

**APPENDIX C**  
**SOFTWARE ANALYSIS WORKSHEETS**

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## CATEGORIES FOR RATING COMPLIANCE OR PERFORMANCE LEVELS

### Unacceptable

This category contains evaluation scores of modules that **only** comply with less than 60% of the criterion factor. A score in this category requires major efforts for re-engineering or repairs to effect a correction to the source codes.

### Poor Practice

This category contains evaluation scores of modules that **only** comply with 60% to 79% of the criterion factor. A score in this category, while not unacceptable, still requires minimal efforts for re-engineering of repairs to effect a correction to the source codes.

### Acceptable

This category contains evaluation scores of modules that **only** comply with 80% to 99% of the criterion factor. Scores in this category do not require any correction to be made to the source codes.

### Excellent

This category is a combination of two groups of evaluations. The first is a collection of evaluation scores that are only 100%-compliant (i.e., for one particular criterion of ANSI standard compatibility; the module is 100% compliant). The second group are the non-applicable criteria. For example: even if the module did not use EQUIVALENCE statements at all, the module would be considered 100%-compliant with their use.

### Performance Levels Points Assignments

Table C-1 shows the assignments of point values to performance levels. These values are to be assigned as a result of the evaluations of the sample set of modules. There are 19 criteria with the MOEs that will make up the points earned for each module. The maximum points that can be earned by a module is 95. Table C-12 shows the evaluation points assigned per MOE. This table can be used by the reader to observe a trend in the V&V evaluation (i.e., the documentation is poor but the rest of the program complies with the criteria).

TABLE C-1. Schedule of Points Assignments.

Performance Level	Points	Maximum Points
Unacceptable	0	
Poor Practice	3	
Acceptable	4	
Excellent	5	5*19 criteria = 95 points

# DRAFT

TABLE C-2. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** MOVANT (rad1.f)**Module Type:** Subroutine

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability		3	
Criterion #2: Modifiability		4	
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers		4	
Criterion #2: Use of formatted statements	N	N	N
Criterion #3: Logical I/O devices	N	N	N
Criterion #4: Variable declarations		4	
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity		4	
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations			5
Criterion #2: Use of library functions			5
Criterion #3: Nested computations		3	
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management		4	
Criterion #3: Use of COMMON blocks			5
Criterion #4: Modularity		4	
Criterion #5: Subroutine tractability			5

Notes: Roughly 38% of code comment lines. Identical groups of statements repeated several times. Comment indenting inconsistent and makes for visual choppiness. Easy to understand code structure and processing. Variable names thoughtfully selected.

# DRAFT

TABLE C-3. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:**    *SIGNL* (rad2.f)**Module Type:**    Subroutine

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability		3	
Criterion #2: Modifiability		4	
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers		4	
Criterion #2: Use of formatted statements	N	N	N
Criterion #3: Logical I/O devices	N	N	N
Criterion #4: Variable declarations		4	
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity		4	
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations			5
Criterion #2: Use of library functions			5
Criterion #3: Nested computations			5
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management			5
Criterion #3: Use of COMMON blocks			5
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Several variables not defined in comments. Roughly 46% of code dedicated to comments. Program reasonably self explanatory. Spacing and indenting of comments do not flow visually.

# DRAFT

TABLE C-4. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** RCVRT (rad2.f)**Module Type:** Subroutine

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability		4	
Criterion #2: Modifiability		4	
Criterion #3: ANSI standards		4	
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers		3	
Criterion #2: Use of formatted statements		4	
Criterion #3: Logical I/O devices			5
Criterion #4: Variable declarations		4	
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity		4	
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations		4	
Criterion #2: Use of library functions			5
Criterion #3: Nested computations			5
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability		4	
Criterion #2: Memory management		4	
Criterion #3: Use of COMMON blocks			5
Criterion #4: Modularity		4	
Criterion #5: Subroutine tractability			5

Notes: Roughly 32% of code dedicated to comments. Not an abundance of format statements used in this subroutine, but of the ones there, several are used multiple times. Centralized location of format statements at the end of the routine would make it easier for the user to locate the first occurrence.

