



# **MEPS+ and New CAS Specification for Interface to MAS eApps System**

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# MEPS+ and New CAS Specification for Interface to MAS eApps System

## Assignment

Task No.	Task Name	Assigned To
1	MEPS+ and New CAS Specification for Interface to MAS eApps System	Ng Ee Siew

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28 May 2004	Ng Ee Siew	1.3	Revised version for MAS' signoff, incorporating MAS' comments.
3 Jun 2004	Ng Ee Siew	1.4	Revised version for MAS' signoff, incorporating MAS' comments.
2 Jul 2004	Ng Ee Siew	1.5	Revised version to include new MAS requirement.
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## 1. SGS Interfaces With e-Apps

### 1.1 Requirement

At a designated time, upon manual triggering, the MEPS+ SGS will send details of issuance or re-opening of ISINs, or step-up coupon rates to the e-Apps /Savings Bonds. The e-Apps will also send the daily closing prices file containing the MLA prices, ILF prices and closing yields of the ISINs. The e-Apps / Savings Bonds will send back the auctions results to the MEPS+ SGS. After receiving the auction results, the MEPS+ SGS will validate the information and prepare the allotment records.

The e-Apps / Savings Bonds will also send file containing partial redemption requests to MEPS+ SGS. MEPS+ SGS upon successful validation of the file will store the requests, for the redemption of the ISIN on the specified redemption date.

The MEPS+ SGS also provides an end-of-day batch interface to send the daily ISIN updates and Bank List to the e-Apps.

An Interface report (SGBP0901) will be generated each time MEPS+ SGS received and processed a file from the e-Apps and also at the EOD batch job.

The following table depicts the interface interaction between the MEPS+ New CAS with the eApps System:

S/No.	Filename	File Description	Mode of Processing	From	To
1.	secmast.txt	New issuance or Re-opening of ISIN's	Upon triggered manually via function on screen.	SGS	eApps / Savings Bonds
2.	secupdt.txt	ISIN Summary after auctions	Online	eApps	SGS
3.	secint.txt	Daily ISIN update	EOD	SGS	eApps / Savings Bonds
4.	auction.txt	Bank Auction Details	Online	eApps	SGS
5.	bank.txt	Daily Bank List	EOD	SGS	eApps
6.	masrepo.txt <sup>1</sup>	MAS Repo Transaction Details	Online	eApps	SGS
7.	closingprice.txt	Closing Prices of the ISIN's.	Online	eApps	SGS
8.	auction_sbond.txt	Savings Bonds auction results	Online	eApps / Savings Bonds	SGS
9.	couponrates_sbond.txt	Step-up coupon rates	Upon manual	SGS	eApps / Savings

<sup>1</sup> Currently eApps will not send 'masrepo.txt' file to MEPS+ SGS.

S/No.	Filename	File Description	Mode of Processing	From	To
		for Savings Bonds	trigger via screen function		Bonds
10.	rdmpartial_sbond.txt	Partial redemption requests for Savings Bonds	Online	eApps / Savings Bonds	SGS
11.	meps_sora_index.txt	Daily SORA Index (Singapore Overnight Rate Average)	Online	eApps System	SGS

## 1.2 Communication Channel

Interface with the E-Apps is via WMQ to WMQ. The MEPS+ SGS will need to define

- 1 transmission queues for sending new or re-open issuance information, bank list and daily security update to eApps.
- 1 receiving queues for receiving closing price information.
- 1 receiving queues for receiving bank auction results for conventional SGS, ISIN summary after auction, auction results for savings bonds, partial redemption requests for savings bonds and MAS repo facility.

MAS' MQ queue names and the corresponding MEPS+ queue names are the same and they are as follows:

- Closing Price queue:  
MSAB.SABMNEAP.MNET2MEPS
- Auction result, auction security update, MAS Repo queue, auction result for savings bonds, partial redemption requests for savings bonds, daily SORA Index:  
MSAB.SABAUEAP.SGS2MEPS
- New/reopening ISIN, daily ISIN update, Bank list queue, Step-up coupon rates for savings bonds:  
MSAB.SABMNEAP.MEPS2MNET

### 1.3 Processing Requirement for MQ Listener

The Interface MQ Listener will be activated depending on the Start of Day and End of Day process start up scripts in the MEPS+ SGS system.

- When the Start Of Day start up script is executed, the Job Controller will be brought up. This will also **bring up** the eApps interface MQ listener.
- When the Job Controller is brought down for End Of Day backup, the eApps interface MQ listener will be brought **down**.
- When the End of Day start up script is executed, the Job Controller will be brought up but it **will not bring up** the eApps interface MQ listener.
- When the Job Controller is brought down for after End Of Day backup, there is no impact to the status of the eApps interface MQ listener (i.e. remain **down**).

The MEPS+ SGS system will process interface detail from eApps /Savings Bonds as long as the MQ listeners are up.

## 1.4 New Issuance or Re-opening of ISINs

### 1.4.1 Format

S/N	Field Name	Format	Position		Remarks
			Fr	To	
1.	ISSUE_CODE	X(8)	1	8	E.g. NX00100H
2.	ISSUE_NO	9(2)	9	10	01 for new issuance 02 – 99 for re-opening
3.	ISSUE_TYPE	X(1)	11	11	Value is always space.
4.	CURR	X(3)	12	14	Value 'SGD'
5.	ISSUE_DESC	X(30)	15	44	Description of ISIN
6.	ISSUE_DATE	X(8)	45	52	YYYYMMDD
7.	TENDER_DATE	X(8)	53	60	YYYYMMDD
8.	QTY_OFFERED	9(13)	61	73	Total nominal amount for auction
9.	QTY_APPLIED	9(13)	74	86	
10.	AVE_YIELD	9(3)v9(2)	87	91	
11.	CUT_OFF_YIELD	9(3)v9(2)	92	96	
12.	MATURITY_DATE	X(8)	97	104	YYYYMMDD
13.	PERCENT_COY	9(3)v9(2)	105	109	
14.	PERCENT_SUB	9(3)v9(2)	110	114	
15.	NC_PERCENT	9(3)v9(2)	115	119	
16.	NC_QTY_ALLOT	9(13)	120	132	
17.	INT_RATE	9(3)v9(4)	133	139	Contain zeroes for new ISIN. Contain coupon rate for re-open ISIN.
18.	TAX_STATUS	X(1)	140	140	Y or N
19.	CUT_OFF_YIELD_PRICE	9(3)v9(4)	141	147	
20.	AVE_YIELD_PRICE	9(3)v9(4)	148	154	
21.	CLOSING_PRICE	9(3)v9(4)	155	161	
22.	ISIN_CODE	X(12)	162	173	
23.	TENOR	9(3)	174	176	For T-Bills/M-Bills, will be in day(s) For SGS Bonds and Savings Bonds, will be in year(s) For MAS FRN Bonds, will be in month(s)
24.	ETENDER_IND	X(1)	177	177	'Y' if ISSUE_DATE>14012002
25.	MAS_APPLIED	9(13)	178	190	
26.	MAS_ALLOTTED	9(13)	191	203	
27.	INT_PAID_IND	X(1)	204	204	
28.	LAST_INT_DATE	X(8)	205	212	YYYYMMDD
29.	NEXT_INT_DATE	X(8)	213	220	YYYYMMDD
30.	ACCRUED_INT_DAYS	9(3)	221	223	000
31.	INT_DATE1	9(4)	224	227	MMDD

<b>S/N</b>	<b>Field Name</b>	<b>Format</b>	<b>Position</b>		<b>Remarks</b>
			<b>Fr</b>	<b>To</b>	
32.	INT_DATE2	9(4)	228	231	MMDD
33.	EX_INT_DATE	X(8)	232	239	YYYYMMDD

- Unused area will be padded with leading zeroes or spaces accordingly.
- '9' denotes field having numeric value(s).
- 'X' denotes field having alphanumeric value(s).
- For Tbills, the fields filled will be up to number 26 and for, Bonds and Savings Bonds, up to number 33.

#### **1.4.2 Field Definitions**

1. ISSUE\_CODE
  - i) Example of the code: NX00100H.
2. ISSUE\_NO
  - i) The field will contain value from 01 to 99.
  - ii) For new issuance, the number will be 01.
  - iii) Number 02 to 99 is used for re-openings.
  - iv) If number of re-openings exceeds 98 times, maximum number allowed (99) will be used instead.
3. ISSUE\_TYPE
  - i) Value will always be a space.
4. CURR
  - i) Value will always be 'SGD'.
5. ISSUE\_DESC
  - i) This will contain the ISIN description.
6. ISSUE\_DATE
  - i) Should be 8 digits. The format is YYYYMMDD. This is also known as allotment date.
7. TENDER\_DATE
  - i) Should be 8 digits. The format is YYYYMMDD. This is also known as auction date.
8. QTY\_OFFERED
  - i) This will contain the total nominal amount for the auction.
9. QTY\_APPLIED
  - i) For SGS's interface to eApps, value will always be zeroes.
10. AVE\_YIELD
  - i) For SGS's interface to eApps, value will always be zeroes.
11. CUT\_OFF\_YIELD
  - i) For SGS's interface to eApps, value will always be zeroes.

**12. MATURITY\_DATE**

- i) Should be 8 digits. The format is YYYYMMDD.
- ii) If an optional maturity date has been specified by the User, the value will be used for this field. Else the original maturity date will be used.

**13. PERCENT\_COY**

- i) For SGS's interface to eApps, value will always be zeroes.

**14. PERCENT\_SUB**

- i) For SGS's interface to eApps, value will always be zeroes.

**15. NC\_PERCENT**

- i) For SGS's interface to eApps, value will always be zeroes.

**16. NC\_QTY\_ALLOT**

- i) For SGS's interface to eApps, value will always be zeroes.

**17. INT\_RATE**

- i) For new issuance, value will always be zeroes.
- ii) For re-opening, this will contain the ISIN coupon rate.

**18. TAX\_STATUS**

- i) Value is either 'Y' or 'N'.

**19. CUT\_OFF\_YIELD\_PRICE**

- i) For SGS's interface to eApps, value will always be zeroes.

**20. AVE\_YIELD\_PRICE**

- i) For SGS's interface to eApps, value will always be zeroes.

**21. CLOSING\_PRICE**

- i) For SGS's interface to eApps, value will always be zeroes.

**22. ISIN\_CODE**

- i) This will contain the ISIN Code for the SGS issue.

**23. TENOR**

- i) For SGS Bonds, the value will be defined in years.
- ii) For Treasury Bills and MAS Bills, the value will be defined in days.
- iii) For MAS FRN Bonds, the value will be defined in months.

**24. ETENDER\_IND**

- i) Value is 'Y' if the ISSUE\_DATE is greater than 14012002.

**25. MAS\_APPLIED**

- i) This will contain the MAS Applied amount.

**26. MAS\_ALLOTTED**

- i) For SGS's interface to eApps, value will always be zeroes.

**27. INT\_PAID\_IND**

- i) This field will be appended only for Bonds (SGS Bonds, and MAS FRN Bonds).

