XI.B. PROCEDURES TO FOLLOW WHEN YOU HAVE PROBLEMS

(Most of this section is taken almost directly from the SAMMY workshop material. The procedure described here has proven to be useful in helping users debug their input and in helping the author debug the code when that is needed.)

What to do when SAMMY does not work?!

1. Do not panic – this happens to **everyone**.

2. Is this run *really* the same as the one that worked last week? Think carefully — *exactly* what did you change?

3. Look at the SAMMY.LPT file in **detail**:
   a. Did SAMMY understand all of your instructions? *Maybe you had a typographical error.*
   b. Is SAMMY using the same parameter values that you intended? *Maybe you had a typo. Look for factors of ten, for example.*
   c. Would additional information help? *Maybe you need to ask SAMMY to print out more initial values, or more intermediate steps.*
   d. Did SAMMY give you an error message? *Look at the very end of the file.*

4. Can you simplify and/or isolate the problem?
   a. Use a smaller energy range.
   b. Vary fewer parameters.
   c. Drop normalization & background options.
   d. Do no broadening.
   e. Find the smallest case for which the error occurs, and try to understand what is unique about that case.

5. See Table XIB.1 for additional suggestions.

6. If the problem persists, ask for help. (See the next page.)

Help is available

1. Talk to your office-mate or the person next door. *Perhaps you have simply been looking at it for too long, and someone else can see immediately what you can no longer see.*

2. Talk to the most experienced SAMMY user in the neighborhood. *It does get easier with practice.*

3. Send an e-mail to the author at LarsonNM@ornl.gov.

   a. First, send information but not files. Describe the problem in some detail:
      i. What version of SAMMY are you using? (If you are not using the most recent release, your bug may already be fixed.)
      ii. What features are in use?
      iii. Did the code bomb or "merely" give wrong answers?
      iv. How do you know that the answers are wrong?
      v. In which module did the bomb occur?
         - For example, SAMMY-RSL might be the last thing in the LPT file.
         - Or M6-SAMMY-SSM might appear on the screen right before the bomb.
      vi. What error message did SAMMY give you?
      vii. Does a minor perturbation of this case work properly?

   b. When requested, send very small files from the simplest case that illustrates the problem: command file, INPut file, PARameter file, DATa file, and any other necessary input files.
      i. Send these files as attachments if possible, otherwise as separate e-mail messages.
      ii. See item # 4 on the previous page for suggestions on how to simplify the run.

NOTE: If you should find an error in your version of SAMMY (either the code or the manual), please tell the author about it so that it can be corrected in the "official" version.

ALSO: When you encounter a SAMMY error message that does not convey appropriate information, can you suggest a more informative message? If so, please contact the author with your suggestion.

Table XI B.1. Possible solutions to some common problems

	Problems that may occur during a SAMMY run	Possible solutions
1	SAMMY tells you that the matrix is nearly singular	* Initial values are very far from "true" values. * Initial parameter uncertainties are too large. Modify by using one or more of the uncertainty options described in Table VI B.2 for the PARameter file. * Too many parameters are being varied (this is unlikely). * Too few data points are used. * Sometimes this message can be ignored! But do so at your own risk.
2	A "divide check" or "floating overflow" or similar error message occurs	* Your INPut or PARameter or DATa file has a zero (or a number which SAMMY reads as nearly zero) where none is permitted. Look over the LPT file carefully to be sure your input is correct. * SAMMY has a bug?
3	Cryptic messages occur before SAMMY bombs	* You are trying to analyze too many data points at one time. Use fewer points, or vary only the parameters of interest. * You have mistyped a file name. * The computer has had a bad day. Try again tomorrow.
4	Results "run away" from your "reasonable" input values.	* Your input did not properly describe the "background" R-matrix. Try adding more dummy resonances, check if spin groups are properly assigned, etc. * Data uncertainties are unrealistic. Zeros are never allowed, and very small values should be increased. (Or, use VMIN, in card set 7 of the INPut file, Table VIA.1.) * Total cross sections may look funny at large resonances (due to "blacking out" of transmission dips), so increase the uncertainties. Better yet, use transmission data and increase uncertainties for low T. * Systematic errors in data should be handled with off-diagonal data covariances, or by varying or PUPing data reduction parameters such as normalization or background. (See Section IV.D.2 for information regarding PUPs.) * "DIVIDE DATA INTO REGions" landed in the middle of a resonance. Change the number of data points, choose the regions yourself, or (ideally) analyze all data at once. * The number of iterations is too small. (This is rarely true, experience has shown.) * Your input contained errors such as misplaced decimal points. Check the LPT file to be sure. * Try analyzing any "sensitive" energy regions first and/or last. Or analyze all data at once. * Initial parameter uncertainties are too large. This is especially likely to be a problem for resonance energies.