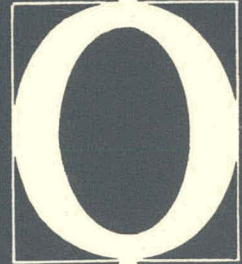


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THE ORKAND CORPORATION

SILVER SPRING, MARYLAND

FCHART INSTRUCTION MANUAL

MASTER

April 21, 1977

Prepared for:
Federal Energy Administration
Office of Energy Information and
Analysis
Nuclear Energy Analysis Division
Washington, D.C.

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FCHART INSTRUCTION MANUAL

The FCHART program has been modified to include several versions and can be used easily in batch mode. Input data as well as output information can be saved from run to run. This manual assumes that the user has a general understanding of FCHART and a limited understanding of SUPERWYLBUR.

I. FCHART Data sets

All data sets are under the account 6231.RS3 unless specified otherwise. Also, all data sets are on Volume FEA011 unless otherwise specified.

- FCHART 1 - Original FCHART program. All output on logical unit 6.
- FCHART 2 - Breakeven Analysis, optimizes collector area and adjusts price of collector until Present Worth with and without solar are equal. All output on logical unit 6.
- FCHART 3 - Same as FCHART 1, except that this version outputs thermal and economic analyses on unit 6; user prompts on unit 8, and lists of parameters on unit 9.
- FCHART 4 - Alternate Economic Analysis (no mortgage) and years to payback, output on unit 6, prompts on unit 8, and lists of parameters on unit 9.
- FCHART 5 - Years to Positive Savings, defined as the first year in which cost with solar is less than cost without solar. Output on unit 6, prompts on unit 8, and lists of parameters on unit 9.

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- FCHART 6 - Years to Positive Savings and Bounds, Bounds of 40 ft² for water and 150 ft² for space and water are specified if optimized collector area is less than these values. Output of optimized collector area is also made. Output on unit 6, prompts on unit 8, and lists of parameters on unit 9.
- FCHART 7 - Fixed Percent Solar, optimized collector area such that the percent solar equals 50%. Output on unit 6, prompts on unit 8, and lists of parameters on unit 9, also number of iterations to optimize on unit 10.
- FCHART - JCL needed to execute FCHART 1 through FCHART 7.
- INPUT - Input data set located on FEA009, saved in card format.
- 6231.KW3.FCHART2.DATA - Data on degree days, solar radiation, ambient temperature and city latitudes.

II. Creating Input to FCHART

Running FCHART in batch as opposed to interactive mode means that the user must anticipate the program prompts with answers. First the user must answer these questions:

1. You may use either Scientific or English units. Do you wish to use Scientific units?
Yes or No
2. Would you like a listing of locations for which calculations can be made?
Yes or No
3. You may model the space heating load using the degree-day concept or you may type in a space heating load for each month. Do you wish to use the degree-day concept?
Yes or No

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If "No", answer questions 3a and 3b.

3a. Type in 12 load values, January first

3b. Do you wish to have these values relisted?

Yes or No

4. You may either have the ground reflectance set to .2 for all months or you may type in a value for each month. Do you wish to have the ground reflectance set to .2 for all months?

Yes or No

If "No", answer questions 4a and 4b

4a. Type in 12 values of ground reflectance, January first.

4b. Do you wish to have these values relisted?

Yes or No

5. Would you like the program to perform an Economic Analysis?

Yes or No

If "Yes", answer question 5a.

5a. Is this an income producing building?

Yes or No

6. Do you need instructions to change other parameters?

Yes or No

The user should answer these questions and enter them sequentially into the input data set. This will be explained later.

At this point, after answering the questions, the program is waiting for your operating commands. That is, you might want to change the values of certain parameters from the default values, or you may want to make a series of runs. The comments are:

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- LIST Code # - This lists a specific parameter. If the Code # is left out, then all parameters are listed.
- CHANGE - This command lets you change the load or reflectance values; it should not be needed.
- RUN - Causes the program to compute the Thermal and Economic characteristics of the described unit.
- Code # New Value
- This command lets the user change the value of a parameter; where Code # is the parameter number and New Value is the value you want the parameter to have.
- Code # Begin Value End Value Increment -
- This command causes a loop on a specified parameter.

III. Running FCHART

It is assumed that the user can get on to SUPERWYLBUR

A. Creating data for the run

1. Answer questions in Part II.
2. Create input specific to your run.
3. Now enter it into terminal; Enter Command: COLLECT 1
4. Type in first input, carriage return.
5. Prompt will go to line 2, enter next input, carriage return.
6. Continue until all data is entered.
7. Press CNTL Q. This gets you out of the COLLECT mode.

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8. Enter command:

SAVE CARD into DSN on FEA009

- You may give a unique data set name or use the DSN "INPUT" currently on FEA009.
 - If you use a unique name, remember to change the JCL in FCHART to correspond to this change.
9. If after you say SAVE, the terminal might respond that it already exists and would ask for a reply of "Yes" or "No" to re-save.
10. If you want to reuse this Data Set later, to either modify or add to, enter command:

USE FROM DSN on FEA009 CLR

and proceed with changes.

B. Executing FCHART

1. To run FCHART, one only needs to know what version and what input data set to use.
2. Enter command:

USE FROM FCHART on FEA011 CLR

3. Enter command:

CHANGE '#' to '?'

Where ? is a number from 1 to 7 corresponding to the form of FCHART that you want, (see Section I on data sets).

4. Changes to input data:

Currently input data set is INPUT, if this is not what you want, enter command:

CHANGE 'INPUT' to 'NEW DSN'

Where NEW DSN is the name of your input data set.

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5. Enter command:

RUN HOLD

Terminal will respond with a job number.

6. If you want to save this set of JCL so that you do not have to make changes again, enter command:

SAVE INTO DSN on FEA011

Where DSN is a unique name but not FCHART or any other form of FCHART.

C. Fetching Output

1. After job is entered you can enter command:

SHOW JOBS or LOC Job #

Where Job # is the number of your submitted job. This will give you the status of your job.

2. If the job is AWAITING FETCH, then you can proceed to look at output.
3. To fetch an output on a specific unit, i.e., output is on unit 6, prompts on unit 8, listings of parameters on unit 9, and possibly additional output on unit 10,

enter command:

FETCH Job # DDN FTO#FOO1 CLR

Where FTO#FOO1 corresponds to the unit number. If you want output, enter FETCH job# DDN FT06F001 CLR.

4. Enter command:

LIST UNNUMBERED

to see the output.

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5. To get listings at 12th & Pennsylvania Avenue, enter command:

LIST UNN OFFLINE BIN=DØ1 REM=2 COPIES=#

where the number of copies is your option.