# DRAFT

TABLE C-5. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** ANTRK (rad3.f)**Module Type:** Function

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability			5
Criterion #2: Modifiability			5
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers		4	
Criterion #2: Use of formatted statements	N	N	N
Criterion #3: Logical I/O devices	N	N	N
Criterion #4: Variable declarations			5
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity			5
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations			5
Criterion #2: Use of library functions			5
Criterion #3: Nested computations			5
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management			5
Criterion #3: Use of COMMON blocks			5
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Roughly 36% of code dedicated to comments. Nice spacing and indenting. Easy to read, easy to modify. Antenna gain function parameter variable comment needs to be updated to match the code (C1-C8 in code, C1-C7 in comments). Definition of parameters passed via common blocks would be helpful.

# DRAFT

TABLE C-6. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** SPLGAT (rad3.f)**Module Type:** Function

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability			5
Criterion #2: Modifiability			5
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers			5
Criterion #2: Use of formatted statements	N	N	N
Criterion #3: Logical I/O devices	N	N	N
Criterion #4: Variable declarations			5
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity			5
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations			5
Criterion #2: Use of library functions			5
Criterion #3: Nested computations			5
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management			5
Criterion #3: Use of COMMON blocks			5
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Roughly 68% of code dedicated to comments. Nicely spaced and indented. Very readable and modifiable. All variables identified in comments except ones passed in via common statement (variables nicely named so clarity maintained).

# DRAFT

TABLE C-2. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** RSERVO (rad4.f)**Module Type:** Subroutine

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability			5
Criterion #2: Modifiability			5
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers		4	
Criterion #2: Use of formatted statements	N	N	N
Criterion #3: Logical I/O devices	N	N	N
Criterion #4: Variable declarations			5
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity			5
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations			5
Criterion #2: Use of library functions			5
Criterion #3: Nested computations			5
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management			5
Criterion #3: Use of COMMON blocks			5
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Roughly 50% of the code is dedicated to comments. Parameters passed in from common statements are not defined in comments. Omitted definition of variable EPS (small nonzero number used to prevent division by zero in calculations) in comments.

# DRAFT

TABLE C-7. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** MTITRK (rad5.f)**Module Type:** Function

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability			5
Criterion #2: Modifiability			5
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers		4	
Criterion #2: Use of formatted statements	N	N	N
Criterion #3: Logical I/O devices	N	N	N
Criterion #4: Variable declarations			5
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity			5
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations			5
Criterion #2: Use of library functions			5
Criterion #3: Nested computations	N	N	N
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management			5
Criterion #3: Use of COMMON blocks			5
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Roughly 65% of the code is dedicated to comments. While variable names are descriptive, several variables are not defined in comments, specifically PRIS, AMTI, MTITRK.

# DRAFT

TABLE C-8. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** BURST (gun30.f)**Module Type:** Subroutine

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability		4	
Criterion #2: Modifiability			5
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers		3	
Criterion #2: Use of formatted statements	N	N	N
Criterion #3: Logical I/O devices	N	N	N
Criterion #4: Variable declarations			5
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity		4	
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations			5
Criterion #2: Use of library functions			5
Criterion #3: Nested computations			5
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management			5
Criterion #3: Use of COMMON blocks			5
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Roughly 54% of the code is dedicated to comments. Several functions are not defined in comments (HYPOT, OPNFIR), and some variables, passed in via common blocks, are not defined in comments (MOVTYP, DISPER, DISP). To the uninitiated, this lack of description could lead to confusion.

# DRAFT

TABLE C-9. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** FCCOMP (gun23.f)**Module Type:** Subroutine

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability			5
Criterion #2: Modifiability			5
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers			5
Criterion #2: Use of formatted statements	N	N	N
Criterion #3: Logical I/O devices	N	N	N
Criterion #4: Variable declarations			5
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity			5
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations	N	N	N
Criterion #2: Use of library functions			5
Criterion #3: Nested computations	N	N	N
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management	1		
Criterion #3: Use of COMMON blocks	N	N	N
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: This subroutine consists of two lines of code. The first is a logical IF statement, the second is a call to another subroutine where by all of the variables listed in this subroutine are passed to the called subroutine. This subroutine could easily be eliminated by inserting applicable lines of code into the body of the calling program.

# DRAFT

TABLE C-10. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** KD (gun57.f)**Module Type:** Function

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability			5
Criterion #2: Modifiability			5
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers	1		
Criterion #2: Use of formatted statements	N	N	N
Criterion #3: Logical I/O devices	N	N	N
Criterion #4: Variable declarations			5
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity			5
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations			5
Criterion #2: Use of library functions			5
Criterion #3: Nested computations	N	N	N
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management			5
Criterion #3: Use of COMMON blocks	N	N	N
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Roughly 46% of the code is dedicated to comments. This is a very short routine. Still, variables should be explicitly defined in the comments. None of them are (AINDX, MACH, FACT, INDX, KD, KDS).

