Rolls-Royce

Family Day 2000

Test Dept ,Ansty

10 JUNE 2000

ANSTY TEST SITE

1946 Test sites built at Ansty and Parkside by Armstrong Siddeley. (Armstrong Siddeley became Bristol Siddeley in 1959, and Rolls-Royce plc in 1966.)
1976 Parkside Test Department transferred to/merged with Ansty.

40 TEST HOUSE Built in 1949 for research and development work on aero dynamic characteristics of compressors and turbines. Driven by a 10,000 HP hunt class destroyer steam turbine. In 1975/1976, the main hall of the facility was converted to enable the turbine spin test facility to be transferred to the 'Test' area. In 1976, the first spin test on 'A' bed of SK20 for Hams Hall followed by a TM3B test on 'B' bed. The steam plant was retained in the front part of the test house to supply steam to drive the Anechoic turbine. Spin testing is still available for SM1A – SM1C units on one bed only. The steam plant and power turbine were removed from the test house in 1991.

41 & 42 TEST BEDs Built initially around 1946/1947 for development of the *Appollo Single Mamba*. Around 1956, the test beds were re-built to accommodate *Viper* development and production testing. In 1973, the test beds were again re-configured to take the later version of the *Viper* 600-632. The last changes to the test beds took place in 1987/1988 to enable testing of the latest *Viper* 680.

44 TEST BED Built in 1948 for development and production testing of the *Python* and production testing of the *Python* Turbo Prop engine. Minor bed changes were made in 1952 and continued in operation until the late 1950's. In 1960/1964 the test bed was converted into three separate test cells A, B and C to accommodate the testing of the *Maybach* high speed diesel engines. In 1965, the test bed was again re-built for the purpose of testing power turbines within a ship's type configuration. 1977/1978 saw the test bed re-furbished to take *Spey* SMI_A power turbines. The mid 1980's saw the updated *Spey* SMI_C engine and power turbine on test.

45 TEST BED Built and commissioned in 1950 for *Sapphire* development work. In 1960/1961 the test bed was converted to take the industrial and marine *Olympus* engines (this work was previously done at Bristol). During the late 1960's and early 1970's, the bed was adapted to take *Avon* industrial development engines. The test bed carried out 70% of all multi-fuels testing on *Olympus* and *Avon* engines, including the development of associated fuel systems. Gas testing was a major part of the industrial engine testing during this period. In 1986, the test bed was converted to *RB211* industrial development, also testing the early production engines, and in 1992/1993 the test bed was re-worked to take the *RB211* Dry Low Emissions (DLE).

46 TEST BED Built and commissioned in 1950/1951 for *Sapphire* development. It continued in this role until the last *Sapphire* test took place in April 1964. The test bed was refurbished and configured to take industrial *Proteus* development and production engines until 1966/1967, when the test bed was converted to, and re-commissioned to, take the industrial development *Avon*. During the next four years, gas running and heavy fuel testing were carried out. In 1970, the test bed was converted to take the Industrial *RB211* - this continued up to 1986 when *RB211* activities were transferred to 45 test bed.

47 TEST BED Built 1950/1951 and commissioned for *Sapphire* development work. 1962/1963 saw the test bed refurbished and equipment installed to enable marine and industrial *Proteus* development work (this work was previously carried out at Bristol). It continued in use as a marine *Proteus* test bed until 1988, when the last marine repair engine was completed.

48 TEST BED Built around 1950/1951, originally commissioned for the development of *Sapphire* engines. During the late 1950's, it carried out a short commission on *Viper* testing. Around 1960/1962, the test bed was converted into a cold chamber and was used for cold starting trials of numerous types of engines. This facility was de-commissioned in 1975. In 1976, the test bed was converted for industrial *Spey* development. In April 1976, the first *Phanton Spey* was converted to an industrial engine which was installed to run on gas. In 1979, the test bed was converted for marine *Spey* production. Finally, in 1985, the bed was converted to take the 'C' rated marine *Spey*.

