ELLIOTT 900 SERIES SIMULATOR

905 FORTRAN DEMONSTRATION PROGRAMS.

905 FORTRAN demonstration programs are held in the 905FOTRAN
directory.

The majority of the demonstration programs are case studies
taken from "A Guide to FORTRAN IV Programming", by Daniel D.
McCracken, John Wiley & Sons, Second Edition, 1972, a classic
student text book from the early 1970's. A few minor changes
have been made to accommodate restrictions in 905 FORTRAN and
the fact that paper tape rather than punched cards is being
used for input-output.

DEMO1.DAT. A simple table of squares program to illustrate
the compile / load / run sequence for 905 FORTRAN programs.
The program is laid out in the "free format" style.

DEMO2.DAT. McCracken Case Study 1 – Economic Ordering
Quantity. Shows basic FORTRAN IV arithmetic and output.

DEMO3.DAT. McCracken Case Study 2 – Current in an A.C.
circuit. Shows simple input-output and transfer of control
features of FORTRAN IV. Note that formatted input is used, so
the input numbers are carefully positioned using spaces.

DEMO4.DAT. McCracken Case Study 3 – Column Design. Illustrates
further arithmetic and transfer of control features of FORTRAN
IV.

DEMO5.DAT. McCracken Case Study 4 – The Newton-Raphson Method.
Shows the calculation of the roots of an equation using an
iterative method. Compare to 903FORTRAN DEMO3.DAT that is the
same program written in FORTRAN II and 903ALGOL DEMO1.DAT for
an ALGOL 60 version..

DEMO6.DAT. McCracken Case Study 5 – Error Analysis in a Double
Precision Sine Routine. Shows the use of double precision
arithmetic to overcome problems with rounding errors when
using Taylor's series to calculate sines of large angles.
Both a single and double precision version of the program are
given for comparison. The single precision version can also
be found in 903FORTRAN DEMO4.DAT as a FORTRAN II program and
903ALGOL DEMO2.DAT for an ALGOL 60 version.

DEMO7.DAT. McCracken Case Study 6 – A Servomechanism Frequency
Response Plot. Illustrates the use of complex numbers in
FORTRAN IV. Note the use of free format input.

DEMO8.DAT. McCracken Case Study 7 – Logical Design of a Binary
Adder. Illustrates the use of logical values in FORTRAN IV.

DEMO9.DAT. McCracken Case Study 8 – Using Subscripts in
Computing Means, Standard Deviations and a Correlation
Coefficient. Illustrates the use of arrays in FORTRAN IV. A
FORTRAN II version of this program is in 903FORTRAN DEMO9.DAT.

DEMO10.DAT. McCracken Case Study 9 – Damped Oscillation.
Explores FORTRAN IV DO loops.

DEMO11.DAT. McCracken Case Study 10 – The Gauss-Seidel Method
for Solving Simultaneous Equations. This program further
illustrates DO loops and the 905 FORTRAN store map facility.
See 903FORTRAN DEMO6.DAT for a FORTRAN II version.

DEMO12.DAT. McCracken Case Study 11A – Graphing / Damped
Oscillation. This is an extension of DEMO10 that plots a
graph of the damped oscillation to the teleprinter. See
903FORTRAN DEMO7.DAT for a FORTRAN II version of this program.

DEMO13.DAT. McCracken Case Study 11B – Graphing / Temperature
Map. This program calculate the temperature distribution in a
pipe carrying a hot fluid, immersed in a cold bath. The
distribution is plotted graphically to the teleprinter. See
903FORTRAN DEMO8.DAT for a FORTRAN II version of this program.

DEMO14.DAT. McCracken Case Study 13 – Quadratic Equation
Solution with Subprograms. This example illustrates the use
of subroutines and functions in FORTRAN IV. Note the comments
in the routine SOLVE that point to a bug in the FORTRAN IV
compiler. DEMO9.DAT in 903FORTRAN is a FORTRAN II version of
this program.

DEMO15.DAT. McCracken Case Study 14 – Translating Algebraic
Expressions into Polish Notation. This program shows the use
of the A format specification to do text processing in FORTRAN
IV. Note that every line of data is terminated by a space.

DEMO16.DAT. This program contains embedded SIR code. It is
essentially the 905 FORTRAN version of 903 FORTRAN DEMO10.DAT.
Note that parameter decoding is easier in 905 FORTRAN, but it
is not possible to access an array descriptor to check its

dimensions, nor can a call be made to QF, so instead all real arithmetic has to be written in FORTRAN.

DEMO17.DAT. This demonstration shows the use of the EXTERNAL statement to allow functions to be passed as arguments. Note that the use of EXTERNAL leads to the 900 Loader reporting *CLW errors (check words not equivalent) and therefore option bit 9 (400 in octal) is set to ignore these.

System files

905FORT(ISS6).BIN – "905 FORTRAN COMPILER ISS 6".
(The tape is labelled "ISSUE 6", but the compiler announces itself as FORT05, suggesting Issue 5?).

905FORTLIB1(ISS4).BIN – "905 FORTRAN LIBRARY VOL 1 ISS 4 RLB"
(Issue 4)

905FORTLIB2(ISS5).BIN: - "905 FORTRAN LIBRARY VOL 2 ISS 5 RLB"
(Issue 5).