**28. LAST\_INT\_DATE**

- i) This field will be appended only for Bonds (SGS Bonds, and MAS FRN Bonds).
- ii) Should be 8 digits. The format is YYYYMMDD.
- iii) This will contain the last Coupon payment date. For new issuance, this will contain the issue date.

**29. NEXT\_INT\_DATE**

- i) This field will be appended only for Bonds (SGS Bonds, and MAS FRN Bonds).
- ii) Should be 8 digits. The format is YYYYMMDD.
- iii) This will contain the next Coupon payment date. For new issuance, this will contain the 1<sup>st</sup> coupon payment date.

**30. ACCRUED\_INT\_DAYS**

- i) This field will be appended only for Bonds (SGS Bonds, and MAS FRN Bonds).
- ii) For new issuance, value will always be zeroes.

**31. INT\_DATE1**

- i) This field will be appended only for Bonds (SGS Bonds, and MAS FRN Bonds).
- ii) Should be 4 digits. The format is MMDD.

**32. INT\_DATE2**

- i) This field will be appended only for Bonds (SGS Bonds, and MAS FRN Bonds).
- ii) Should be 4 digits. The format is MMDD.

**33. EX\_INT\_DATE**

- i) This field will be appended only for Bonds (SGS Bonds, and MAS FRN Bonds).
- ii) Should be 8 digits. The format is YYYYMMDD.
- iii) For bonds, this will contain the next ex-date for the ISIN, which is defined by the SGS system using the ex-date period defined by MAS and the next interest payment date.

### 1.4.3 Processing Requirement

The MEPS+ SGS will extract new or re-opening ISINs (if any) upon triggered and create a file containing the extracted information. This file, named 'secmast.txt' will then be placed in the WMQ to be sent to the eApps.

User can use the Utility function in MEPS+ SGS to trigger the sending of new issuance or re-opening of ISINs (if any) manually. The triggering can be done repeatedly as long as the issuance of the ISINs is not allotted yet.

During contingency, user can also download the 'secmast.txt' last generated by the system through the Manual Contingency function in MEPS+ SGS.

Note: The automatic daily extraction during the EOD batch job is disabled upon MAS' request (refer to log item S-M0012). The recommencing of this feature should be discussed together with the change request for handling MLA prices for new ISIN.

#### 1.4.3.1 Formula for calculating Tenor

For SGS bonds and Savings Bonds,

#NUM-YEARS = days between maturity date and issue date divided by 365

```

IF #NUM-YEARS >= 0 AND #NUM-YEARS < 3.0
    TENOR = 2
ELSE IF #NUM-YEARS >= 3.0 AND #NUM-YEARS < 7.5
    TENOR = 5
ELSE IF #NUM-YEARS >= 7.5 AND #NUM-YEARS < 12.5
    TENOR = 10
ELSE IF #NUM-YEARS >= 12.5 AND #NUM-YEARS < 17.5
    TENOR = 15
ELSE IF #NUM-YEARS >= 17.5 AND #NUM-YEARS < 25.0
    TENOR = 20
ELSE IF #NUM-YEARS >= 25.0 AND #NUM-YEARS < 35.0
    TENOR = 30
ELSE IF #NUM-YEARS >= 35.0 AND #NUM-YEARS < 45.0
    TENOR = 40
ELSE
    TENOR = 50 (for anything that does not fall in the ranges specified above)

```

For MAS FRN bonds,

TENOR = #NUM-MONTHS (days between maturity date and issue date divided by (no. of days in a year/12))

For T-Bills and M-Bills,

TENOR = #NUM-DAYS (days between maturity date and issue date divided by 7)

If tenor calculated exceeds 3 digits, the particular ISIN record will be excluded from the interface file. An alert message "Tenor for <ISIN Code: Issue Code> exceeded 3 digits" will be sent to the TEC.

#### 1.4.3.2 Computation for Coupon Payment Date

The calculation or formula for deriving the following fields will be based on the issuance or re-issuance date of the ISIN.

1. INT\_PAID\_IND
2. LAST\_INT\_DATE
3. NEXT\_INT\_DATE
4. ACCRUED\_INT\_DAYS
5. INT\_DATE1
6. INT\_DATE2
7. EX\_INT\_DATE

The algorithm for deriving the results for the above fields, please refer to the "New CAS and MEPS+ SGS Functional Specifications", Section 3.9.1 "Interface with the SGS Electronic Applications System (eApps)".

## 1.5 ISIN Summary After Auction

### 1.5.1 Format

S/N	Field Name	Format	Position		Remarks
			Fr	To	
1.	ISSUE_CODE	X(8)	1	8	E.g. NX00100H
2.	ISSUE_NO	9(2)	9	10	01 for new issuance 02 – 99 for re-opening
3.	ISSUE_TYPE	X(1)	11	11	Value is always space
4.	CURR	X(3)	12	14	Value 'SGD'
5.	ISSUE_DESC	X(30)	15	44	Description of ISIN
6.	ISSUE_DATE	X(8)	45	52	YYYYMMDD
7.	TENDER_DATE	X(8)	53	60	YYYYMMDD
8.	QTY_OFFERED	9(13)	61	73	Total nominal amount for auction
9.	QTY_APPLIED	9(13)	74	86	
10.	AVE_YIELD	S9(3)v9(2)	87	92	Average Yield with +/- sign
11.	CUT_OFF_YIELD	S9(3)v9(2)	93	98	Cutoff Yield with +/- sign
12.	MATURITY_DATE	X(8)	99	106	YYYYMMDD
13.	PERCENT_COY	9(3)v9(2)	107	111	
14.	PERCENT_SUB	9(3)v9(2)	112	116	
15.	NC_PERCENT	9(3)v9(2)	117	121	
16.	NC_QTY_ALLOT	9(13)	122	134	
17.	INT_RATE	9(3)v9(4)	135	141	Contain zeroes for new ISIN. Contain coupon rate for re-open ISIN.
18.	TAX_STATUS	X(1)	142	142	Y or N
19.	CUT_OFF_YIELD_PRICE	9(3)v9(4)	143	149	
20.	AVE_YIELD_PRICE	9(3)v9(4)	150	156	
21.	CLOSING_PRICE	9(3)v9(4)	157	163	
22.	ISIN_CODE	X(12)	164	175	
23.	TENOR	9(3)	176	178	For T-Bills/M-Bills, will be in day(s) For SGS Bonds and Savings Bonds, will be in year(s) For MAS FRN Bonds, will be in month(s)
24.	ETENDER_IND	X(1)	179	179	'Y' if ISSUE_DATE>14012002
25.	MAS_APPLIED	9(13)	180	192	
26.	MAS_ALLOTTED	9(13)	193	205	
27.	INT_PAID_IND	X(1)	206	206	
28.	LAST_INT_DATE	X(8)	207	214	YYYYMMDD
29.	NEXT_INT_DATE	X(8)	215	222	YYYYMMDD
30.	ACCRUED_INT_DAYS	9(3)	223	225	000
31.	INT_DATE1	9(4)	226	229	MMDD

32.	INT_DATE2	9(4)	230	233	MMDD
33.	EX_INT_DATE	X(8)	234	241	YYYYMMDD

- ‘9’ denotes field having numeric value(s). Unused area will be padded with leading zeroes.
- ‘X’ denotes field having alphanumeric value(s). Unused area will be padded with trailing spaces.
- ‘S’ denotes +/- sign.
- For Treasury Bills and MAS Bills, the fields will be filled up to number 26. For Bonds, up to number 33.
- If the record length is more than required, the additional characters will be ignored.

### 1.5.2 Field Definitions

The following fields in the ‘secupdt.txt’ file will contain the values that are sent previously from MEPS+ SGS to eApps in the 'secmast.txt' file for new issuance or re-opening of ISINs.

1. ISSUE\_CODE
  - i) Example of the code: NX00100H
2. ISSUE\_NO
  - i) The field will contain value from 01 to 99.
  - ii) For new issuance, the number will be 01.
  - iii) Number 02 to 99 is used for re-openings.
  - iv) If number of re-openings exceeds 98 times, the maximum number allowed (99) will be used instead.
3. ISSUE\_TYPE
  - i) Value will always be a space.
4. CURR
  - i) Value will always be ‘SGD’.
5. ISSUE\_DESC
  - i) This will contain the ISIN description.
6. ISSUE\_DATE
  - i) Should be 8 digits. The format is YYYYMMDD. This is also known as allotment date.
7. TENDER\_DATE
  - i) Should be 8 digits. The format is YYYYMMDD. This is also known as auction date.
8. QTY\_OFFERED
  - i) This will contain the total nominal amount for the auction.
9. MATURITY\_DATE
  - i) Should be 8 digits. The format is YYYYMMDD.
  - ii) If an optional maturity date has been specified by the User, the value will be used for this field. Else the original maturity date will be used.
10. TAX\_STATUS

- i) Value is either 'Y' or 'N'.
11. ISIN\_CODE
  - i) This will contain the ISIN Code for the Bonds, Treasury Bills and MAS Bills issued.
12. TENOR
  - i) For SGS Bonds, the value will be defined in years.
  - ii) For Treasury Bills and MAS Bills, the value will be defined in days.
  - iii) For MAS FRN Bonds, the value will be defined in months.
13. ETENDER\_IND
  - i) Value is 'Y' if the ISSUE\_DATE is greater than 14012002.
14. MAS\_APPLIED
  - i) This will contain the MAS Applied amount.
15. INT\_PAID\_IND
  - i) This field will be appended only for Bonds.
16. LAST\_INT\_DATE
  - i) This field will be appended only for Bonds (SGS Bonds, and MAS FRN Bonds).
  - ii) Should be 8 digits. The format is YYYYMMDD.
  - iii) This will contain the last Coupon payment date. For new issuance, this will contain the issue date.
17. NEXT\_INT\_DATE
  - i) This field will be appended only for Bonds (SGS Bonds, and MAS FRN Bonds).
  - ii) Should be 8 digits. The format is YYYYMMDD.
  - iii) This will contain the next Coupon payment date. For new issuance, this will contain the first coupon payment date.
18. ACCRUED\_INT\_DAYS
  - i) This field will be appended only for Bonds (SGS Bonds, and MAS FRN Bonds).
  - ii) For new issuance, value will always be zeroes.
19. INT\_DATE1
  - i) This field will be appended only for Bonds (SGS Bonds, and MAS FRN Bonds).
  - ii) Should be 4 digits. The format is MMDD.
20. INT\_DATE2
  - i) This field will be appended only for Bonds (SGS Bonds, and MAS FRN Bonds).
  - ii) Should be 4 digits. The format is MMDD.
21. EX\_INT\_DATE
  - i) This field will be appended only for Bonds (SGS Bonds, and MAS FRN Bonds).
  - ii) Should be 8 digits. The format is YYYYMMDD.
  - iii) For bonds (SGS Bonds, and MAS FRN Bonds), this will contain the next ex-date for the ISIN, which is defined by the SGS system using the ex-date period defined by MAS and the next interest payment date.
  - iv) For treasury bills, this will be equal to the maturity date of the ISIN.

The following fields are those that will be updated by eApps (after the auction) and send back to MEPS+.

