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turboshaft at present are the Bell Model 206 JetRanger
and LongRanger, Agusta A.109A Hirundo, Agusta-Bell
Model 206, MBB BO105, Hughes 500 series and various
Soloy conversions. A major new prospect for the future is
the Sikorsky S-76 commercial twin helicopter, certification
of which is planned for July this year, with production deliveries starting soon after. Orders for the S-76 already stand at more than 120. A recent and! completely new outlet for the Model 250 turboshaft is as the power section for a family of auxiliary power units being engineeired and marketed by Sundstrand. The Model 250-C20B and -C30 are used in the Sundstrand Model 450 and 600 APUs, and the Boeing 727 and 737 are' possible applications. The Allison-powered APUs are said to offer reduced fuel consumption, lower noise, less emission, lower operating costs and lighter weight than existing APUs. A new turboprop application which first flew early last year and is due to enter produc-tion about now is the four-enginedi Ahrens Aircraft AR-404 commuter and light freight aircraft

Applications and projects Agusta A.109C Hirundo (2X420 s.h.p. Model 250-C20B); Agusta A.129 Mangusta (2 X 450 s.h.p. Model 250-C30); Agusta-Bell Model 206A and A-l JetRanger (1 X 317 s.h.p. Model 250-C18); Agusta-Bell 206B and B-l, JetRanger 2 (1 X 400 s.h.p. Model 250-C20); Agusta-Bell 206L LongRanger (1 X 420 s.h.p. Model 250-C20B); Ahrens AR404 (4 X 420 s.h.p. Model 250-B17B); American Jet Industries Turbo Star 402 (2 X 400 s.h.p. Model 250-B17); American Jet Industries Turbo Star Pres-surised 414 (2 X 420 s.h.p. Model 250-BH7B); Bell Model 206B JetRanger 2 (1 X 400 s.h.p. Model 250-C20); Bell Model 206 JetRanger 3 (1 X 420 s.h.p. Model 250-C20B); Bell Model 206L LongRanger (1 X 420 s.h.p. Model 250-C20B); Bell Model 206L-1 LongRanger (1 X 500 s.h.p. Model 250-C28B); Bell Model 209 TH-57A SeaRanger (I X 317 s.h.p. Model 250-C18); Bell Model 209 OH-58A Kiowa and CH-136 (1 X 317 s.h.p. T63-A-700); Boeing Vertol/ MBB BO105C (2 X Model 250-C20); Breda Nardi Oos-truzioni Aeronautiche 369HC/NH500C (1 X Model 250-C20); Breda Nardi Costruzioni Aeronautiche 369HS/NH500 (1 X Model 250-C18A); Dornier Do34 Kiebitz (1 X Model 250-C20); Dornier/LGT Argus System (1 X Model 250-C20); Equator Aircraft P-400 Turbo-Equator (1 X 420 s.h.p. Model 250-B17B); Fairchild Industries FH-1100 (1 X 317 s.h.p. Model 250-C18); Government Aircraft Factories N22B Nomad 2 X 416 e.h.p. Model 250-B17B); Government Air-craft Factories N24 (2X416 e.h.p. Model 250-B17B); Hughes OH-6A Cayuse (1 X 317 s.h.p. T63-A-700); Hughes OH-6C (1 X 400 s.h.p. Model 250-C20); Hughes Model 500C (1 X 278 s.h.p. Model 250-C20); Hughes Model 500D and 500M-D Defender (1 X 420 s.h.p. Model 250-C20B); Kawa-saki/Hughes 369/Model 500 (I X 317 s.h.p. Mitsu-bishi Model 250-C18A); Kawasaki/Hughes 369HS/500C (1 X 400 s.h.p. Model 250-C20); MBB BO105C (2 X 400 s.h.p. Model 250-C20); MBB/Kawasaki MK117 (1 X 650 s.h.p. Model 250-C28); Poschel Aircraft P-400 Meridian (1 X Model 250-B17B); Siai-Marchetti SM.1019E Turbo Stol (2 X 400 s.h.p. Model 250-B17); Sikorsky S-76 (2 X 700 s.h.p. Model 250-C30); Soloy Conversions UH-12-J3 and UH-12-J5 (1 X 400 s.h.p. Model 250-C20); Spitfire Helicopters Spitfire Mk 1 (1 X 420 s.h.p. Model 250-C20B).

Model 250-C30 Single-stage centrifugal compressor, annular reverse-flow combustor, two-stage compressor and power turbines. Centre-mounted reduction gearing. Take-off 630 s.h.p., pressure ratio 8-5:1, mass flow 5-61b/sec, length 40-99in, width 21-86in, height 25-13in, weight 2351b.