# DRAFT

TABLE C-11. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** NOISE (greem.f)**Module Type:** Subroutine

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability			5
Criterion #2: Modifiability		4	
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers		3	
Criterion #2: Use of formatted statements	N	N	N
Criterion #3: Logical I/O devices	N	N	N
Criterion #4: Variable declarations		4	
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity		4	
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations			5
Criterion #2: Use of library functions			5
Criterion #3: Nested computations			5
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management		4	
Criterion #3: Use of COMMON blocks			5
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Roughly 41% of the code is dedicated to comments. Several of the variables passed via common statements are not defined in the comments (FIRSTR, JXCLAS, PI, PRI, RDRBW, TWOPI). Several of the variables passed through the calling statement are not defined (II, JAMRG, JAMPTR, JAMSRC, JAMNUM), and one function (CIRCLE) is not defined in the comments. JAMNUM was passed through the calling statement and declared to be a vector of length 30. This array variable is not used in the algorithm. This is a short routine with well chosen variable names, indentation, and spacing.

# DRAFT

TABLE C-12. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** SWEPTA (gun57.f)**Module Type:** Subroutine

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability			5
Criterion #2: Modifiability		4	
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers		3	
Criterion #2: Use of formatted statements	N	N	N
Criterion #3: Logical I/O devices	N	N	N
Criterion #4: Variable declarations		4	
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity		4	
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations			5
Criterion #2: Use of library functions			5
Criterion #3: Nested computations			5
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management		4	
Criterion #3: Use of COMMON blocks			5
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Roughly 37% of the code is dedicated to comments. Several of the variables passed via common statements are not defined in the comments (FIRSTR, JXCLAS, PI, PRI, RDRBW, TWOPI). Several of the variables passed through the calling statement are not defined (II, JAMRG, JAMPTR, JAMSRC, JAMNUM), and one function (CIRCLE) is not defined in the comments. JAMNUM was passed in through the calling statement and declared to be a vector of length 30. This array variable was not used in the algorithm. This is a short routine with well chosen variable names, indentation, and spacing.

# DRAFT

TABLE C-13. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** FCCOM1 (rggun.f)**Module Type:** Subroutine

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability		4	
Criterion #2: Modifiability			5
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers		3	
Criterion #2: Use of formatted statements	N	N	N
Criterion #3: Logical I/O devices	N	N	N
Criterion #4: Variable declarations			5
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity		4	
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations			5
Criterion #2: Use of library functions			5
Criterion #3: Nested computations			5
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management		4	
Criterion #3: Use of COMMON blocks			5
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Several variables in the common blocks (FCCSET, OPTOUT, VELMUZ) as well as several other variables used in the subroutine (ACCEL, ALAST, TEMP, STEP, DELTAT, SHELL, TLAST, B HOLD, ITP, FALL1, FALL2, CAM1, CAM2, CAM, FCCSET) are not specified in the comments. A description of the called functions and subroutines (FIL2AB, PHIDEL) would be useful. When calculating the predicted target position, there are two lines (one commented out and one not) which calculate DRIVE(2,I). It is assumed that the user would comment or uncomment the appropriate calculation based on the specific case instance. This is poor practice. Choices should be made by the user in the input parameter files, they should not have to alter the code to make their runs.

# DRAFT

TABLE C-14. *RADGUNS* v.2.0 Software Analysis Worksheet.

**Module Name:** SHOOT (rgrun.f)

**Module Type:** Subroutine

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability		4	
Criterion #2: Modifiability			5
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers		3	
Criterion #2: Use of formatted statements			5
Criterion #3: Logical I/O devices			5
Criterion #4: Variable declarations			5
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity		4	
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations			5
Criterion #2: Use of library functions			5
Criterion #3: Nested computations			5
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management		4	
Criterion #3: Use of COMMON blocks			5
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Roughly 22% of the code is dedicated to comments. Most of the common block variables are not defined in the comments (CALIBR, FIRST, IVUON, RNDINC, NBRLS, OPTOUT, PHIT, PHBUR, PHCUM, PKIL1, PK1BUR, PK1CUM, PKIL2, PK2BUR, PK2CUM, PKIL3, PK3BUR, PK3CUM, PKIL4, PK4BUR, PK4CUM, PRTSHT, RGMAX, SAVFIR, TWOPI). Several variables are not defined in the comments (GUNDIS, CNTSHL, LASTTP, TARG1, LSHLL, LASTTP, XOFS, YOFS, ZOFS, POSAZ, IGUN, DPT2, DPT3, ELVFAC, ELVIDX, X1, Z1, X3, Z3, DPT1, I1, IMID, X2, XSH1, YSH1, XSH2, YSH2). Changes made for the IVIEW option is added by TSM and BWO. This leads one to believe these were not configuration managed. Baseline code should not have changes identified by a modifier.

