

GENESIS OF THE ULTIMATE

FINAL
PART



Jay 36 (left) and Jay 19 during
Hot Environment Testing of the
V8 Efi in the USA in August 1989

In LRM's final issue for 2024, the Discovery's 35th anniversary year, we conclude the results of our investigations into the history of the Project Jay vehicles

"ANOTHER challenge that the Project Jay team had to overcome was a major strike at Solihull, when around 6000 Land Rover hourly-paid workers went on strike for five weeks in early 1988," remembers Brian Hipkins. "This was a particularly crucial time for the Build and Validation Programme and posed a significant threat to our crucial

first builds. But due to the high level of commitment shown by all those involved in the build of these vehicles in Block 38, the Build Programme remained on target.

"A leaked photograph of a complete Jay design buck appeared on the front cover of *Autocar* magazine on 24 February 1988 under the headline 'The Secret Range Rover

for 1990', and the company made a great show of trying to find the person responsible, including appointing John Stalker, the ex-deputy chief constable of Greater Manchester Police, to lead an investigation. No one was ever identified, and rumours circulated that the leak had been made by the company itself, to focus the striking workers' attention on what they were throwing away!"

Brian has some more historical treasure to show me, including Issue Three of the Build and Validation Programme, dated 8 October 1987, which lists individual vehicles and their planned build dates and specifications, and what purpose each vehicle would play in the Validation Programme. This is the first time I have seen such a list, which reveals information on the first 34 vehicles including Jays 21 to 31 – the first five-door and van-bodied vehicles.

This Build and Validation Programme was regularly updated as the project progressed, subtle changes were made, and more vehicles were added. I'm struck by a number of things, the first being the appearance of the initials VM against the Jays that were to be built with diesel engines.

"At the beginning of the Jay programme, senior management hadn't made a final decision regarding fitting the new Gemini diesel engine, so we planned to use the VM which was installed in the Range Rover Turbo D," Brian says. "The management decision to adopt the Gemini engine was made partway through the build of Jay 4, which was a diesel, →



Jay 5 in Canada during Cold Environment Testing in 1988. Jay 5 is the oldest surviving Discovery and in the care of the Dunsfold Collection



Jay 5 in Canada with its One Ten support vehicle



but it came too late for that particular vehicle and 4 was completed as a VM. The only others with the VM were Jays 37 and 39."

I'm curious as to what caused the delay in deciding to adopt the Gemini 200Tdi, and a later conversation with Roger Crathorne introduces me to Keith Bird, who was a member of the Diesel Engine Development team under Les Wilkins. "When I joined the team in January 1988 to work on the Gemini project, skew gears were failing and when fitted to a test vehicle the gear would only last about 30,000 miles. The skew gear drove down to the oil pump and up to the vacuum pump and when the gear failed, oil pressure was lost, and the engine suffered catastrophic failure.

"Although I introduced several improvements, the main issue with the gear was the lack of a top bearing. To improve the situation, we prototyped a plain top bearing. This was an improvement but not as good as we hoped. In assessing this gear, one of us suggested a ball bearing and the rest is history. This was the very last roll of the dice, and the Gemini successfully met the requirements and was adopted for the Jay programme."

The second thing I note is that the vehicles are identified only by their Jay fleet number, with neither chassis numbers nor registration numbers listed, although obviously not all were registered for the road. Brian's answer to this makes perfect sense: "The team didn't really care on a day-to-day basis what the chassis and registration numbers of the vehicles were, because all we were focused on were the tasks that one or other of the Jay fleet was undertaking. It was easier to speak of Jay 5 or Jay 11 than to bother with chassis numbers and registration numbers.

"Generally, the only time these appeared was on the individual Vehicle Build Report, which the engineer in charge of each build had to complete. This was an



“Rumours circulated the leak [in *Autocar*] had been made by the company itself”

In 1988 Jay 18 went to Australia for Hot Environment Testing and extended mileage testing

extensive document that listed the exact specification of each build, including body style, steering, engine, axles and so on. What makes them historically interesting is when they list components such as Range Rover seats, fascias and instruments, which were hacked about to fit, in the absence of the correct Jay components, which did not yet exist.”

Brian has the Build Report for Jay 8 which confirms that it was built on 19 May 1988 with chassis number 329901. It was right-hand drive and fitted with Gemini engine number J22 and registered as B219 AAX. It was fitted with a front axle comprising a Range Rover axle case with One Ten hub and brake assemblies, while the rear axle was from a Land Rover Ninety, with Land Rover wheels fitted all-round. It would be wonderful to find a full set of the Jay Build Reports.

Brian also has two very helpful documents dated October 1987 and April 1988, which list each Jay Prototype Build Module Matrix, which means they basically summarise the detail that would eventually appear in the full Build Reports onto a single page, but without the very helpful chassis and registration numbers. Between them, these two Module Matrix documents list Jays 1 to 42 (there was no Jay 13). A further document names the engineers on the Jay team who were responsible for the build and testing programmes of 23 three-door Jays: numbers 1 to 12, 14 to 20, and 32 to 35. The engineers responsible for building and testing the Dunsfold Collection’s Jay 5 and Jay 17, for example, are listed respectively as John Woodward and Mark Hughes.