Model 501 (T56) Single-shaft turboprop. This turboprop has three main applications: the Lockheed C-130 Hercules, of which the 1,500th was scheduled to have been delivered last month; the Lockheed P-3 Orion, of which about 500 have been built; and the Grumman E-2 Hawkeye, of which there are atxmt 100. All remain in production today, albeit at modest rates, and the Orion line will be augmented next year by the CP-140 Aurora variant of the P-3C Orion Up-date 2, 18 of which are on order for the Canadian Armed Forces. Well over 10,000 engines have been delivered—by far the largest quantity for any turboprop—and total flying time is measured in tens of millions of hours.
Applications and projects General Dynamics Model 580

(2 X 3,750 e.h.p. Model 501-D13); Grumman C-2A Grey-hound (2 X 4,050 e.h.p. T56-A-8); Grumman E-2A and E-2B Hawkeye (2 X 4,050 e.h.p. T56-A-8); Grumman E-2C Hawk-eye (2 X 4,910 e.h.p. T56-A-425); Lockheed C-130B and E (4 X 4,050 e.h.p. T56-A-7); Lockheed C-130H, &130K, HC-130H and C-130SS (4 X 4,910 e.h,p, T56-A-15); Lock-heed L-100-10 and -30 Hercules (4 X 4,050 e.h.p. Model 501-D22); Lockheed L-100-20 and -50 Hercules (4 X 4,508 e.h.p. Model 501-D22A); Lockheed L400 Twin Hercules (2 X 4,910 e.h.p. Model 501-D22D); Lockheed P-3C Orion and P-3C Orion Update (4 X T56); Lockheed CP-3C Orion/ CP-140 Aurora (4X4,910 e.h.p. T56-A-14); Lockheed Model 188A Electra (4 X 3,750 e.h.p. Model 501-D13). T56-A-15 Fourteen-stage axial compressor, annular com-bustor, four-stage turbine, separate forward-supported re-duction gearing. Take-off 4,910 e.h.p., pressure ratio 9-25:1, mass flow 32-41b/sec, length 146in, width 27in, height 39in, weight 1,8251b.

Model 501-M62 (T701) Free-turbine two-shaft turboshaft. Originally developed in the early 1970s to power the three-engined Boeing-Vertol XCH-62A heavy-lift helicopter cancelled in 1976, the 8,079 e.h.p. Model 501-M62 currently has no firm application in prospect. The turboshaft has been proposed for a number of more recent projects, among them the novel four-engined RECAT (Reduced Energy Consumption Aircraft Technology) design sponsored by Nasa, in which a 14,000 s.h.p. growth version of the T701 drives 12ft-diameter prop-fans. The turboshaft embodies technology from the Model 501/T56 and TF41 engines, and the GMA 300 Ategg core engine (see above). Initial growth to 9,500 s.h.p. was planned by means of an increased turbine-entry temperature, and to 11,000 s.h.p. via introduction of a compressor zero stage.
T701-AD-700 Thirteen-stage axial compressor, annular combustor, two-stage compressor and power turbines. Direct drive. Take-off 8,079 e.h.p., pressure ratio 20:1, mass flow 44-31b/sec, length 64-3in, width 30-3in, height 36-8in, weight 1,1791b.

Model 912 Two-shaft turbofan. Described below under its TF41 military designation.

T56 Single-shaft turboprop. Described earlier its Model 501 commercial designation.

T63 Free-turbine two-shaft turboshaft. Described earlier under its Model 250 commercial designation.

T701 Free-turbine two-shaft turboshaft. Described above

under its Model 501-M62 commercial designation.

TF41 (Model 912) Two-shaft turbofan. Jointly developed and manufactured by Allison and Rolls-Royce, the TF41 is derived from the RB.168-25R Spey powering RAF and RN F-4M and F-4K Phantoms. The two companies have to date received orders for more than 1,300 TF41s for USAF A-7Ds (1 X 14,5001b TF41-A-1), USN A-7Es (1 X 15,0001b TF41-A-2 and -400), and Greek Air Force A-7Hs (1 X 15,0001b TF41-A-2). Production of the A-7E and A-7H continued through 1977, with 43 aircraft scheduled to have been delivered. USN purchases of 12 more A-7Es in each of 1978 and 1979 is expected. A further prospect for the TF41 in its higher-rated Model 912-B32 afterburning version is the competitive development (see GE F101-X and P&W F401) to re-engine some 520 US Navy F-14 Tomcats. The Model 912-B32 retains the basic aerodynamics of the present TF41 but contains components, of both Allison and R-R manufacture, in higher-performance materials. There have also been press reports of the TF41 being used to re-engine Egyptian Air Force MiG-21s.

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Subsidiary of Dowty Group Ltd, a public company with corporate activities covering the manufacture of aerospace, mining, industrial and electronics products. Corporate assets £136-3 million ($239 million) and employees 13,886. Corporate turnover up in 1976-77 to £136-3 million ($239