# DRAFT

TABLE C-15. *RADGUNS* v.2.0 Software Analysis Worksheet.

**Module Name:** RGINP18 (rginp20.f)      **Module Type:** Subroutine

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability			5
Criterion #2: Modifiability			5
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers			5
Criterion #2: Use of formatted statements			5
Criterion #3: Logical I/O devices			5
Criterion #4: Variable declarations			5
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity			5
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations	N	N	N
Criterion #2: Use of library functions			5
Criterion #3: Nested computations	N	N	N
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management			5
Criterion #3: Use of COMMON blocks			5
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Roughly 27% of the code is dedicated to comments. All variables are defined at the beginning of the subroutine.

# DRAFT

TABLE C-16. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** CHKTRK (rgio.f)**Module Type:** Subroutine

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability		4	
Criterion #2: Modifiability			5
Criterion #3: ANSI standards		4	
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers		4	
Criterion #2: Use of formatted statements		3	
Criterion #3: Logical I/O devices			5
Criterion #4: Variable declarations			5
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity		4	
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations	N	N	N
Criterion #2: Use of library functions			5
Criterion #3: Nested computations	N	N	N
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management			5
Criterion #3: Use of COMMON blocks			5
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Roughly 16% of the code is dedicated to comments. Not all variables are defined in the comments (LOKTYP, PRTPAR, TRKNAM, TRKNM). Format statements are not grouped at the end of the code and are not numerically arranged by order of appearance. The subroutine uses several exit points based on parameter values.

# DRAFT

TABLE C-17. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** EVENT (rgio.f)**Module Type:** Subroutine

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability		3	
Criterion #2: Modifiability			5
Criterion #3: ANSI standards		4	
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers			5
Criterion #2: Use of formatted statements		4	
Criterion #3: Logical I/O devices			5
Criterion #4: Variable declarations			5
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity			5
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations	N	N	N
Criterion #2: Use of library functions			5
Criterion #3: Nested computations	N	N	N
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management		4	
Criterion #3: Use of COMMON blocks		4	
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Roughly 30% of the code is dedicated to comments. Several variables are not defined in comments (FIRST, GUNON, IVUON, MESJAM, MESSGM MTREP, MTRUN, PRTCOD, SIMTYP). Several common block variables are not used by the subroutine (RNDINC, PRTCOD, SIMTYP). Format statements are scattered and are not arranged by order of appearance. Modifier-identified code changes indicate poor CM practice.

# DRAFT

TABLE C-18. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** PDET (rgdet.f)**Module Type:** Subroutine

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability			5
Criterion #2: Modifiability			5
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers		4	
Criterion #2: Use of formatted statements	N	N	N
Criterion #3: Logical I/O devices	N	N	N
Criterion #4: Variable declarations			5
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity			5
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations			5
Criterion #2: Use of library functions			5
Criterion #3: Nested computations			5
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management			5
Criterion #3: Use of COMMON blocks			5
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Roughly 21% of the code is dedicated to comments. The subroutine is described as calculating the probability of detection when in fact it determines the beamwidth power and calls a subroutine to calculate the probability of detection based on the beamwidth power and other parameters.

# DRAFT

TABLE C-19. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** DGAM (rgdet.f)**Module Type:** Function

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability		3	
Criterion #2: Modifiability		4	
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers	N	N	N
Criterion #2: Use of formatted statements	N	N	N
Criterion #3: Logical I/O devices			5
Criterion #4: Variable declarations			5
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity		3	
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations			5
Criterion #2: Use of library functions			5
Criterion #3: Nested computations			5
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management			5
Criterion #3: Use of COMMON blocks	N	N	N
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Roughly 2% of the code is dedicated to comments. No description of variables or overall purpose of the routine is given.

