

# NAG Library Routine Document

## E04NSF

**Note:** before using this routine, please read the Users' Note for your implementation to check the interpretation of *bold italicised* terms and other implementation-dependent details.

### 1 Purpose

E04NSF may be used to supply individual optional parameters to E04NQF. The initialization routine E04NPF **must** have been called before calling E04NSF.

### 2 Specification

```
SUBROUTINE E04NSF (STRING, CW, IW, RW, IFAIL)
```

```
INTEGER          IW(*), IFAIL
REAL (KIND=nag_wp) RW(*)
CHARACTER(*)     STRING
CHARACTER(8)     CW(*)
```

### 3 Description

E04NSF may be used to supply values for optional parameters to E04NQF. It is only necessary to call E04NSF for those parameters whose values are to be different from their default values. One call to E04NSF sets one parameter value.

Each optional parameter is defined by a single character string, of up to 72 characters, consisting of one or more items. The items associated with a given option must be separated by spaces, or equals signs [=]. Alphabetic characters may be upper or lower case. The string

```
Print Level = 1
```

is an example of a string used to set an optional parameter. For each option the string contains one or more of the following items:

- a mandatory keyword;
- a phrase that qualifies the keyword;
- a number that specifies an integer or real value. Such numbers may be up to 16 contiguous characters in Fortran's I, F, E or D formats, terminated by a space if this is not the last item on the line.

For E04NSF, each user-specified option is not normally printed as it is defined, but this printing may be turned on using the keyword **List**. Thus the statement

```
CALL E04NSF ('List', CW, IW, RW, IFAIL)
```

turns on printing of this and subsequent options. Printing may be turned off again using the keyword **Nolist**.

Optional parameter settings are preserved following a call to E04NQF and so the keyword **Defaults** is provided to allow you to reset all the optional parameters to their default values before a subsequent call to E04NQF.

A complete list of optional parameters, their abbreviations, synonyms and default values is given in Section 11 in E04NQF.

### 4 References

None.

## 5 Parameters

- 1: STRING – CHARACTER(\*) *Input*  
*On entry:* a single valid option string (see Section 3 in E04NSF and Section 11 in E04NQF).
- 2: CW(\*) – CHARACTER(8) array *Communication Array*  
**Note:** the dimension of the array CW must be at least LENCW (see E04NPF).
- 3: IW(\*) – INTEGER array *Communication Array*  
**Note:** the dimension of the array IW must be at least LENIW (see E04NPF).
- 4: RW(\*) – REAL (KIND=nag\_wp) array *Communication Array*  
**Note:** the dimension of the array RW must be at least LENRW (see E04NPF).
- 5: IFAIL – INTEGER *Input/Output*  
*On entry:* IFAIL must be set to 0, -1 or 1. If you are unfamiliar with this parameter you should refer to Section 3.3 in the Essential Introduction for details.  
 For environments where it might be inappropriate to halt program execution when an error is detected, the value -1 or 1 is recommended. If the output of error messages is undesirable, then the value 1 is recommended. Otherwise, if you are not familiar with this parameter, the recommended value is 0. **When the value -1 or 1 is used it is essential to test the value of IFAIL on exit.**  
*On exit:* IFAIL = 0 unless the routine detects an error or a warning has been flagged (see Section 6).

## 6 Error Indicators and Warnings

If on entry IFAIL = 0 or -1, explanatory error messages are output on the current error message unit (as defined by X04AAF).

Errors or warnings detected by the routine:

IFAIL = 1

The initialization routine E04NPF has not been called.

IFAIL = 2

The supplied option is invalid. Check that the keywords are neither ambiguous nor misspelt.

## 7 Accuracy

Not applicable.

## 8 Further Comments

E04NRF, E04NTF or E04NUF may also be used to supply optional parameters to E04NQF.

## 9 Example

See Section 9 in E04NRF.