1. QTY\_APPLIED
  - i) This will contain the total nominal amount for the auction.
2. AVE\_YIELD
  - i) Value should be passed from eApps to MEPS+SGS. Format should be +/- sign and value e.g. +999v99 or -999v99.
  - ii) Value should be provided in the following format:

123.45	→	+12345
23.45	→	+02345
3.4	→	+00340
0	→	+00000
-123.45	→	-12345
-23.45	→	-02345
-3.4	→	-00340
3. CUT\_OFF\_YIELD
  - i) Value should be passed from eApps to MEPS+SGS. Format should be +/- sign and value e.g. +999v99 or -999v99.
  - ii) Value should be provided in the following format:

123.45	→	+12345
23.45	→	+02345
3.4	→	+00340
0	→	+00000
-123.45	→	-12345
-23.45	→	-02345
-3.4	→	-00340
4. PERCENT\_COY
  - i) Value should be passed from eApps to MEPS+SGS.
5. PERCENT\_SUB
  - i) Value should be passed from eApps to MEPS+SGS.
6. NC\_PERCENT
  - i) Value should be passed from eApps to MEPS+SGS.
7. NC\_QTY\_ALLOT
  - i) Value should be passed from eApps to MEPS+SGS.
8. CUT\_OFF\_YIELD\_PRICE
  - i) Value should be passed from eApps to MEPS+SGS. Format should be 999v9999.
9. AVE\_YIELD\_PRICE
  - i) Value should be passed from eApps to MEPS+SGS. Format should be 999v9999.
10. CLOSING\_PRICE
  - i) Value should be passed from eApps to MEPS+SGS. Format should be 999v9999.
11. MAS\_ALLOTTED

- i) Value should be passed from eApps to MEPS+SGS. Value should contain only digits.

#### 12. INT-RATE

- i) Value should be passed from eApps to MEPS+SGS.
- ii) For a new issuance (where ISSUE\_NO is 1), value will be updated to MEPS.
- iii) For re-opening, this value will not be used.

### **1.5.3 Type of Validation**

When the validation listed in Table 1 fails, the error log message will be displayed in the TEC console.

When the validation listed in table 2 fails, the error status will be logged in the interface report (SGBP0901). The error log message will also be displayed in the TEC console.

1. The message handler performs the following validation(s) when the file is received via MQ:

	<b>Data Validation</b>	<b>Error Status</b>	<b>Error Log to TEC</b>
1.	Interface file must not be empty and has no empty line within the file.	Empty line.	Empty file/message received.

2. The job processor performs the following validations. The validation is repeated for each ISIN record in the file.

	<b>Data Validation</b>	<b>Error Status</b>
1.	Value and format for QTY_APPLIED is valid.	QTY_APPLIED format error.
2.	Value and format for AVE_YIELD is valid.	AVE_YIELD format error.
3.	Sign for AVE_YIELD must be either + or -.	Invalid sign.
4.	Value and format CUT_OFF_YIELD is valid.	CUT_OFF_YIELD format error.
5.	Sign for CUT_OFF_YIELD must be either + or -.	Invalid sign.
6.	Value and format for INT_RATE is valid.	INT_RATE format error.
7.	Value and format for CUT_OFF_YIELD_PRICE is valid.	CUT_OFF_YIELD_PRICE format error.
8.	Value and format for AVE_YIELD_PRICE is valid.	AVE_YIELD_PRICE format error.
9.	Value and format for CLOSING_PRICE is valid.	CLOSING_PRICE format error.
10.	ISIN Code exists in MEPS+ SGS.	Invalid ISIN Code.

	<b>Validation</b>	<b>Error Status</b>	<b>TEC Message</b>
11.	The ISIN code must be one of the following type: <ul style="list-style-type: none"><li>• Bonds</li><li>• Treasury Bills</li><li>• MAS Bills</li></ul>	Invalid ISIN type.	[MEP05004] EApps ISIN Summary - Interface information rejected by system. Refer to interface report (SGBP0901 - SGS) for details.

Note:

- Fields not mentioned in the above tables will not be validated.
- Only validations that are mentioned in the above tables will be performed.

The job processor will not check if there is duplicate ISIN record in the file. The later record's prices will take precedence and updated into the system.

#### **1.5.4 Processing Requirement**

After the auction has been completed, eApps will update the ISIN information with the yields and prices, and send the data back to MEPS+ SGS. The data file 'secupd.txt' will be placed in the WMQ to be sent to the MEPS+ SGS.

SGS will validate the securities type to ensure the ISIN in the interface file must be Bonds, Treasury Bills or MAS Bills only.

For new issuance of bond with negative yield, the coupon rate will be floored at zero. The flooring of coupon rate for new issuance with negative yield should be handled by eApps, and MEPS+ will take the coupon rate from the INT\_RATE field in 'secupd.txt' interface file to perform calculations.

During contingency, user can also upload the 'secupd.txt' to the system through the Manual Contingency function in MEPS+ SGS.

Upon receiving the data file, MEPS+ SGS will validate the file as per the validation stated under Data Validation. The file will be rejected at the first error encountered.

#### **1.5.5 Processing Flow**

1. After the auction has been completed, the eApps will update the ISIN information with the yields and prices, and send the data back to the MEPS+ SGS.
2. The data file will be 'secupd.txt' and the filename will be set in the correlation ID field of the MQ Message sent to MEPS+ SGS.
3. MEPS+ SGS Queue listener will retrieve the MQ Message and passes the MQ data to the message handler.
4. The message handler will write the MQ data into the database and commit to the MQ. If the MQ data is not written to the database successfully, the MQ message will be rolled back to the MQ. Exception will be logged in the application log.
5. The handler will then triggers the job processor to process the received MQ data.
6. The job processor will proceed to perform validation on the data received and the interface report (SGBP0901) will be generated immediately showing the status of the processing.
7. Upon successful validation, the relevant data will be updated into the database.
8. Final status (failed or successful) of the processing will be sent to the TEC.

#### **1.5.6 Exception Handling**

Interface report (SGBP0901) will be generated when any of the validation failed. The eApps will need to make the necessary amendment and send a new interface file (before the issue date) to the MEPS+ SGS and the MEPS+ will then validate and process the new interface file.

### **1.5.7 Handling of Failed Scenarios Due to Validation**

1. The job processor will reject the file at the first error encountered.
2. All exceptions or failed validation will be logged in the application SGS log and the interface report (SGBP0901) will be generated immediately and also at the EOD batch job.
3. User has to correct the error and re-send the file. For example:
  1. Ensure an empty file has not been sent accidentally or that the empty file is not due to transmission problem.
  2. Ensure the correct format of the relevant field.
4. The MEPS+ SGS will not check for duplicate file. The latter file will take precedence and its data will be updated into the system.

### **1.5.8 Cut-off Point to Receive the Information**

For new issuance, the file must be sent to the MEPS+ SGS before the EOD of the business day before the issuance date (T-1). The SGS System will update the coupon rate field of new SGS issues based on the INT\_RATE field in the ISIN Summary After Auction file (i.e. secupdt.txt) received from eApps. This only applies to new auctions and does not apply to re-opened issues, which already have a coupon rate value that was previously updated according to the information from eApps. The user can view the coupon payment rate via the ISIN Code Enquiry screen.

The MEPS+ SGS will propagate the coupon payment rate to the New CAS upon processing of the file. The latest information received will be updated in the system.

### **1.5.9 Manual Contingency**

During contingency, the “ISIN Summary After Auction file” can be uploaded through the MEPS+ SGS Manual Contingency utilities. No specific filename needs to be used for the uploaded file. The file type selected (via the upload screen) will indicate the nature of the file. When an empty file is uploaded to the MEPS+ SGS, the system will validate the file and return an error message “File (*filename*) to be uploaded does not exist or is empty” on screen.

The user can also update the coupon payment rate manually via the ISIN maintenance screen.

## 1.6 Daily ISIN Update

### 1.6.1 Format

S/N	Field Name	Format	Position		Remarks
			Fr	To	
1.	ISSUE_CODE	X(8)	1	8	E.g. NX00100H
2.	ISSUE_NO	9(2)	9	10	This value will always default to 01.
3.	ISSUE_TYPE	X(1)	11	11	Value is always space.
4.	CURR	X(3)	12	14	Value 'SGD'
5.	ISSUE_DESC	X(30)	15	44	Description of ISIN
6.	ISSUE_DATE	X(8)	45	52	YYYYMMDD
7.	TENDER_DATE	X(8)	53	60	YYYYMMDD
8.	QTY_OFFERED	9(13)	61	73	Total nominal amount for auction
9.	QTY_APPLIED	9(13)	74	86	
10.	AVE_YIELD	9(3)v9(2)	87	91	
11.	CUT_OFF_YIELD	9(3)v9(2)	92	96	
12.	MATURITY_DATE	X(8)	97	104	YYYYMMDD
13.	PERCENT_COY	9(3)v9(2)	105	109	
14.	PERCENT_SUB	9(3)v9(2)	110	114	
15.	NC_PERCENT	9(3)v9(2)	115	119	
16.	NC_QTY_ALLOT	9(13)	120	132	
17.	INT_RATE	9(3)v9(4)	133	139	Contain zeroes for new ISIN. Contain coupon rate for re-open ISIN.
18.	TAX_STATUS	X(1)	140	140	Y or N
19.	CUT_OFF_YIELD_PRICE	9(3)v9(4)	141	147	
20.	AVE_YIELD_PRICE	9(3)v9(4)	148	154	
21.	CLOSING_PRICE	9(3)v9(4)	155	161	
22.	ISIN_CODE	X(12)	162	173	
23.	TENOR	9(3)	174	176	For T-Bills/M-Bills, will be in day(s) For SGS Bonds and Savings Bonds, will be in year(s) For MAS FRN Bonds, will be in month(s)
24.	ETENDER_IND	X(1)	177	177	'Y' if ISSUE_DATE>14012002
25.	MAS_APPLIED	9(13)	178	190	
26.	MAS_ALLOTTED	9(13)	191	203	
27.	INT_PAID_IND	X(1)	204	204	
28.	LAST_INT_DATE	X(8)	205	212	YYYYMMDD
29.	NEXT_INT_DATE	X(8)	213	220	YYYYMMDD
30.	ACCRUED_INT_DAYS	9(3)	221	223	000
31.	INT_DATE1	9(4)	224	227	MMDD
32.	INT_DATE2	9(4)	228	231	MMDD
33.	EX_INT_DATE	X(8)	232	239	YYYYMMDD

34.	CPN_PAYM_IND	X(1)	240	240	<p>This field is not applicable for T-Bills, MAS-Bills and SGS Bonds. For these ISIN Types, it will be defaulted to blank value regardless of any coupon payment on that day.</p> <p>For MAS FRN Bonds, it will be either Y or blank value depending whether there is coupon payment on that day.</p> <p>Field Value: 'Y' or '&lt;Blank&gt;'</p> <p>Y – if there is coupon payment for the Bond ('MAS FRN' Sub-Type) on that day. For FRN that are redeemed on that day, the ISIN detail of the FRN will be displayed and this field value will be "Y".</p> <p>Blank – if there is no coupon payment for a particular MAS FRN bond on that day or if the ISIN Type is T-Bill, M-Bill, Bond ('NA' Sub-Type)</p>
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- Unused area will be padded with leading zeroes or spaces accordingly.
- '9' denotes field having numeric value(s).
- 'X' denotes field having alphanumeric value(s).
- For Tbills, the fields filled will be up to number 26 and for, Bonds and Savings Bonds, up to number 33.