# DRAFT

TABLE C-20. *RADGUNS* v.2.0 Software Analysis Worksheet.

**Module Name:** OPLEA1 (rgsensor.f)      **Module Type:** Subroutine

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability		4	
Criterion #2: Modifiability			5
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers		4	
Criterion #2: Use of formatted statements	N	N	N
Criterion #3: Logical I/O devices	N	N	N
Criterion #4: Variable declarations			5
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity			5
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations			5
Criterion #2: Use of library functions			5
Criterion #3: Nested computations			5
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management			5
Criterion #3: Use of COMMON blocks			5
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Roughly 22% of the code is dedicated to comments. Some of the variables are not identified in the comments (FIRST, LOKTYP, SAVFIR, VELMUZ, TARAZ, TAREL, TARRG).

# DRAFT

TABLE C-21. *RADGUNS* v.2.0 Software Analysis Worksheet.

**Module Name:** SPDRNG (rgsensor.f)      **Module Type:** Subroutine

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability		4	
Criterion #2: Modifiability		4	
Criterion #3: ANSI standards		4	
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers		4	
Criterion #2: Use of formatted statements	N	N	N
Criterion #3: Logical I/O devices	N	N	N
Criterion #4: Variable declarations			5
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity		4	
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations			5
Criterion #2: Use of library functions			5
Criterion #3: Nested computations			5
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management		3	
Criterion #3: Use of COMMON blocks		4	
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Roughly 29% of the code is dedicated to comments. Some variables are not identified in the comments (FIRST, LOKTYP, PI, RGMAX, SAVFIR). Several of the common block variables are not used by the subroutine (XMIS, YMIS, ZMIS, MAXAZA, MAXAZV, MAXELA, MAXELV, MINEL, MAXEL).

# DRAFT

TABLE C-22. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** AZDIFF (rgutil.f)**Module Type:** Function

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability			5
Criterion #2: Modifiability			5
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers		4	
Criterion #2: Use of formatted statements	N	N	N
Criterion #3: Logical I/O devices	N	N	N
Criterion #4: Variable declarations			5
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity			5
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations			5
Criterion #2: Use of library functions			5
Criterion #3: Nested computations	N	N	N
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management			5
Criterion #3: Use of COMMON blocks			5
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Roughly 12% of the code is dedicated to comments. This is a short routine with minimal computation. None of the few variables are defined in the comments.

# DRAFT

TABLE C-23. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** CLUTG (rgutil.f)**Module Type:** Function

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability		4	
Criterion #2: Modifiability			5
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers		4	
Criterion #2: Use of formatted statements		3	
Criterion #3: Logical I/O devices			5
Criterion #4: Variable declarations			5
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity		4	
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations			5
Criterion #2: Use of library functions			5
Criterion #3: Nested computations			5
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management			5
Criterion #3: Use of COMMON blocks			5
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Roughly 21% of the code is dedicated to comments. Some of the common block variables are not defined in the comments (CLUTYP, HALFPI, HILLON, ISEAST, LNDCVR, LNDFRM, PHICRT, TERAİN, TWOPI, WNDASP). There appears to be several areas where the user needs to modify the code to obtain the desired simulation results based on specific parameters selected. The code should not require the user to modify it in order to make simulation runs. Output data are not formatted.

# DRAFT

TABLE C-24. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** HITPRB (rgutil.f)**Module Type:** Subroutine

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability		4	
Criterion #2: Modifiability			5
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers			5
Criterion #2: Use of formatted statements		4	
Criterion #3: Logical I/O devices			5
Criterion #4: Variable declarations			5
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity			5
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations			5
Criterion #2: Use of library functions			5
Criterion #3: Nested computations			5
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management			5
Criterion #3: Use of COMMON blocks			5
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Roughly 23% of the code is dedicated to comments. Some of the common block variables are not defined in the comments (FCCORN, FIRST, XMIS, YMIS, ZMIS, AZMIS, ELMIS, MVUON, OPTOUT, TRKERR, TWOPI). Format statements are scattered throughout the code rather than located at the end of the routine.

