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High Speed Wind Tunnel . . .

20,000th run in its Silver Jubilee Year

COMMENT

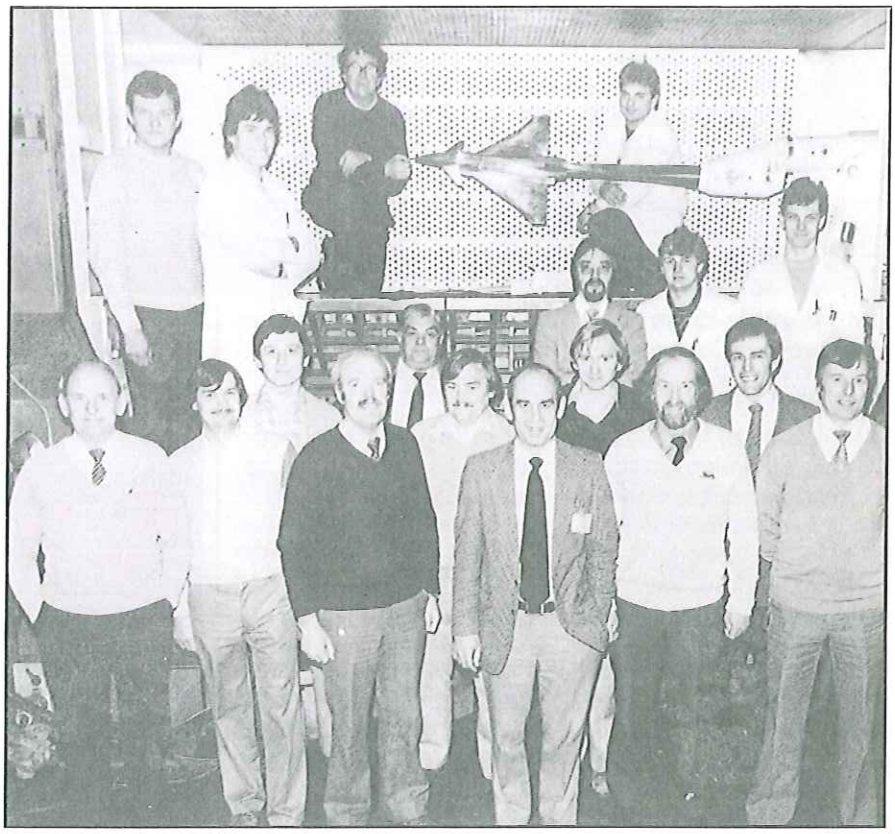
BEING one of the biggest, if not *the* biggest, employer in the area places a lot of responsibilities on Warton Division.

Our first and by far our most important responsibility, of course, is to stay in business. Not just our own employees, but a large number of other people in the community—families, suppliers, shops, services—depend on us for their livelihoods. It is estimated that in the Blackpool/Fylde, Preston and Blackburn areas the Division supports, directly or indirectly, 5% of the total working population.

But our responsibilities don't stop there. Most large companies recognise that they also have other obligations towards their local community. Some of these obligations are financial—the Company gives money to local charities, for example. By far the biggest contribution, however, is help in kind. This ranges from the loan of lorries for local club days, to the loan of expertise. A large number of our senior people are involved on the Company's behalf in a large number of local or regional organisations. Just some of these: Preston Polytechnic, Manpower Services Commission, CBI, Chamber of Commerce, Central Lancashire Development Corporation.

Two commitments for 1984 demonstrate the Division's support for the local community. The first is the secondment of one of our employees to be executive director of the new Preston Business Venture (see page 12). The second is a Meet the Buyers event for local suppliers to be held in the Spring (see page 4).

Add to this the many employees who hold positions in the local community as JPs, local councillors, school governors and so on, and it is possible to see that the two-way exchange between Company and community is varied and lively. And this is good for everyone.



Members of the high speed wind tunnel team.

ON 16th December, Warton's 1.2×1.2 metre high speed wind tunnel ran for the 20,000th time. This good news was passed to Intercom by George Benson, Principal Engineer, so we visited the South Side to ask him about this major milestone in the Division's history.

He told us that the high speed wind tunnel was started in 1957 and made its first commissioning run on 9th September, 1959, and on 2nd September, 1960, it made its first test run—with a Lightning model. A month later, it was officially opened by Peter Thornycroft, the then Minister of Aviation.