## 1.6.2 Field Definitions

Except for the following fields, all other fields will be the same as per defined in the file format for "New Issuance or Re-opening of ISINs".

1. ISSUE\_CODE
  - i) Example of the code: NX00100H.
2. ISSUE\_NO
  - i) This value will always be 01. Other fields such as ISSUE\_DATE, TENDER\_DATE and QTY\_OFFERED will contain the values based on the first issuance data.
3. INT\_RATE
  - i) This will contain the ISIN coupon rate.
4. ISIN\_CODE
  - i) This will contain the ISIN Code for the SGS issue.
5. INT\_PAID\_IND
  - i) This field will be appended only for Bonds.
  - ii) This will contain a "Y" or "N".

6. LAST\_INT\_DATE
  - i) This field will be appended only for Bonds.
  - ii) Should be 8 digits. The format is YYYYMMDD.
  - iii) This will contain the last Coupon payment date. For new issuance, this will contain the issuance date.
  
7. NEXT\_INT\_DATE
  - i) This field will be appended only for Bonds (SGS Bonds, and MAS FRN Bonds).
  - ii) Should be 8 digits. The format is YYYYMMDD.
  - iii) This will contain the next Coupon payment date. For new issuance, this will contain the first coupon payment date.
  
8. ACCRUED\_INT\_DAYS
  - i) This field will be appended only for Bonds (SGS Bonds, and MAS FRN Bonds).
  - ii) For new issuance, value will always be zeroes.
  - iii) If the days accrued exceed 999, the maximum value allowed (999) will be used.
  
9. INT\_DATE1
  - i) This field will be appended only for Bonds (SGS Bonds, and MAS FRN Bonds).
  - ii) Should be 4 digits. The format is MMDD.
  
10. INT\_DATE2
  - i) This field will be appended only for Bonds (SGS Bonds, and MAS FRN Bonds).
  - ii) Should be 4 digits. The format is MMDD.
  
11. EX\_INT\_DATE
  - i) This field will be appended only for Bonds (SGS Bonds, and MAS FRN Bonds).
  - ii) Should be 8 digits. The format is YYYYMMDD.
  - iii) For bonds, this will contain the next ex-date for the ISIN, which is defined by the SGS system using the ex-date period defined by MAS and the next interest payment date.
  
12. CPN\_PAYM\_IND
  - i) This field will be appended only for MAS FRN Bonds
  - ii) Should be either Y (if there is coupon payment for the MAS FRN Bond that day) or empty value.
  - iii) The "Y" indicator will be appended if ISIN Type is "Bond" and ISIN Sub-Type is "MAS FRN" where coupon payment date is greater than last value date and lesser or equals to current value date.

### **1.6.3 Processing Requirement**

The MEPS+ SGS will extract only New, Active and Suspended ISINs information at the daily end of day batch job. In addition, ISIN information for FRNs (ISIN Type = Bond, Sub-Type = MAS FRN) that have been redeemed on MEPS+ current value date (where maturity date or optional maturity date > MEPS+ Previous Value Date and <= MEPS+ Current Value Date) will also be extracted and displayed in the 'secint.txt' file. The FRN ISIN details will no longer appear in the subsequent files after its maturity date. The extracted file 'secint.txt' will be placed in the transmission queue to be sent to the eAPPs at the end of day.

For example, if 01/04/2004 is the coupon date for a particular issue (half yearly coupon payment), the interface to eApps on 31/03/2004 will have LAST\_INT\_DATE = 01/04/2004, NEXT\_INT\_DATE = 01/10/2004 and EX\_INT\_DATE = 28/09/2004.

For example, if there is a FRN that matures on 9<sup>th</sup> December 2022, then the FRN ISIN detail record (with "Y" value in the CPN\_PAYM\_IND field) will only appear in the 'secint.txt' file for 9<sup>th</sup> December 2022 value date when system runs EOD batch on 8<sup>th</sup> December 2022 end of day. The FRN that matured on 9<sup>th</sup> December 2022 will no longer appear in the subsequent secint.txt files (e.g. 12<sup>th</sup> December 2022 onwards...)

In the event that the FRN matures on non-working day, the FRN ISIN detail record will appear in the 'secint.txt' file for the next working date. For example, if there is FRN that matures on 11<sup>th</sup> December 2022 (Sunday), then the FRN ISIN detail record (with "Y" value in the CPN\_PAYM\_IND field) will only appear in the 'secint.txt' file for 12<sup>th</sup> December 2022 value date when system runs EOD batch on 9<sup>th</sup> December 2022 end of day. The FRN that matured on 11<sup>th</sup> December 2022 will no longer appear in the subsequent secint.txt files (e.g. 13<sup>th</sup> December 2022 onwards...)

When there is zero coupon rate for Bonds and Savings Bonds, the following fields value will not be set to display "00000000" or "0000". Instead the following fields will displayed the values as per stated:-

- i) Existing ISIN with Coupon Rate = 0.00000 and Coupon Frequency = Monthly
  - LAST\_INT\_DATE (displayed in YYMMDD format) = Last Coupon Date
  - NEXT\_INT\_DATE (displayed in YYMMDD format) = Next Coupon Date
  - INT\_DATE1 (displayed in MMDD format) = Last Coupon Date
  - INT\_DATE2 (displayed in MMDD format) = Next Coupon Date
  - EXT\_INT\_DATE (displayed in YYMMDD format) = Ex-Date
  
- ii) New ISIN with Coupon Rate = 0.00000 and Coupon Frequency = Monthly
  - LAST\_INT\_DATE (displayed in YYMMDD format) = First Issuance Date
  - NEXT\_INT\_DATE (displayed in YYMMDD format) = First Coupon Payment Date
  - INT\_DATE1 (displayed in MMDD format) = Next Coupon Date
  - INT\_DATE2 (displayed in MMDD format) = First Coupon Payment Date
  - EXT\_INT\_DATE (displayed in YYMMDD format) = Ex-Date
  
- iii) Re-open ISIN with Coupon Rate = 0.00000 and Coupon Frequency = Monthly
  - LAST\_INT\_DATE (displayed in YYMMDD format) = First Issuance Date
  - NEXT\_INT\_DATE (displayed in YYMMDD format) = First Coupon Payment Date
  - INT\_DATE1 (displayed in MMDD format) = Next Coupon Date
  - INT\_DATE2 (displayed in MMDD format) = First Coupon Payment Date
  - EXT\_INT\_DATE (displayed in YYMMDD format) = Ex-Date

During contingency, user can download the 'secint.txt' last generated by the system through the Manual Contingency function in the MEPS+ SGS.

1.6.3.1      Formula for extracting FRN ISINs that are redeemed on MEPS+ Current Value Date

```

SELECT
ISIN TYPE = BN (Bond),
ISIN SUB-TYPE = MF (MAS FRN),
ISIN STATUS = C (Redeemed),

If MATURITY_DATE > LAST_VAL_DATE AND MATURITY_DATE <= THIS_VAL_DATE
OR
OPT_MATURITY_DATE > LAST_VAL_DATE AND OPT_MATURITY_DATE <=
THIS_VAL_DATE

(ISIN details of the redeemed FRN will be extracted)
AND CPN_PAYM_IND = 'Y'
Else
(no extraction of the redeemed FRN)

```

1.6.3.2      Formula for calculating interest paid indicator

```

If ISSUE_DATE = LAST_INT_DATE and ISSUE_DATE < NEXT_INT_DATE
    INT_PAID_IND = 'N'
Else
    INT_PAID_IND = 'Y'

```

In MEPS+ SGS system, the above formula is translated into:

```

If 1st Coupon Payment date <= Current Business Date
    INT_PAID_IND = 'Y'
Else
    INT_PAID_IND = 'N'

```

1.6.3.3      Formula for calculating Tenor

Refer to the formula stated under the processing requirement for "New Issuance or Re-opening of ISINs.

If tenor calculated exceeds 3 digits, the particular ISIN record will be excluded from the interface file. An alert message "Tenor for <ISIN Code: Issue Code> exceeded 3 digits" will be sent to TEC.

## 1.7 Bank Auction Results

### 1.7.1 Format

S/N	Field Name	Format	Position		Remarks
			Line	Col	
1.	ISIN_CODE	X(12)	1	1	E.g. SG1234567890
2.	ISSUE_CODE	X(8)	1	2	E.g. NX00100H
3.	ISSUE_DATE	X(8)	1	3	YYYYMMDD
4.	REC_NUM	9(3)	1	4	Total number of records.
Repetitive Auction Details					
5.	MBR_CODE	X(8)	2	1	E.g. OCBCSGSG
6.	BANK_CODE	9(4)	2	2	E.g. 7339
7.	CUSTODY_CODE	X(3)	2	3	E.g. TRD (Trade)
8.	PRICE	9(3)v9(5)	2	4	E.g. 12400500 (124.005)
9.	NOMINAL_AMT	9(13)	2	5	E.g. 0000000100000
10.	SETT_AMT	9(13)v9(2)	2	6	E.g. 000000010000000 (\$100,000.00)
End of Auction Indicator					
11.	End_Txn	X(6)	N	1	ENDTXN

- Field 5 to 10 will be repetitive for each auction detail record.
- Each auction detail record must start on a new line.
- All fields/columns should be delimited with a delimiter ';'. If other delimiter such as "pipe" is used, system will not be able to process the data accordingly. Hence, it is expected that the file will fail in MEPS+.
- '9' denotes field having numeric value(s).
- 'X' denotes field having alphanumeric value(s).
- All fields with decimal places must be padded with leading or trailing zeroes, up to the required decimal length.

### 1.7.2 Field Definitions

1. ISIN\_CODE
  - i) This will contain the ISIN Code for the SGS issue.
2. ISSUE\_Code
  - i) Example of the code: NX00100H.
3. ISSUE\_DATE
  - i) Must be 8 digits. The format is YYYYMMDD. This is also known as allotment date.
4. REC\_NUM
  - i) Must contain only digits.
  - ii) This field indicates the number of repetitive lines of auction details to be expected for the batch of auction.

5. MBR\_CODE
  - i) For Participants, this should contain their 8-characters BIC Code.
  - ii) For Non-Participants, this should contain the 8-characters Member Code assigned to them.
6. BANK\_CODE
  - i) This should contain the 4-digit bank code of the member.
  - ii) For MAS, the bank\_code will always be "2500".
7. CUSTODY\_CODE
  - i) This should contain the custody code of the Member that the SGS is to be delivered to.
  - ii) E.g. TRD – Trade, CUS – Customer
8. PRICE
  - i) This should contain the cutoff price for the allotted ISIN.
9. NOMINAL\_AMT
  - i) This should contain the nominal amount to be allotted under the specified Member's custody code.
10. SETT\_AMT
  - i) This should contain the total settlement amount that the Member is to pay for the allotted ISIN.
11. End\_Txn
  - i) This will appear in the last line of each auction record and the value will be ENDTXN.