“The main areas of Dick’s responsibilities were split into Build and Test,” Brian explains. “That said, there were no firm boundaries between the two. The emphasis was on teamwork so once the first couple of builds were underway there was a major focus on build



Jay 18 was registered with the local number PHN-069 for its expedition through Australia



Jay 5 in Canada in 1988. It carried the local registration number 968-FPP



activities. We nominated engineers according to their skillset so while the nominated build engineer took the lead on managing each build, the test engineer would look over his shoulder and get to know the make-up of his vehicle, particularly with reference to which components were design-intent and which were perhaps carry-over Range Rover in lieu of the new Discovery spec component not yet available. He could then plan appropriate test work accordingly. Towards later stages of the build, as there were more and more vehicles on test, the build engineers would migrate to test activities."

Although the three-door Discovery was the vehicle that was introduced to the world at the 1989 Frankfurt motor show and the one that was driven by the global media and Land Rover dealers at Plymouth in October that year, the development of the five-door and the commercial van body was also underway and partly overlapped the three-door programme. Brian has a copy of a document entitled 'Key Events for 5-door and Van' and this includes the same build stages set out in the three-door plan, but with key dates several months later.

The build of the Engineering Validation vehicles was scheduled to begin in October 1988 for the five-door and January 1989 for the van. Methods Builds were planned to commence in November 1989 for both the five-door and the van, by which the time the three-door would have been launched. Body and Assembly Pre-production build would be underway by March 1990 for the five-door and May 1990 for the van; body and assembly production was expected to start in May 1990 for the five-door and July 1990 for the van. The five-door was eventually launched on 11 September 1990 with either the Gemini 200Tdi or the 3.5 V8 with fuel injection. The Defender brand name and the Range Rover CSK were

Jay 18 testing in Australia, 1988



Dick Elsy was Project Jay Validation Manager



Brian Hipkins was Principal Engineer Validation Build

both launched on the same day.

Brian has two further issues of the October 1987 Build and Validation Programme summary that we encountered in part one of Genesis of the Jays, which listed the first 34 vehicles. The two further issues are dated much later – 14 July 1989 and 3 August 1989 – and both are entitled 'P.I. and Job Two Validation'. The abbreviation P.I. stands for Petrol Injection and relates to the move to fit the Efi version of the V8 instead of the carburettor version that was installed in the first production three-doors – Job Two refers to the Validation programme for the five-door.

Close examination of both the 1989 P.I. and Job Two Validation documents confirm that at least five Range Rovers were used in the Petrol Injection programme, some of them converted to Jay P.I. spec, while the other vehicles were three-door Jays that were updated with Efi engines for the trial, and five-door Jays. These were fitted with either low-compression engines with catalytic convertors, or high-compression engines without cats. As an aside, Brian recalls that as many as 17 Range Rovers were used in the Jay programme: the Discovery was built on Range Rover running gear and using a Range Rover for some of the tests saved time and money.

Both documents also show that there were two other activities underway in parallel with the Petrol Injection and Job Two work: three-door Continued Engineering, and a project involving Jay 17 and Land Rover Parts that focused on the development of the specification for the Camel Trophy Discovery vehicles, which arguably makes Jay 17 the prototype Camel Discovery.

Jay vehicles up to numbers 60 and 61 appear in these records. Interestingly, registration numbers are listed in

“The vehicles were identified by their Jay fleet number, with neither chassis nor registration numbers listed”



Jay 18 during its extended mileage testing in Australia. Note what appears to be a Range Rover-type decker panel at the base of the windscreen. In fact, the panel line is fake

both these documents where applicable, although the number listed for Jay 35, D610 NHB, is clearly incorrect because as far as the DVLA is concerned it was allocated to a Lada in March 1987.

“After Job One, which was the three-door, the programme was absorbed into the main business with the engineering led by Vehicle Engineering under Alex Stephenson as Vehicle Director for all LR products,” explains Dick Elsy. “I became Chief Engineer for Vehicle Engineering, Discovery, working for Alex, basically looking after the engineering and programme management post-Job One. We even did a trial 2.0-litre four-cylinder M-Series installation because of a plea from our national sales company in Greece. But that’s another story...”

And when it comes to photographs and video, there is more good news. Brian kept a video cassette issued to Land Rover staff which includes a wonderful behind the scenes film of the 1989 launch, including footage of Roger Crathorne driving the Discovery hauling railway carriages on the Dart Valley Railway. The video also has the contemporary TV advertisement and other material. Dick had a remarkable selection of photographs of Jay vehicles undergoing climate testing in Canada and Australia, and dust ingress tests at Gaydon, together with images of the static test rigs in use, and one of the full-size Jay bucks alongside examples of the Japanese competition for management evaluation purposes.