50 TEST HOUSE Built late 1940s/ early 1950's for rocket motor testing. It remained in operation until the early sixties when all operations were transferred to the main rocket motor test area. In 1990, the buildings split into three areas - Smoke Analysis Laboratory; Fuel Flow Calibration Laboratory and Water Analogy Laboratory.

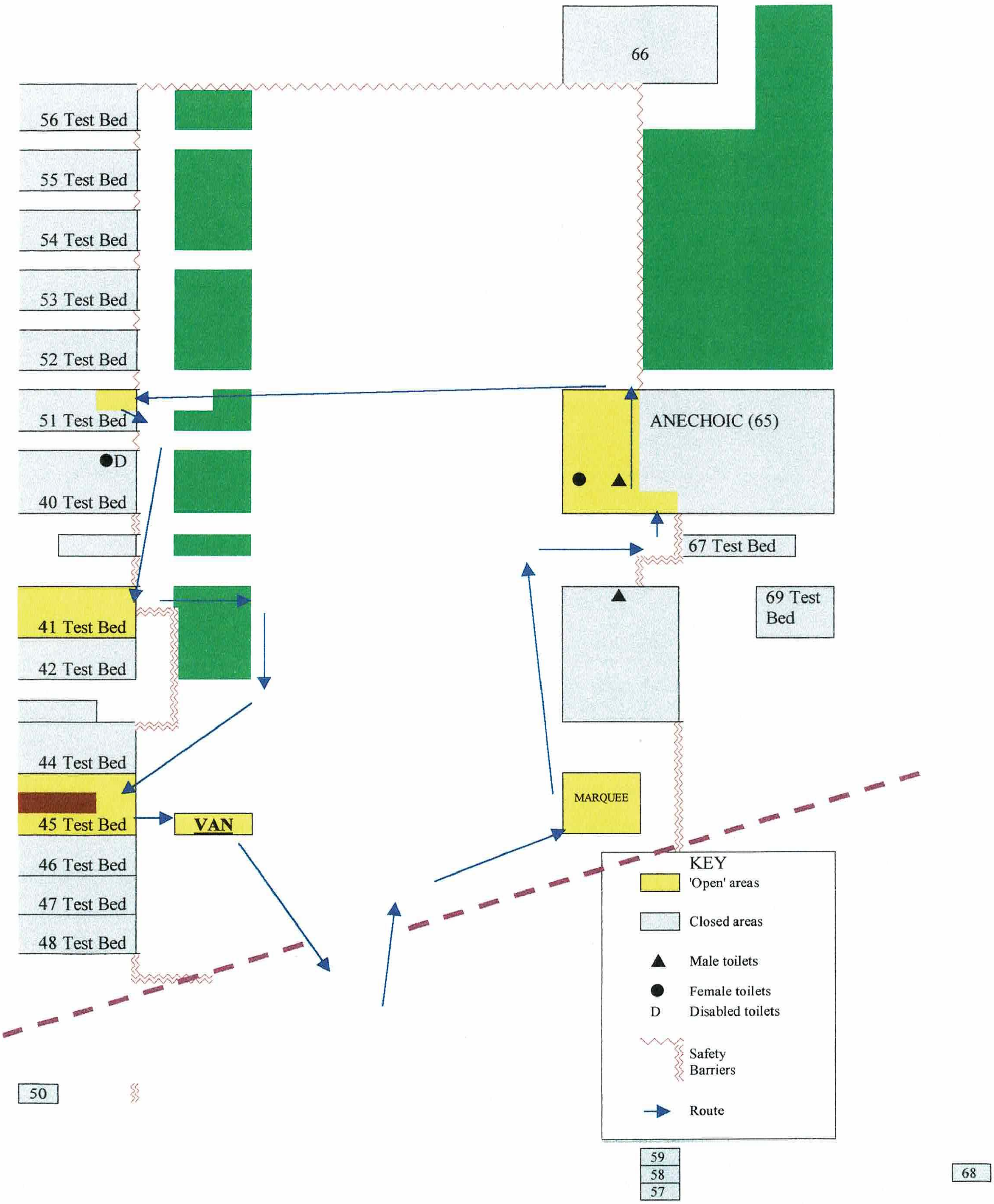
51 TEST BED Built around 1952/1953, it was initially intended for the *Python* programme. However, it was later converted for double *Mamba* development work and was used around 1954/1955 for single *Mamba* running. In 1960/1961, the test bed was converted with the front section being used for the first *Olympus* driven 17½ MW power turbine. This unit operated for a short time in 1961/1962 before being transferred and installed at the Hams Hall power station for operational trials. In 1963/1965, the middle section of the test bed was converted for industrial *Proteus* production. In addition, special tests were carried out on "V" gear box arrangements, which, at that time, were being installed in the fast patrol boats. Testing was also carried out on the Swedish gear box for Sweden's high speed patrol boats. The first *Proteus* gas engine was also run on gas in 1996.

