will get mom and pop operation that are bidding on these very
1128 important jobs and you're not going to get corporate America operations. And to some
1129 degree I think we've been, I mean, during, well during the six year tour we raised our
1130 award fee scores substantially and we see across the agency that they are since,
1131 particularly since Dan is gone, they're creeping up to the low 90's anyway, but what you
1132 get from some of the DoD, particularly some of the classified customers.

1133

1134 Unknown: It's hard to imagine mom and pop operations...

1135

1136 Honeycutt: Yeah. But the other side of that, if I'm going to make 80 percent and I'm
1137 putting a 35 billion dollar corporation at risk for a 3 percent profit on a small job..

1138

1139 Unknown: Right.

1140

1141 Honeycutt: You know, there's a trade there that you have to, that the chairman has to
1142 make. I mean, here's all the benefits but, I mean, look at Columbia thing. We've taken,
1143 when the investigation boards fessed up and said the foam did it, well, guess who did the
1144 foam. So the chairman has to balance that risk against what kind of return we're getting
1145 and how much growth are we seeing in this customer. I don't perceive Lockheed Martin
1146 ever withdrawing from the NASA customer because we value them too much. And we
1147 value the type of work that it provides. Because again, I mean, we get turnover just like
1148 we were talking earlier. People can come in to a NASA job, and then next thing you
1149 know they're in a DPA job or a classified customer job or...

1150

1151 Unknown: Returning to your point about recruiting, it seems to suggest that NASA is
1152 highly respected in certain technical communities.

1153

1154 Honeycutt: We, I mean, we're 75 or 80 percent acceptances on fresh shot engineers that
1155 are getting 20,000 dollars more somewhere else.

1156

1157 Unknown: I talked to some people that do the ELV technology and about the relationship
1158 between, you know, the (???) 898 and the contractors. And obviously now, it's almost all
1159 done by contractors. And part of it, one of the selling points is, well, it's kind of got a
1160 NASA stamp of approval. So that the agency in some areas gets to play that role, kind of
1161 a quality sort of approval if it matches NASA...

1162

1163 Honeycutt: The issue to a degree that we've been dealing with is, a little bit like the
1164 conversation we had earlier with kicking a can of paint over. How do we better
1165 communicate to the people who are populating the source selection boards the value that
1166 we bring to their center. If you did pick one of the smaller companies this is what you
1167 get, but this is what you don't get. You don't access to 180,000 engineers. You don't get
1168 access to the technologies that are, that can be brought out of the classified community,
1169 and applied to your – some of them can't be brought out but some of them can. You
1170 don't get access to, for example, San Dea. We run San Dea and (??? 920) has got 14,000
1171 technical PhD's that work for him. I'm sorry, 1,400.

1172

1173 Unknown: 1,400

1174

1175 Honeycutt: Technical PhDs that work for him at San Dea. They do stuff that you don't
1176 even want to know about. We got access to them. We got access to the engineering team
1177 that does the atomic power lab. They've done the nuclear reactor for the year 2050. I
1178 mean we've got phenomenal technical capability that you don't get, that you get access to
1179 if we're on your center that you don't normally get access to. Otherwise, how do you,
1180 how does a GS-13 a GS-14 that are populating these source boards how do they back and
1181 look at this thing from the bigger perspective.

1182

1183 Unknown: It's got to be a big deal now I would think with all the new potential
1184 development.

1185

1186 Honeycutt: Yeah. Yeah.

1187

1188 Unknown: How do you feel about President Bush's announcement?

1189

1190 Honeycutt: Well, I'm all for it and I hope the thing comes about. It doesn't appear that
1191 they are doing a very good job with the customer, I mean, I'm sorry, with the Congress to
1192 get any funding support out of the House authorizers. I think it's going to be hard sell
1193 honestly and somehow or another it has to be, it has to be framed in the greater good
1194 showcase rather than a dollars and cents, you know, how much is this thing going to cost,
1195 you know, how do we justify the cost because it loses in that environment. When you
1196 have to go back to the Apollo and post-Apollo and see what happened to the number of
1197 PhD candidates in the technical fields during Apollo. Well, they did this then what
1198 happened. Well, now, I think it's China has something like 9 times as many PhD
1199 candidates in the technical fields than we do.

1200

1201 Unknown: Wow.

1202

1203 Honeycutt: There's some huge amount of difference where China is going from a
1204 technical point-of-view in space and we are. And somehow or another if we're unable to
1205 frame that initiative into, like Apollo did, focus on the technical growth of the country I
1206 think it's doomed. That's my personal reading just because if it gets into a bean counter
1207 debate it just, I mean, there's no way you can justify it from a dollars and cents point.
1208 But I think you can from a how do we maintain our leadership in R&D and the technical

1209 community and how important is that to our long term survivability. Because there's not,
1210 you know, nothing else seems to be able to provide that stimulus for your kids to want to
1211 go study engineering or science at the graduate level.

1212

1213 Unknown: You're right. But you can really see the way having a Space Program. I mean,
1214 drives people into it.

1215

1216 Honeycutt: Otherwise, we'd want to go to law school instead of MIT.

1217

1218 Unknown: Yeah. Finance.

1219

1220 Honeycutt: So, I mean, I think it hinges on, and it probably hinges on the election and
1221 who controls the White House who controls the Senate and House as well. Typically,
1222 we've gotten bipartisan support. Historically, we have.

1223

1224 Unknown: It's those numbers you always see quoted 2/3 of the American people support
1225 having a Space Program but translate that into dollars...

1226

1227 Honeycutt: The other side of that is most of them don't know what the hell they are
1228 supporting. I mean, if you sit next to somebody on the airplane and you go get your
1229 haircut or something and they ask you where do you work and you say NASA, my
1230 experience has been that as many people say, "You know, I'd really like to ride on that
1231 Shuttle. I'd like to go to the moon just once." As can talk intelligently about what the

1232 Shuttle program is really about. As many think it just goes to the moon as think it goes in
1233 Earth orbit.
1234
1235 Unknown: Yeah
1236
1237 Honeycutt: So that's a concern as well. It says hey, they're supporting it, but they don't
1238 really know exactly what they are supporting.
1239
1240 Unknown: Well, Mr. Honeycutt, I think we've taken up a lot of your time. I want to
1241 thank you very much.
1242
1243 Honeycutt: And I prefer not to be called Mr. Honeycutt.
1244
1245 Unknown: Ok. Alright, Jay. Thank you very much and you really informed us about
1246 these issues.
1247
1248 Unknown2: If you need any help I'm around here most of the time. We'll probably end
1249 up calling you to help us figure.
1250
1251 Honeycutt: And what's going to be the product?
1252
1253 Unknown: The product is a book. A book that will be published, we're not sure by
1254 whom yet, but we've written at this point I think we have about 600 pages in manuscript

1255 so we're hoping to have a pretty substantial book that covers from the beginning of the
1256 center. In fact, a little bit before the beginning when they were launching...

1257