The high speed wind tunnel can operate from M = 0.4 to M = 4.0. New designs of aircraft and alterations to existing ones are all subjected to wind tunnel tests and the high speed wind tunnel has played a vital part in the evolution of the Lightning, TSR-2, Tornado and, to a lesser extent, Jaguar. It has also been extensively used for research work for the Ministry of Defence, and for testing the Rapier Missile and the TKF 90 for MBB. At the moment, most of the tests being carried out are for the EAP and an EAP model was in the high speed wind tunnel when the 20,000th run was made.

George told us that the EAP model was designed and manufactured in the Wind Tunnel Department Design Office and Model Shop in record time for a model of this standard. "It is made from high quality, high strength steel using advanced manufacturing techniques including electron beam welding", he said.

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[Wind Tunnel]

Twenty-two people are involved in running the high speed wind tunnel. The team is made up of laboratory assistants, technicians, wind tunnel engineers and three people, permanently seconded from Electronics Department, who look after and develop the electronic systems. "The basic structure of the high speed wind tunnel hasn't changed over the years", George says, "but we have had extra pumps and extra pressure vessels put in and a lot of internal modifications have been made. Last year we commissioned a third set of instrumentation, which is controlled by a Vax 11-780 computer. This allows us to present fully corrected data within two minutes of the end of the run. This used to take three hours. The data is finally stored on the IBM mainframe computer for access by other departments".

The facility at Warton is of an international class and two of the rigs used in the high speed wind tunnel are rather special. "They are the only ones we know of in the Western world and are probably the only ones of their type in the world", he said. Both rigs were paid for by the Ministry of Defence. The first one is for measuring after body drag on 3-dimensional models at transonic and supersonic speeds. The experimental technique was conceived by high speed tunnel engineers and the rig was designed and manufactured in the wind tunnel design office and model shop. "The rig was built for Tornado and has been used since then for EAP and research work for the Ministry of Defence. Money has been spent by the Division on developing this rig".

The second rig measures roll damping at transonic speeds. It simulates the aircraft's rolling characteristics by rolling a model in the tunnel and measuring the forces on it at transonic speeds. This rig was also designed and manufactured in the Wind Tunnel Department.

Over the 25 years that the high speed wind tunnel has been running, there has never been a time when there's been nothing to test in the tunnel. "Most of the time work is queueing up", said George. The high speed tunnel has reached a peak of 70 runs a week. At the moment the team works two shifts to cope with the urgent data requirements for EAP. "We were so busy when the 20,000th run was made that we weren't able to stop work to celebrate the occasion", he told us.

Warton boasts three wind tunnels. A 2.7×2.1 metre low speed wind tunnel, sited in 25 Hangar, and the high speed, plus a 5.5×5.0 metre VTOL tunnel, on the South Side.

George introduced us to Jack Kitching, senior project supervisor, who helped to build, and then to maintain, the high speed wind tunnel. In those early days he was a tunnel technician and he has worked his way up over the years until now he supervises the maintenance of the facility.

Talking about the high speed wind tunnel, Jack said, "It has a very big pressure range. In the morning there are about 200 interlocks to set up before you can start a test. You have to be very careful that everything is set up correctly because it can be a lethal weapon. With the addition of the new computer system there is a marvellous turn-round of data. Whatever you see Tornado do in the air", he concluded, "a model of the aircraft has done in the wind tunnel beforehand".

From left: Maintenance staff Eric Walton, Frank Murphy and Bill Done in the Compressor House.

Bob Fox, left, presents Frank Walsh with his cheque.

SUGGESTIONS REWARDED

ON 22nd December, Frank Walsh, a fitter in 338 Department at Preston, was presented with a Suggestion Scheme Award of £250 by Bob Fox, Preston's Works Manager. Frank's suggestion was the design of a bolt runner tool which, when used in conjunction with a standard windy motor, speeds up the operation of installing and removing service bolts. To supplement his suggestion, Frank manufactured a prototype tool, which he used on the Tornado fin assembly with great success. As a consequence of his suggestion, Jig and Tool has adopted the design and incorporated it in the Production Tool Standard, for use throughout the Division.

Another Suggestion Scheme Award of £250 has been presented to Dave Atherton, a fitter on the ADV flow line in No. 4 Shed at Samlesbury, by Production Centre Manager Bill Bolton. Dave suggested a better way of carrying out the build stages of the underfloor structure, which has brought about savings in both costs and time.