51A TEST BED Test bed was converted for marine *Tyne* development, and continued with marine *Tyne* development 'A' and 'C' rated production engines, which were also passed off in this test bed, until its de-commissioning in 1987. 1994 saw the building refurbished as a build and strip area for the *Trent* combuster rig, and a store for *Trent* rig spares. The upper area of the test bed is used for development *Avon* work.

51B TEST BED Continued testing all types and marks of industrial *Proteus* engines until it was de-commissioned. The last engine tested on this particular test bed was in 1992. In 1993/1994, the test bed was used as a store and rig build area to serve 67 and 69 test bed combustion rig test.

52 TEST BED Built during 1953/1954, it was first commissioned for double *Mamba* development work, which was the test bed's main function. It remained a double *Mamba* facility until de-commissioning and refurbishment around 1965/1966. The test bed was converted for Aero *Proteus* (a function transferred from Bristol) and remained a *Proteus* test bed until late 1978, testing all marks of aero *Proteus*. In 1978/1979, the test bed was converted to industrial and marine *Spey* for development and production engines. Although the test bed was commissioned for industrial *Spey* engine, no industrial production work was carried out. 1980 Marine *Spey* development work continued with the first production 'A' rated engine being passed off in 1983. 'A' development work and production work continued. In 1989, the first two SM1C 1908B 002 and 1908B 003 for the Royal Navy frigate HMS Brave were passed. In 1992, *Spey* work was transferred to 48 test bed. Also, in 1992, the test bed was converted to industrial *Avon* for development work, to enable *Avon* dual fuel burners and Dry Low Emmissions (DLE) work to progress. The bed was brought up to full DLE standard with gas installed and a Cooper Rolls EMS (Engine Management System) control system.

'TEST' AREA PLAN



	~ Marquee – welcoming show
65	~ Anechoic chamber
41	~ (outside) – Sectioned demonstration Viper engine
41	~ (inside) – Running Viper engine
45	~ RB211 industrial engine on test bed
	~ Control room
VAN	~ Recording van for RB211 (45)

53 TEST BED Built between 1953/1954 for double *Mamba* production and development work. The last double *Mamba* was tested in late 1967. In 1968, the test bed was converted for dual purpose *Allison* and Aero *Proteus*. The *Allison* test bed was then converted to receive the first *Allison* cross calibration engine from America. The last *Allison* was tested in 1985.

54 TEST BED Built and commissioned in 1954 to support the double *Mamba* production programme. Initially tested double *Mamba* MK II engines and development work. It was then converted to handle the uprated MK 8 engines. It was again converted in 1970/1971 to an *Allison* Aero engine test bed, and it operated in this capacity until the early 1980's.

55 TEST BED Built and commissioned in 1954/1955 to support the double *Mamba* production engines, with the last engine being passed off in 1977. In 1979, the test bed was refurbished and converted to *RB211* industrial, for production and development testing. In 1992, the test bed was upgraded to *RB211* Dry Low Emissions (DLE) standard. The bed can handle all marks of *RB211* industrial engines on liquid or gas fuels. 1993 saw the commencement of *RB211* DLE development, and in 1994 the demonstrator engine for was passed off. Ultimately, in 1995, the first *RB211* DLE engine was passed off.