### **1.7.3 Type of Validation**

When the validation listed in Table 1 fails, the error log message will be displayed in the TEC console.

When the validation listed in table 2 fails, the error status will be logged in the interface report (SGBP0901). The error log message will also be displayed in the TEC console.

1. The message handler performs the following validation(s) when the file is received:

	<b>Data Validation</b>	<b>Error Status</b>	<b>Error Log to TEC</b>
1.	Interface file must not be empty and has no empty line within the file.	Empty line.	Empty file/message received.

2. The job processor performs the following validations:

	<b>Data Validation</b>	<b>Error Status</b>
1.	The total number of records must match with the header information. Or any erroneous format causing the program to be unable to process the master and detail lines.	Unable to process data.

2.	Verify that auction result is for a valid allotment process (created by User) in MEPS+ SGS.	Unable to find Allotment Master Record.
3.	Verify that the allotment has not been completed (allotted) yet.	Allotment Record has already been processed.
4.	Issue code specified is valid and matches the ISIN code.	Issue Code specified in interface file is incorrect.
5.	The number of repetitive auction details lines after the header line (that contains the issuance information) must be equal to the value specified in the REC_NUM field in the header line.	Invalid total record count.
6.	Number of fields of each auction results of the auction record is valid.	Unable to process data.
7.	Member code exists in MEPS+ SGS.	Invalid member code.
8.	Bank Code exists in MEPS+ SGS and matches the member code specified.	Invalid bank code.
9.	Custody code exists in MEPS+ SGS.	Invalid custody code.
10.	Value and format for Price is valid.	Invalid price.
11.	Value and format for Nominal Amount is valid.	Invalid nominal amount.
12.	Value and format for Settlement Amount is valid.	Invalid settlement amount.
13.	Sum of the nominal amount in the auction results equal to the total quantity offered.	Total nominal amount in file is not equaled to total allotting nominal amount.

	Validation	Error Status	TEC Message
14.	The ISIN code must be one of the following type:  • Bonds • Treasury Bills • MAS Bills	Invalid ISIN type.	[MEP05004] EApps Bank Auction Results - Interface information rejected by system. Refer to interface report (SGBP0901 - SGS) for details.

Note:

- Fields not mentioned in the above tables will not be validated.
- Only validations that are mentioned in the above tables will be performed.

#### **1.7.4 Processing Requirement**

EApps will place the file 'auction.txt' in the WMQ to be sent to MEPS+ SGS.

The file must only contain the bank auction results of the conventional securities types i.e. Bonds, Treasury Bills and MAS Bills. SGS will validate the securities type to ensure the ISIN must be Bonds, Treasury Bills or MAS Bills only.

During contingency, user can also upload the 'auction.txt' to the system through the Manual Contingency function in the MEPS+ SGS.

The MEPS+ SGS will not check for duplicate file. When the allotment was created based on the file received from the eAPPs, it will overwrite the auction results in the system. When the allotment is not done (allotted), the MEPS+ SGS will create the auction results based on the file received from the eApps in the system.

For file that contains multiple auction results, the message handler will split the auction results in the file received based on the "ENDTXN" indicator. If the "ENDTXN" indicator is not placed between two batches of auction results, the message handler will treat them as one and validate as one batch of auction result. The job processor will validate each batch of auction results separately, as though they arrive in separate file.

The file will be validated at the record level (denoted by the 'ENDTXN' indicator) and rejected on the first error encountered in that record. For example, an "auction.txt" file is sent with two allotment records. The first record is rejected due to invalid member code, but the second record is accepted with positive validation. In this case, the first allotment record will be rejected but the second allotment record will be stored in the system, waiting for the allotment day.

User can create or modify the allotment results manually through the Allotment maintenance screen.

#### **1.7.5 Processing Flow**

1. eApps will generate the interface file containing the bank auction results, and send the data to the MEPS+ SGS.
2. The data file will be 'auction.txt' and the filename will be set in the correlation ID field of the MQ Message sent to MEPS+ SGS.
3. The file may contain the results for one or more auctions. Each set of auction results will be separated by the 'ENDTXN' indicator.
4. MEPS+ SGS Queue listener retrieves the MQ Message and passes the MQ data to the message handler.
5. The handler writes the MQ data into a text file on the server, and logs each set of auction results into individual records in the database and commit to the MQ. If the MQ data is not written to database successfully, the MQ message will be rolled back to MQ. The text file created previously will remain in the file system. Exception will be logged in application log.
6. The handler will then trigger the job processor to process the received MQ data. When the handler triggers the job processor, it passes the data in the file by value to the job processor. The job processor does not read from database or file. Each set of auction results (separated by the "ENDTXN" indicator) is loaded and processed separately.
7. The job processor will proceed to perform validation on results received and the interface report (SGBP0901) will be generated immediately showing the status of the processing for each auction.
8. Upon successful validation, the auction results will be updated into the database.

9. For failed validations, screen alerts and/or email alerts will also be sent to users who have been authorized to receive the alerts.
10. Final status (failed or successful) of the processing will be sent to TEC.

### **1.7.6      Exception Handling**

Interface report (SGBP0901) will be generated when any of the validation failed. The eApps will need to make the necessary amendment and send a new interface file (before the issue date) to the MEPS+ SGS and the MEPS+ will then validate and process the new interface file.

### **1.7.7      Handling of Failed Scenarios Due to Validation**

1. The file will be validated at the record level (denoted by the 'ENDTXN' indicator) and rejected on the first error encountered for each auction record.
2. For example, an "auction.txt file" is sent with two allotment records. The first one is rejected due to invalid member code, but the second one was accepted with positive validation. The first allotment record will be rejected but the second one will be stored in the system, waiting for the allotment day.
3. All exceptions or failed validation will be logged in the application SGS log and the interface report (SGBP0901) will be generated immediately and also at the EOD batch job.
4. For failed validations, screen alerts and/or email alerts will also be sent to users who are authorized to receive the alerts.
5. User has to correct the error and re-send the file.
6. MEPS+ SGS will not check for duplicate file. As long as the allotment is not done (allotted) yet, MEPS+ SGS will create or overwrite the auction results in the system, based on the file received from eApps.

### **1.7.8      Cut-off Point to Receive the Information**

The auctions results need to be sent to MEPS+ SGS before the EOD of the business day before the issuance date (T-1). Auction results are received and stored in the system until the allotment process was initiated. For allotment where the auction results are available before the planned issuance date, the system will automatically perform the allotment during the EOD batch run.

If results are not received by the stipulated cutoff point, manual intervention may be required for the allotment to be activated during intraday.

For new issuance, the system will still wait for the auction results to be loaded (through MQ, Upload or Maintenance screen). After the auction results are loaded and saved in the system successfully, user can trigger the allotment process manually via the "Activate Allotment" utility screen.

For re-opening, the re-opening record will be house kept by the system if auction results are not available prior to the cutoff point. User will need to recreate the re-opening record before the auction results can be loaded and trigger the allotment process manually.

In the scenario where results are loaded but the user did not trigger the allotment process during intraday, the auction records will be run automatically at the EOD batch run of that business date. The settlement date of the allotment transactions will be based on the actual business day where the issuance takes place. When users view the "ALO" transaction record via the Enquiry screen,

they will see the trade date containing the original issuance date, but the value date will reflect the actual date that the settlement takes place. This is similar to the case where issuance date falls on a holiday and issuance will take place on the next business day.

### 1.7.9 Manual Contingency

During contingency, the Bank Auction Results file can be uploaded through the MEPS+ SGS Manual Contingency utilities. No specific filename needs to be used for the uploaded file. The file type selected (via the upload screen) will indicate the nature of the file. The User can also create or modify the auction results manually via the “Allotment Maintenance” screen function provided.

In situation where the allotment results are not interfaced to the MEPS+ SGS system prior to the cutoff point, the actions required by the User to trigger it manually will depend if it is a new issuance or re-opening. Please refer to section 1.7.8 for the follow-up action.

## 1.8 Daily Bank List

### 1.8.1 Format

<b>S/N</b>	<b>Field Name</b>	<b>Length</b>	<b>Position</b>		<b>Remarks</b>
			<b>Fr</b>	<b>To</b>	
1.	BANK_CODE	9(4)	1	4	E.g. 7339
2.	BANK_NAME	X(40)	5	44	E.g. OCBC Bank
3.	BANK_SHORTNAME	X(15)	45	59	E.g. OCBCSGSG
4.	AUTODEBIT_INDICATOR	X(1)	60	60	Y or N
5.	PARTICIPANT_INDICATOR	X(1)	61	61	Y or N

- Unused area will be padded with leading zeroes or spaces accordingly.
  - '9' denotes field having numeric value(s).
  - 'X' denotes field having alphanumeric value(s).

### 1.8.2 Field Definitions

1. BANK\_CODE
  - i) This will contain the 4-digit bank code of the member.
  - ii) For MAS, the bank\_code will always be "2500".
2. BANK\_NAME
  - i) This will contain the name/description of the member.
3. BANK\_SHORTNAME
  - i) This will contain the 8-characters Member Code of the member.
4. AUTODEBIT\_INDICATOR
  - i) The value is either 'Y' or 'N'.
5. PARTICIPANT\_INDICATOR
  - i) This is to indicate whether the bank is a Participant.
  - ii) The value is either 'Y' (Participant or MAS) or 'N' (Non-Participant/Vostros). If there is changes to the member type during the day in MEPS+ SGS (e.g. changing from a participant to non-participant), system will take the last updated member type to reflect this field in the file.

### 1.8.3 Processing Requirement

MEPS+ SGS will generate a file containing all the members at the daily end of day batch job. Members with "Closed" status will be excluded from the file. For new banks which are created but not yet activated, the system will only include the new banks one day before the effective date in 'bank.txt' file.

The file 'bank.txt' will be placed in the WMQ to be sent to eApps.

During contingency, user can download the 'bank.txt' last generated by the system through the Manual Contingency function in MEPS+ SGS.