# DRAFT

TABLE C-25. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** ORIENT (rgutil.f)**Module Type:** Subroutine

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability			5
Criterion #2: Modifiability			5
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers		4	
Criterion #2: Use of formatted statements	N	N	N
Criterion #3: Logical I/O devices	N	N	N
Criterion #4: Variable declarations			5
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity			5
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations			5
Criterion #2: Use of library functions			5
Criterion #3: Nested computations	N	N	N
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management		4	
Criterion #3: Use of COMMON blocks		4	
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Roughly 37% of the code is dedicated to comments. Some variables are not defined in the comments (LUBM, NFBM, TARGIN, BULOFF, BULFIL, MOVTYI, MOV TYP, OPTOUT, PI, SIMTYP). Some of the common block variables are not used in the subroutine (LUBM, NFBM, BULOFF, BULFIL).

# DRAFT

TABLE C-26. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** SRCH1 (rgutil.f)**Module Type:** Subroutine

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability			5
Criterion #2: Modifiability			5
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers		4	
Criterion #2: Use of formatted statements		4	
Criterion #3: Logical I/O devices			5
Criterion #4: Variable declarations			5
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity			5
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations			5
Criterion #2: Use of library functions			5
Criterion #3: Nested computations			5
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management		4	
Criterion #3: Use of COMMON blocks		4	
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Roughly 28% of the code is dedicated to comments. Some variables are not defined (DETTYP, ECHO, BLDRPM, BLNTH, SIGMAB, NBLASE, DOPTRK, HILLON, MTRUN, OPTOUT, RDRSYS, SCHPAT, SIMTYP, TWOPI, WPNMOV). Some common block variables are not used in the subroutine (BLDRPM, BLNTH).

# DRAFT

TABLE C-27. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** LEGDY (radgraf.f)**Module Type:** Subroutine

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability			5
Criterion #2: Modifiability			5
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers		4	
Criterion #2: Use of formatted statements	N	N	N
Criterion #3: Logical I/O devices	N	N	N
Criterion #4: Variable declarations			5
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity			5
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations	N	N	N
Criterion #2: Use of library functions			5
Criterion #3: Nested computations			5
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management		4	
Criterion #3: Use of COMMON blocks		4	
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Roughly 13% of the code is dedicated to comments. Some variables are not defined and are not used by the subroutine (CRSAX, KCRVE, REGRPH, SCURVE).

# DRAFT

TABLE C-28. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** MYSPEC**Module Type:** Subroutine

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability			5
Criterion #2: Modifiability			5
Criterion #3: ANSI standards			5
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers		4	
Criterion #2: Use of formatted statements	N	N	N
Criterion #3: Logical I/O devices	N	N	N
Criterion #4: Variable declarations			5
Criterion #5: Variable initialization			5
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity			5
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations			5
Criterion #2: Use of library functions			5
Criterion #3: Nested computations	N	N	N
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability			5
Criterion #2: Memory management		4	
Criterion #3: Use of COMMON blocks		4	
Criterion #4: Modularity			5
Criterion #5: Subroutine tractability			5

Notes: Roughly 4% of the code is dedicated to comments. One of the common block variables is not used by the subroutine (JCRVE). None of the variables are described in the comments.

# DRAFT

TABLE C-29. *RADGUNS* v.2.0 Software Analysis Worksheet.**Module Name:** rgdime.f**Module Type:** Program

Criterion	Poor Practice	Acceptable	Excellent
<b>MOE #1 - Use of Standards:</b>			
Criterion #1: Readability		3	
Criterion #2: Modifiability		3	
Criterion #3: ANSI standards	1		
<b>MOE #2 - Programming Conventions:</b>			
Criterion #1: Use of comments and headers		3	
Criterion #2: Use of formatted statements	1		
Criterion #3: Logical I/O devices	1		
Criterion #4: Variable declarations	1		
Criterion #5: Variable initialization	1		
Criterion #6: Variable naming conventions			5
Criterion #7: Algorithm clarity		3	
<b>MOE #3 - Computational Efficiency:</b>			
Criterion #1: Mixed mode calculations		3	
Criterion #2: Use of library functions		3	
Criterion #3: Nested computations		3	
<b>MOE #4 - Maintainability:</b>			
Criterion #1: Portability	1		
Criterion #2: Memory management	1		
Criterion #3: Use of COMMON blocks	1		
Criterion #4: Modularity	1		
Criterion #5: Subroutine tractability	1		

Notes: Roughly 13% of the code is dedicated to comments. This program is a “work in progress”. It is a place holder for a collection of unfinished subroutines to add an ACES/PHOENIX capability to *RADGUNS*. None of the subroutines is in a completed form or are even documented in the Methodology and Design Manual. Experimental or developmental code should not be included in a baseline operational version of the simulation.