Hugely enjoyable conversations about the Jay programme with Don Hall, a retired Land Rover mileage test driver, reveal that he had, of course, driven several of the Jay vehicles on the road, including the 150,000-mile vehicle Jay 16. “I joined the Durability and Validation section working for John O’Donnell and Peter Storrie →



Jay 19 was accompanied in Australia by a film crew, who took footage for marketing and PR



Jay 14 ended up as the Project Jay Bond Vehicle, photographed here by Validation Senior Engineer Steve Roper



Exercise Roadmaster was held at Bordon in 1989. The Land Rover team from left are Dave Dodds, Charles Whitaker, Bob Seager, Pete Armel, Bill Morris, Neil Doswell, John Carter and Graham Archer. Behind them are three Body & Assembly Pre-production vehicles C862 CEU, D973 LBO, and D750 LWO. Jay fleet numbers unknown but all were built in April 1989



Three-door and five-door full-size styling bucks

FIVE-DOOR AND VAN PRE-PRODUCTION JAYS

ENGINEERING VALIDATION VEHICLES

JAY	BUILD	ENGINE	L/RH	PURPOSE
21	10/88	-	-	TEST RIG: seat belt pull, DTp test
22	12/88	V8	R	Road mileage 150,000 miles to 07/90
23	12/88	V8	L	HIDE four-poster, strip and inspect
24	11/88	-	-	TEST RIG: door slam test
25	01/89	V8	L	Master spec build validation, legals compliance
26	01/89	V8	L	Structural evaluation, NVH validation, electrical validation, suppression test
27	01/89	G	R	VAN: trim and NVH pack development, NVH sign-off
28	01/89	V8	L	HET USA
29	02/89	V8	L	Trim and hardware development, four-poster trim endurance
30	02/89	G	L	Water/dust fume ingress, fuel consumption back-to-back check with three-door
31	02/89	G	L	VAN: HIDE

METHODS BUILD VEHICLES

JAY	BUILD	ENGINE	L/RH	PURPOSE
44		V8	L	08/89 P.I. Programme: updated to Efi, HIDE, trim update 16/03/1990 HIDE Gaydon
45	11/89	G	L	Production line build Five-door validation: HIDE, slow crush test
46	11/89	-	-	TEST RIG 1: 6/89: Five-door validation as Jay 46, torsion rate, side door slam test, in-house seat belt pull
47	11/89	V8	L	Production line build Five-door validation: master spec interior and exterior, DTp noise, compliance, projections, seat belt, wash/wipe, speedo etc
48	11/89	D	L	Production line build Five-door validation: aerodynamics, water and dust ingress
49	11/89	V8	R	Production line build P.I. Programme: underbonnet layout, NVH assessment, suppression in-house and DTp tests, brakes and handling
61	11/89	V8	L	Production line build P.I. Programme: underbonnet layout, NVH assessment, brakes, ride and handling
RIg 2	02/90	-	-	Five-door validation: DTp seat belt test

Efi Hot Environment Testing in the USA in 1989. Jay 36 descending either Mount Evans or Pike's Peak, taken from Jay 19. Note the rudimentary dashboard layout

"There was a tremendous can-do attitude within the team"



The August 1989 HET trials in the USA involved Range Rover and One Ten vehicles as well as Jays 19 and 36



Jay 19 in Death Valley during Efi HET trials in August 1989

at the start of the Jay mileage programme, and we were attached to Project Engineering," Don tells me.

During the conversation with Don I discover that he kept a diary of his daily test drives in all manner of interesting Land Rovers, and there are many references to Jays and a whole lot more that might well feature in a future article in *LRM*, if I can twist Don's arm. Had he by any chance taken any photographs of the Jays he had been testing? "It was strictly forbidden," he told me, "but yes, I do have a few, and I was very proud to be part of the Discovery story."

The challenge is to try to create a complete listing of the Jay vehicles and cross-reference the build dates listed in Brian's documents for the Validation, Methods Build, and B&A Pre-production phases, determine how many there were in each category, and then to compare these to the Jay vehicles recorded in the Land Rover chassis records.

It is not going to be easy, because the 'despatched out' dates recorded in the chassis records are notoriously unreliable, and in my view all the more so where prototypes and pre-production vehicles such as these are concerned. Brian's records are incomplete as well, and many of them describe planned activities rather than those that had already happened, but it all represents a significant leap forward in our understanding of the Project Jay pre-pro vehicles, and we have Brian and Dick to thank for that.

A summary of the Jay vehicles referred to in the surviving paperwork is published in this feature (see page 58) and in part one for the first time, and we can expect it to prompt the appearance of additional information as the sea of Land Rover history continues to give up its secrets.

I'll leave the final words to Brian: "The Jay Team days were probably the most memorable and rewarding time of my 47 years with Land Rover. There was a tremendous can-do attitude within the team. We all pulled in the same direction, knew what we needed to achieve, and were proud to deliver ground-breaking results."