## 1.9 MAS Repo Facility (currently not enabled)

### 1.9.1 Format

S/N	Field Name	Format	Position		Remarks
			Line	Col	
1.	TXN_REF_NO	X(16)	1	1	E.g. REF1234567890
2.	MSG_FUNCTION	X(4)	1	2	E.g. NEWM
3.	MBR_CODE	X(8)	1	3	BIC CODE
4.	BANK_CODE	9(4)	1	4	
5.	CUSTODY_CODE	9(3)	1	5	E.g. TRD (Trade)
6.	EXECUTION_DATE	X(8)	1	6	YYYYMMDD
7.	REVERSAL_DATE	X(8)	1	7	YYYYMMDD
8.	TXN_AMT	9(13)v9(2)	1	8	Repo Fee
9.	DELIVERING_ISIN	9(2)	1	9	No. of ISIN to be delivered by member.
10.	RECEIVING_ISIN	9(2)	1	10	No. of ISIN to be received by member.
11.	PREV_TXN_REF_NO	X(16)	1	11	E.g. PREF999000111
Repetitive Securities Details					
12.	INOUT_INDICATOR	X(1)	2	1	I – Receiving O – Delivering
13.	ISIN_CODE	X(12)	2	2	E.g. SG1234567890
14.	ISSUE_CODE	X(8)	2	3	E.g. NX00100H
15.	NOMINAL_AMT	9(13)	2	4	E.g. 100000
16.	PRICE	9(3)v9(5)	2	5	E.g. 10099900 (100.999)
17.	HAIRCUT	9(3)v9(2)	2	6	E.g. 01050 (10.5)
End of Transaction Indicator					
18.	End_Txn	X(6)	N	1	ENDTXN

- Field 12 to 17 will be repetitive for each ISIN to be exchanged.
- Each securities detail must start on a new line.
- All fields/columns should be delimited with a delimiter ','. If other delimiter such as "pipe" is used, system will not be able to process the data accordingly. Hence, it is expected that the file will fail in MEPS+.
- '9' denotes field having numeric value(s).
  - 'X' denotes field having alphanumeric value(s).
  - All fields with decimal places must be padded with leading or trailing zeroes, up to the required length

### 1.9.2 Field Definitions

1. TXN\_REF\_NO
  - i) This will contain unique transaction reference number.
  - ii) This will be one of the fields that will be used for duplicate checking.
  - iii) EApps will re-use/re-cycle the reference number every 10 years.
2. MSG\_FUNCTION
  - i) NEWM – New Transaction
  - ii) CANC – Cancellation of Transaction
3. MBR\_CODE
  - i) This will contain the 8-characters BIC Code of the Participant.
4. BANK\_CODE
  - i) This should contain the 4-digit bank code of the member.
  - ii) For MAS, the bank\_code will always be "2500".
5. CUSTODY\_CODE
  - i) This should contain the custody code of the Member that the SGS is to be delivered to.
  - ii) E.g. TRD – Trade, CUS – Customer
6. EXECUTION\_DATE
  - i) This should contain the date where by the transaction is to be settled.
7. REVERSAL\_DATE
  - i) This should contain the date where by the transaction is to be reversed.
8. TXN\_AMT
  - i) This should contain the repo fee that the member is supposed to pay MAS.
9. DELIVERING\_ISIN
  - i) This should contain the number of ISINs to be delivered by the member.
10. RECEIVING\_ISIN
  - i) This should contain the number of ISINs to be received by the member.
11. PREV\_TXN\_REF\_NO
  - i) This field is only applicable to for a cancellation of a MAS Repo Facility (MRF) transaction that is sent previously. This should contain the transaction reference number of the (MRF) transaction that is sent to MEPS+ SGS system previously.
  - ii) This field should be blank if the transaction is not a cancellation transaction.
12. INOUT\_INDICATOR
  - i) 'I' should be used to indicate if the ISIN is to be received by the member.
  - ii) 'O' should be used to indicate if the ISIN is to be delivered by the member.
13. ISIN\_CODE
  - i) This should contain the ISIN code of the securities to be received/delivered.

14. ISSUE\_CODE
  - i) This should contain the MAS issue code of the securities to be received/delivered.
15. NOMINAL\_AMT
  - i) This should contain the nominal amount of the securities to be received/delivered.
16. PRICE
  - i) This should contain the price of the securities to be received/delivered. This value will not be used for any processing by SGS, but to be passed to CAS.
17. HAIRCUT
  - i) This should contain the haircut to be applied to the price. This value will not be used for any processing by SGS, but to be passed to CAS.
18. End\_Txn
  - i) This will appear in the last line of each transaction and the value will be ENDTXN.

### **1.9.3 Type of Validation**

When the validation listed in Table 1 fails, the error log message will be displayed in the TEC console.

When the validation listed in table 2 fails, the error status will be logged in the interface report (SGBP0901). The error log message will also be displayed in the TEC console.

1. The message handler performs the following validation(s) when the file is received:

	<b>Data Validation</b>	<b>Error Status</b>	<b>Error Log to TEC</b>
1.	Interface file must not be empty and has no empty line within the file.	Empty line.	Empty file/message received.

2. The job processor performs the following validations.

	<b>Data Validation</b>	<b>Error Status</b>
1.	Verify that the number of delivering ISIN matches the given securities details.	Number of delivering ISIN does not match the given ISIN details
2.	Verify that the number of receiving ISIN matches the given securities details.	Number of receiving ISIN does not match the given ISIN details
3.	Verify that there is no duplicate ISIN found in the securities details.	Duplicate ISIN found in securities movement.

	<b>Business Rule Validations</b>	<b>Error Status</b>
1.	If it is a cancellation request, verify that execution date is valid.	Settlement Date invalid for cancellation/ILF closing (i.e. must be current date).
2.	Verify that opening settlement date is within the period allowed.	Settlement Date is not within the future period allowed.
3.	If it is a future-dated transaction, verify that	System is not open for future value dated

	MEPS+ SGS system activity status is still valid for accepting the transaction.	transactions.
4.	Verify that opening settlement date is not a non-working day.	Settlement Date falls on a non-working day.
5.	If it is a current value-dated transaction, verify that MEPS+ SGS system activity status is still valid for accepting the transaction.	System has already cutoff for current value date.
6.	Verify that closing settlement date is within the repo period allowed.	Closing date/time specified is not within the allowed repo period.
7.	If it is an intra-day repo, verify that intraday reversal is not activated yet.	Intraday reversals have been activated.
8.	Verify that closing settlement date is not a non-working day.	Closing date/time falls on a non-working day.
9.	Verify that receiving agent is a valid member.	Receiving Agent invalid.
10.	Verify that receiving agent is allowed to accept new transactions.	Receiving Agent not allowed to accept new transactions.
11.	Verify that receiving agent is allowed to accept incoming messages.	Receiving Agent not allowed accepting incoming messages.
12.	Verify that receiving agent's member type allows the member to conduct MRF transaction.	Receiving Agent's member type does not allow the member to conduct the particular transaction.
13.	Verify that bank code specified matches the receiving agent.	Bank Code does not match receiver's details.
14.	Verify that receiving agent's member type allows the member to use the specified custody to conduct transaction.	Receiving Agent's member type does not allow the member to access the specified delivering custody.
15.	Verify that the specified receiving agent custody is allowed for use in MRF transaction.	Receiving Custody specified cannot be used for the particular transaction.
16.	Verify ISIN is valid.	ISIN specified is not found in the system.
17.	Verify ISIN is still active.	ISIN is no longer an active issue.
18.	Verify that issue code specified matches the ISIN.	ISIN is not tradable.
19.	Verify that ISIN maturity date is one day or less after the opening settlement date.	ISIN maturity date is one day or less after the value date.
20.	Verify that closing settlement date is earlier than the ISIN maturity date.	Closing date/time is later than the maturity date of the ISIN.
21.	Verify that nominal Amount does not meet the minimum denomination of the ISIN	Nominal Amount does not meet the minimum denomination of the ISIN.
22.	Verify if the transaction is a duplicate.	Message invalid due to duplicate message.
	<i>The following applies for cancellation transactions only</i>	
23.	Verify that the original transaction to be cancelled can be found.	Cancellation transaction invalid due to referenced transaction could not be found.

24.	Verify that the original transaction is not already cancelled.	Cancellation transaction invalid due to referenced transaction has already been cancelled.
25.	Verify that the original transaction's status is applicable for cancellation.	Cancellation transaction invalid due to the state of the referenced transaction.

Note: Fields not mentioned in the above table will not be validated.

Refer to the “MEPS+ SGS Functional Specification – Appendix H” document on Fields Format Validation for character set format.

#### **1.9.4 Processing Requirement**

EApps will place the file 'masrepo.txt' in the WMQ to be sent to MEPS+ SGS<sup>2</sup>.

For file that contains multiple MRF transactions, the message handler will split the MRF transactions in the file received based on the "ENDTXN" indicator. If the "ENDTXN" indicator is not placed between two MRF transactions, the message handler will treat them as one and validate as one transaction. The job processor will validate each transaction separately, as though they arrive in separate file.

The file will be validated at the record level (denoted by the 'ENDTXN' indicator) and rejected on the first error encountered in that MRF transaction. For example, a masrepo.txt file is sent with two MRF transactions. The first transaction is rejected due to invalid execution date and the second transaction is accepted with positive validation. In this case, the first transaction will be rejected but the second transaction will proceed to the settlement phase.

#### **1.9.5 Processing Flow**

1. eApps will generate the interface file containing the MAS Repo Facility (MRF) transactions, and send the data to the MEPS+ SGS.
2. The data file will be 'masrepo.txt' and the filename will be set in the correlation ID field of the MQ Message sent to MEPS+ SGS.
3. The file may contain the data for one or more MRF transactions. Each transaction will be separated by the 'ENDTXN' indicator.
4. MEPS+ SGS Queue listener retrieves the MQ Message and passes the MQ data to the message handler.
5. The handler writes the MQ data into a text file on the server, and logs each transaction into individual records in the database and commit to the MQ. If the MQ data is not written to database successfully, the MQ message will be rolled back to MQ. The text file created previously will remain in the file system. Exception will be logged in application log.
6. The handler will then trigger the job processor to process the received MQ data. When the handler triggers the job processor, it passes the data in the file by value to the job processor. The job processor does not read from database or file. Each transaction (separated by the "ENDTXN" indicator) is loaded and processed separately.
7. The job processor will proceed to perform validation on transactions received and the interface report (SGBP0901) will be generated immediately showing the status of the processing for each transaction.

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<sup>2</sup> Currently eApps will not send 'masrepo.txt' file to MEPS+ SGS.

8. Upon successful validation, the transaction will proceed to the settlement phase. The settlement phase will carry out the business rule validation and securities settlement. For the detail settlement process, please refer to the MEPS+ SGS Function Specification.
9. Final status (failed or successful) of the processing will be sent to the TEC.

### 1.9.6 Exception Handling

Interface report (SGBP0901) will be generated when any of the validation failed. eApps will need to make the necessary amendment and send a new interface file (before the execution date) to MEPS+ SGS and MEPS+ will base on the new interface file to validate and process.

### 1.9.7 Handling of Failed Scenarios Due to Validation

1. The file will be validated at the transaction level (denoted by the 'ENDTXN' indicator) and rejected on the first error encountered for each transaction.
2. For example, a masrepo.txt file is sent with two MRF transactions. The first transaction is rejected due to invalid execution date, but the second transaction is accepted with positive validation. In this case, the first transaction will be rejected but the second transaction will proceed to the settlement phase.
3. All exceptions or failed validation will be logged in the application SGS log and the interface report (SGBP0901) will be generated immediately and also at the EOD batch job.
4. User has to correct the error and re-send the file.
5. MEPS+ SGS will check for duplicate transactions (for the duplicate checking fields, please refer to the MEPS+ SGS functional specifications). MRF transactions that are processed (except for those in reject status) will be rejected due to duplication.