56 TEST BED Built and commissioned around 1956 initially for *Sapphire* work. In 1962, the bed was converted for *Pegasus* development work. During 1964/1965, the bed was upgraded to carry out Plenhem Chamber burner work for the BS100 super sonic version of the *Pegasus*. The test bed had also been used in 1960/1962 to investigate the Vulcan wing problem with two installed *Olympus* aero engines. Between 1965 and 1969, it was used to test *Vipers* – then aero *Avons*. Between 1969 and 1976, the test bed was converted for *Olympus 593* development to support the Concord project. In 1976/1977, the *Olympus 593* ran for industrial assessment, and from 1978 onwards, the test bed has been used for development and production of marine and industrial *Olympus* engines.

57 TEST BED Built in the early 1950's, the bed was commissioned for brake testing of double *Mamba*. In 1955, the test bed was re-commissioned to carry out the development work on the new turboshaft engine P181, and the turboprop engine P182. This engine did not get into production, and the test bed was taken over in 1960/1961 by the small engine laboratory for development work of *Maybach* and BP oil trials. During 1965, the test bed was converted to a shore trials facility for marine *Tyne* RM1A/RM1C. In 1989, the test bed was refurbished and converted to its present status, Vibration Laboratory, which was transferred from the Parkside works.

58 TEST BED Built in the late 1950's. Between 1960 and 1964, it was used for production *Maybach* testing. In 1983, it was converted for use as a Thermal Paint Facility.

59 TEST BED Built in 1960 to support the *Maybach* project. In 1970/1971, it was refurbished with equipment from Pyestock for use as a dynamometer Test Facility for production and *Tyne* engines. A *Tyne* module and gearbox was installed, and 1972 saw the first production 'A' rated *Tyne* passed off.

65 ANECHOIC TEST FACILITY Built in 1965 and commissioned as Ansty Noise Compressor Test Facility (ANCTF) for research and development. The facility is the largest of its type in the world and attracts work from outside the company. In 1967, the building burnt down. From initial commissioning to de-commissioning in 1988, the rig was driven by high-pressure steam turbines, with steam being provided from the 40 test house steam facility. Between 1988 and 1992, the old steam plant and turbine were removed and replaced with a 10,000 HP brush electric motor as the prime mover.

66 TEST HOUSE Built in 1972/1973 and commissioned in 1973/1974 as a shore trials facility for the Ministry of Defence/Rolls-Royce/Vickers/D Brown gear box for the through deck carriers. The test bed was set up as a complete port side engine room with two *Olympus* TM3B engines, a D Brown gear box and a Heenan/Fronde dynamometer. The D Brown gearbox was the main component on test, but all of the associated equipment was tested. The bed is now used as a store.

67 TEST HOUSE COMBUSTION FACILITY The facility was built in 1971/1972 for development work on the current range of engine combustors and burners. The rig was designed as a hot running facility, air supply being provided by a slave *Avon* providing bleed air. In 1993/1994, a new test house was built to accommodate the advanced rig technology and uprated *RB211* Dry Low Emissions (DLE) and *Avon* DLE rigs along with installing the gas system. It can operate alongside 69 test bed, with both test beds using the same slave *Avon* and plant to drive them. The combustion facility was transferred from the Parkside works in 1991. 67 test house also has its own gas analysis laboratory which was built to service both 67 and 69 test beds.

68 TEST HOUSE Aerodynamics rig testing this facility was transferred from the Parkside works in the late 1960's. It originally operated from the rear of 57 test house for a short period until 68 test house was built. In 1975, a purpose built facility was commissioned to test rigs and models associated with industrial and marine products. From 1995, it was heavily involved in Dry Low Emissions (DLE) combustion cold rig work.

69 COMBUSTION RIG FACILITY Built in 1980/1981 to support the industrial and marine gas turbine combustion development programme. It is capable of handling all current industrial and marine combustion systems. In 1993/1994, it was partially refurbished to accommodate *RB211* and *Avon* Dry Low Emissions (DLE) work, and incorporates the latest technology within the control environment. Both 69 and 67 test facilities are able to operate on both gas and liquid fuels.