### 1.9.8 Cut-off Point to Receive the Information

The MRF file will be processed real-time once it is received by the MEPS+ SGS. The validation and processing of the file received will be dependent on the MEPS+ SGS system activities' timings. For example if the file arrives after system has cutoff for the day, the transactions will be rejected. For more detail information, user can refer to the MEPS+ SGS Functional Specification for the information on the system activities.

### 1.9.9 Manual Contingency

During contingency, the MRF file can be uploaded through MEPS+ SGS Manual Contingency utilities. No specific filename needs to be used for the uploaded file. The file type selected (via the upload screen) will indicate the nature of the file.

## 1.10 Daily Closing Prices

### 1.10.1 Format

S/N	Field Name	Format	Position		Remarks
			Line	Col	
1.	VAL_DATE	X(8)	1	1	YYYYMMDD
2.	ISIN_CODE	X(12)	1	2	E.g. SG1234567890
3.	ISSUE_CODE	X(8)	1	3	E.g. NX00100H
4.	MLA_PRICE	9(3)v9(5)	1	4	E.g. 10500050 (105.00050)
5.	ILF_PRICE	9(3)v9(5)	1	5	E.g. 10500050 (105.00050)
6.	CLOSING_YIELD	X(1)S9(3)v9(5)	1	6	E.g. +00220000 (2.2) -00220000(-2.2)

- Fields 1 to 6 will be repetitive for each closing price record.
- Each closing price record must start on a new line.
- All fields/columns should be delimited with a delimiter ';'. If other delimiter such as "pipe" is used, system will not be able to process the data accordingly. Hence, it is expected that the file will fail in MEPS+.
- '9' denotes field having numeric value(s).
- 'X' denotes field having alphanumeric value(s).
- All fields with decimal places must be padded with leading or trailing zeroes, up to the required length

### 1.10.2 Field Definitions

1. VAL\_DATE
  - i) This will contain the date of the MLA, ILF and closing yield prices for the ISIN.
2. ISIN\_CODE
  - i) This will contain the ISIN Code of the securities.
3. ISSUE\_CODE
  - i) This will contain the MAS issue code of the securities.
4. MLA\_PRICE
  - i) This will contain the closing price for the ISIN for that day, which will be used by the SGS System for MLA valuation. If zero values are passed into the SGS System, the last known price will be used in the SGS System.
5. ILF\_PRICE
  - i) This will contain the price for the ISIN to be used for the next working day, which will be used by the SGS System for ILF valuation. If zero values are passed into the SGS System, the last known price will be used in the SGS System.
6. CLOSING\_YIELD
  - i) This should contain the positive/negative closing yield of the ISIN for the stated value date.

**Note** Previously, if zero values closing yield are passed into the SGS System, the last known closing yield will be used in the SGS System. With this change, the zero values closing yield will be updated in the SGS System.

### 1.10.3 Type of Validation

When the validation listed in Table 1 fails, the error log message will be displayed in the TEC console.

When the validation listed in table 2 fails, the error status will be logged in the interface report (SGBP0901). The error log message will also be displayed in the TEC console.

1. The message handler performs the following validation(s) when the file is received via WMQ:

	<b>Data Validation</b>	<b>Error Status</b>	<b>Error Log to TEC</b>
1.	Interface file must not be empty and has no empty line within the file.	Empty line.	Empty file/message received.

2. The job processor performs the following validations. The validation is repeated for each ISIN price record in the file.

	<b>Data Validation</b>	<b>Error Status</b>
1.	Format for VAL_DATE is correct and not backdated (less than MEPS+ SGS last business date).	Invalid date.
2.	ISIN Code exists in MEPS+ SGS.	Invalid ISIN Code.
3.	Issue Code exists in MEPS+ SGS and match the ISIN Code specified.	Invalid Issue Code.
4.	Value and format for MLA Price is valid.	Invalid MLA Price.
5.	Value and format for ILF Price is valid.	Invalid ILF Price.
6.	Value and format for Closing yield is valid.	Invalid Closing Price.
7.	Value and format for Closing yield sign is valid.	Invalid sign.

Note: Fields not mentioned in the above table will not be validated.

The job processor will not check if there is duplicate ISIN price record in the file. The latter record's prices will take precedence and updated into the system.

#### 1.10.4 Processing Requirement

EApps will place the 'closingprice.txt' in the WMQ to be sent to MEPS+ SGS.

User can also upload the 'closingprice.txt' to the system through the Manual Contingency function in MEPS+ SGS.

MEPS+ SGS will overwrite the closing prices of the ISIN in the system if the price already exists for the stated securities and value date. The file will be rejected at the first error encountered.

If the closing price record is for a new ISIN and the value date matches the auction date of the ISIN, the MLA price will be propagated to the MLA records that are 22 calendar days preceding from the ISIN's allotment date (including allotment date). The propagation will be triggered only through closing prices uploaded through WMQ or Manual Contingency function in MEPS+ SGS.

User can update the closing prices manually through the Closing Prices Entry screen.

The closing price file will be sent by eApps to the MEPS+ SGS everyday from Monday to Friday except public holidays.

Example:

The current business date is 4 May 2004 (Tuesday) and the next working day is 5 May 2004 (Wednesday). At the end of 4 May 2004, MEPS+ SGS received the following closing prices from eApps:

20040504;SG1234567890;NX00100H;10500050;11000050;00220000  
..... (Followed by closing prices for other ISINs)

The ILF price, i.e. 110.00050, will be used for calculations in the ILF transactions that are to be settled on 5 May 2004.

The MLA price, i.e. 105.00050, will be used for:

- a. Calculating MLA compliance for 6 May 2004 for members that are required to perform daily LB submissions for MLA compliance.
- b. Calculating MLA compliance for the period of 6 May 2004 to 12 May 2004 for members that are required to perform weekly LB submissions for MLA compliance.
- c. Calculating MLA compliance for the period of 6 May 2004 to 19 May 2004 for members that are required to perform fortnightly LB submissions for MLA compliance.

#### 1.10.5 Processing Flow

1. eApps will generate the interface file containing the yields and prices, and send the data to MEPS+ SGS.
2. The file name will be 'closingprice.txt' and this value will be set in the correlation ID field of the MQ Message sent to MEPS+ SGS.
3. MEPS+ SGS Queue listener retrieves the MQ Message and passes the MQ data to the message handler.
4. The handler writes the MQ data into database and commit to the MQ. If the MQ data is not written to database successfully, the MQ message will be rolled back to MQ. Exception will be logged in application log.
5. The handler will then triggers the job processor to process the received MQ data.
6. The job processor will proceed to perform validation on the data received and the interface report (SGBP0901) will be generated immediately showing the status of the processing.

7. Upon successful validation, the prices will be updated into the database.
8. If the price already exists for the stated securities and value date, the record will be updated with the latest closing prices received.
9. Final status (failed or successful) of the processing will be sent to TEC.

#### **1.10.6 Exception Handling**

Interface report (SGBP0901) will be generated when any of the validation failed. EApps will make the necessary amendments and send a new interface file (before the value date) to MEPS+ SGS and MEPS+ will base on the new interface file to validate and process.

#### **1.10.7 Handling of Failed Scenarios Due to Validation**

1. The job processor will reject the file at the first error encountered.
2. All exceptions or failed validation will be logged in the application SGS log and the interface report (SGBP0901) will be generated immediately and also at the EOD batch job.
3. User has to correct the error and re-send the file. For example:
  - Ensure an empty file has not been sent accidentally or that the empty file is not due to transmission problem.
  - Ensure the relevant field must be in correct format.

#### **1.10.8 Cut-off Point to Receive the Information**

There are two timings that need to be noted for this interface file.

The daily price file should (ideally) arrive before the beginning of day (BOD) of the next business day of the value date specified for the price. For example, a file containing prices for value date 12 April should reach the system before the BOD started for 13 April. If prices are not received by the time the system starts the BOD, the last known prices will be used.

However, if the file arrives during the day (13 April), it will still be accepted and overwrites the current prices in use. The file will still be accepted and process by system up till the end of day batch run for 13 April is run. This will be the cutoff point. After the value date is changed to 14 April, any prices for value date 13 April will be rejected.

#### **1.10.9 Manual Contingency**

The Daily Closing Price file can be uploaded through MEPS+ SGS Manual Contingency utilities. The user can also update the prices manually via the Closing Prices Entry utility screen. No specific filename needs to be used for the uploaded file. The file type selected (via the upload screen) will indicate the nature of the file. When an empty file is uploaded to the MEPS+ SGS, the system will validate the file and return an error message “File (*filename*) to be uploaded does not exist or is empty” on screen.

## 1.11 Savings Bonds Auction Results

### 1.11.1 Format

S/No	Field Name	Format	Position		Remarks
			Line	Col	
<i>Header</i>					
1	ISIN Code	X(12)	1	1	E.g. SG1234567890
2	Issue Code	X(8)	1	2	E.g. SBX0010H
3	Issue Date	X(8)	1	3	YYYYMMDD
4	Record Number	9(3)	1	4	Total number of records
<i>Auction details (repetitive)</i>					
5	Member Code	X(8)	2	1	E.g. OCBCSGSG
6	Bank Code	9(4)	2	2	E.g. 7339
7	Custody Code	X(3)	2	3	Must be CUS/WT0/WT1/WT2
8	Price	9(3)v9(5)	2	4	E.g. 12400500 (124.005)
9	Nominal Amount	9(13)	2	5	E.g. 0000000100000
10	Settlement Amount	9(13)v9(2)	2	6	E.g. 00000001000000 (\$100,000.00)
<i>End of auction indicator</i>					
11	End of auction	X(6)	N	1	ENDTXN

- Field 5 to 10 will be repetitive for each auction details record.
- Each auction details record must start on a new line.
- All fields/columns should be delimited with a delimiter ‘;’. If other delimiter such as ‘pipe’ is used, the system will not be able to process the data accordingly. Hence, it is expected that the file will fail in MEPS+.
- ‘9’ denotes field having numeric value. Unused area will be padded with leading zeroes.
- ‘X’ denotes field having alphanumeric value. Unused area will be padded with trailing spaces.

### 1.11.2 Field Definitions

#### 1. ISIN Code

- i. This will contain the ISIN code for the Savings Bond.
2. Issue Code
- i. This will contain the issue code for the Savings Bond.
3. Issue Date
- i. This will contain the allotment date. Must be in YYYYMMDD format.
4. Record Number
- i. This will indicate the number of repetitive lines of auction details to be expected for the batch of auction.
5. Member Code
- i. This will contain the 8-character BIC code of the member. The member must be a Participant in SGS.
6. Bank Code
- i. This will contain the 4-digit bank code of the member.
7. Custody Code
- i. This will contain the custody code of the member that the securities will be delivered to. Must be CUS / WT0 / WT1 / WT2.
8. Price
- i. This will contain the cutoff price for the allotted ISIN.
9. Nominal Amount
- i. This will contain the nominal amount to be allotted under the specified member's custody code.
10. Settlement Amount
- i. This will contain the total settlement amount that the member has to pay for the allotted ISIN.
11. End of Auction
- i. This will appear in the last line of each auction record and the value will be ENDTXN.

### **1.11.3 Type of Validation**

When the validation listed in Table 1 fails, the error log message will be displayed in the TEC console.

When the validation listed in table 2 fails, the error status will be logged in the interface report (SGBP0901). The error log message will also be displayed in the TEC console.

1. The message handler performs the following validation when the file is received. For failed validations, a TEC alert will be displayed.

	<b>Validation</b>	<b>Error Status</b>	<b>TEC Message</b>
1.	Interface file must not be empty and must not contain empty line within the file.	Empty line.	[MEP05024] EApps Savings Bonds Auction Results – Empty file/message received.

2. The job processor performs the following validations. For failed validations, the error status will be logged in the interface report SGBP0901.

A new TEC alert will be displayed for failed validations.

[MEP05025] EApps Savings Bonds Auction Results – Interface information rejected by system. Refer to interface report (SGBP0901 - SGS) for details.

	<b>Validation</b>	<b>Error Status</b>
1.	Any erroneous format causing the program to be unable to process the data.	Unable to process data.
2.	The auction result must be referenced to a valid allotment record in MEPS+ SGS.	Unable to find Allotment Master Record.
3.	The allotment must not be completed (allotted) yet.	Allotment Record has already been processed.
4.	The ISIN code must be a Savings Bond.	Invalid ISIN type.

Validation	Error Status
5. Issue code specified is valid and matches the ISIN code.	Issue Code specified in interface file is incorrect.
6. The ISIN must not be closed.	The ISIN is already closed.
7. The number of repetitive auction details lines after the header line (that contains the issuance information) must be equal to the value specified in the Record Number field in the header line.	Invalid total record count.
8. Number of fields of each auction results record must be correct.	Unable to process data.
9. Member code exists in MEPS+ SGS.	Invalid member code.
10. Member must be a valid Participant in MEPS+ SGS.	Invalid member type.
11. Bank code exists in MEPS+ SGS and matches the member code specified.	Invalid bank code.
12. Custody code must be CUS / WT0 / WT1 / WT2.	Invalid custody code.
13. Value and format for price must be valid.	Invalid price.
14. Value and format for nominal amount must be valid.	Invalid nominal amount.
15. Value and format for settlement amount must be valid.	Invalid settlement amount.

Note: Fields not mentioned in the above table will not be validated.

#### 1.11.4 Processing Requirement

EApps /Savings Bonds will place the file 'auction\_sbond.txt' in the WMQ to be sent to MEPS+ SGS.

During contingency, user can also upload the 'auction\_sbond.txt' to the system through the Manual Contingency function in the MEPS+ SGS.

The MEPS+ SGS will not check for duplicate file. When the allotment was created based on the file received from the eAPPs, it will overwrite the auction results in the system. When the allotment is not done (allotted), the MEPS+ SGS will create the auction results based on the file received from the eApps in the system. TEC alert will be displayed for passed validations "[MEP05001] EApps Savings Bond Auction Results - Interface Information successfully processed by system".

For file that contains multiple auction results, the message handler will split the auction results in the file received based on the "ENDTXN" indicator. If the "ENDTXN" indicator is not placed between two batches of auction results, the message handler will treat them as one and validate as one batch of auction result. The job processor will validate each batch of auction results separately, as though they arrive in separate file.

The file will be validated at the record level (denoted by the 'ENDTXN' indicator) and rejected on the first error encountered in that record. For example, an "auction.txt" file is sent with two allotment records. The first record is rejected due to invalid member code, but the second record is accepted with positive validation. In this case, the first allotment record will be rejected but the second allotment record will be stored in the system, waiting for the allotment day.

User can create or modify the allotment results manually through the Allotment maintenance screen.

#### 1.11.5 Processing Flow

1. eApps will generate the interface file containing the auction results, and send the data to the MEPS+ SGS.
2. The data file will be 'auction\_sbond.txt' and the filename will be set in the correlation ID field of the MQ Message sent to MEPS+ SGS.
3. The file may contain the results for one or more auctions. Each set of auction results will be separated by the 'ENDTXN' indicator.
4. MEPS+ SGS Queue listener retrieves the MQ Message and passes the MQ data to the message handler.
5. The handler writes the MQ data into a text file on the server, and logs each set of auction results into individual records in the database and commit to the MQ. If the MQ data is not written to database successfully, the MQ message will be rolled back to MQ. The text file created previously will remain in the file system. Exception will be logged in application log.
6. The handler will then trigger the job processor to process the received MQ data. When the handler triggers the job processor, it passes the data in the file by value to the job processor. The job processor does not read from database or file. Each set of auction results (separated by the "ENDTXN" indicator) is loaded and processed separately.
7. The job processor will proceed to perform validation on results received and the interface report (SGBP0901) will be generated immediately showing the status of the processing for each auction.
8. Upon successful validation, the auction results will be updated into the database.
9. For failed validations, screen alerts and/or email alerts will also be sent to users who have been authorized to receive the alerts.

10. Final status (failed or successful) of the processing will be sent to TEC.

#### **1.11.6 Exception Handling**

Interface report (SGBP0901) will be generated when any of the validation failed. The eApps will need to make the necessary amendment and send a new interface file (before the issue date) to the MEPS+ SGS and the MEPS+ will then validate and process the new interface file.

#### **1.11.7 Handling of Failed Scenarios Due to Validation**

7. The file will be validated at the record level (denoted by the 'ENDTXN' indicator) and rejected on the first error encountered for each auction record.
8. For example, an "auction.txt file" is sent with two allotment records. The first one is rejected due to invalid member code, but the second one was accepted with positive validation. The first allotment record will be rejected but the second one will be stored in the system, waiting for the allotment day.
9. All exceptions or failed validation will be logged in the application SGS log and the interface report (SGBP0901) will be generated immediately and also at the EOD batch job.
10. For failed validations, screen alerts and/or email alerts will also be sent to users who are authorized to receive the alerts.
11. User has to correct the error and re-send the file.
12. MEPS+ SGS will not check for duplicate file. As long as the allotment is not done (allotted) yet, MEPS+ SGS will create or overwrite the auction results in the system, based on the file received from eApps.

#### **1.11.8 Cut-off Point to Receive the Information**

The auctions results need to be sent to MEPS+ SGS before the EOD of the business day before the issuance date (T-1). Auction results are received and stored in the system until the allotment process was initiated. For allotment where the auction results are available before the planned issuance date, the system will automatically perform the allotment during the EOD batch run.

If results are not received by the stipulated cutoff point, manual intervention may be required for the allotment to be activated during intraday.

For new issuance, the system will still wait for the auction results to be loaded (through MQ, Upload or Maintenance screen). After the auction results are loaded and saved in the system successfully, user can trigger the allotment process manually via the "Activate Allotment" utility screen.

For re-opening, the re-opening record will be house kept by the system if auction results are not available prior to the cutoff point. User will need to recreate the re-opening record before the auction results can be loaded and trigger the allotment process manually.

In the scenario where results are loaded but the user did not trigger the allotment process during intraday, the auction records will be run automatically at the EOD batch run of that business date. The settlement date of the allotment transactions will be based on the actual business day where the issuance takes place. When users view the "ALO" transaction record via the Enquiry screen, they will see the trade date containing the original issuance date, but the value date will reflect the actual date that the settlement takes place. This is similar to the case where issuance date falls on a holiday and issuance will take place on the next business day.

### 1.11.9 Manual Contingency

During contingency, the Savings Bonds auction results interface file can be uploaded through the SGS Manual Contingency function. No specific filename needs to be used for the uploaded file. The file type selected (via the upload screen) will indicate the nature of the file. The User can also create or modify the auction results manually via the “Allotment Maintenance” screen function provided.

In situation where the allotment results are not interfaced to the MEPS+ SGS system prior to the cutoff point, the actions required by the User to trigger it manually will depend if it is a new issuance or re-opening. Please refer to section 1.11.8 for the follow-up action.

## 1.12 Step-up Coupon Rates

### 1.12.1 Format

S/No	Field Name	Format	Position		Remarks
			Line	Col	
<i>Header</i>					
1	ISIN Code	X(12)	1	1	E.g. SG1234567890
2	Issue Code	X(8)	1	2	E.g. SBX0010H
3	Frequency	X(1)	1	3	Frequency of the coupon payments • M – Monthly • Q – Quarterly • S – Semi-Yearly • Y – Yearly • T – At Maturity
4	Record Number	9(3)	1	4	Total number of coupon rate records
<i>Coupon rate details (repetitive)</i>					
5	Year Number	9(2)	2	1	E.g. 01
6	Coupon Number	9(2)	2	2	E.g. 01
7	Coupon Payment Date	X(8)	2	3	YYYYMMDD
8	Coupon Rate	9(3)v9(5)	2	4	E.g. 12400500 (124.005)
<i>End of record indicator</i>					
9	End of record	X(6)	N	1	ENDREC

- Field 5 to 8 will be repetitive for each coupon rate record of the ISIN.
- Each coupon rate details record must start on a new line.
- All fields/columns should be delimited with a delimiter ‘;’. If other delimiter such as ‘pipe’ is used, the system will not be able to process the data accordingly. Hence, it is expected that the file will fail in MEPS+.
- ‘9’ denotes field having numeric value. Unused area will be padded with leading zeroes.
- ‘X’ denotes field having alphanumeric value. Unused area will be padded with trailing spaces.

### **1.12.2 Field Definition**

1. ISIN\_CODE
  - i) This will contain the ISIN Code for the savings bond.
2. ISSUE\_Code
  - i) Example of the code: SBX0010H.
3. Frequency
  - i) This will contain the frequency at which coupon payment will be performed.
  - ii) Must be 8 digits. The format is YYYYMMDD. This is also known as allotment date.
4. Record Number
  - i) Must contain only digits.
  - ii) This field indicates the number of repetitive lines of step-up coupon rates to be expected for the ISIN.
5. Year Number
  - i) This will contain the year number of the coupon payment.
6. Coupon Number
  - i) This will contain the coupon number of the year number (specified in field 5 above).
7. Coupon Payment Date
  - i) This will contain the coupon payment date in YYYYMMDD format.
8. Coupon Rate
  - i) This will contain the step-up coupon rate applicable for the specified coupon payment date.
9. End of record
  - ii) This will appear in the last line of each auction record and the value will be ENDREC.

### **1.12.3 Processing Requirement**

Users may perform multiple activation of the file sending via the Send Step-up Coupon Rates to eApps function within the same day. Upon each trigger the system will retrieve the latest details of the selected ISIN to generate the couponrates\_sbond.txt interface file and send it to eApps.

The couponrates\_sbond.txt interface file will contain all step-up coupon rate records of the selected ISIN, including the coupon payment dates that have already passed.

The file ' couponrates\_sbond.txt' will be placed in the WMQ to be sent to eApps.

During contingency, user can download the couponrates\_sbond.txt last generated by the system through the Manual Contingency function in MEPS+ SGS.



## 1.13 Partial Redemption Requests

### 1.13.1 Format

S/No	Field Name	Format	Position		Remarks
			Line	Col	
1	ISIN Code	X(12)	1	1	E.g. SG1234567890
2	Issue Code	X(8)	1	2	E.g. SBX0010H
3	Redemption Date	X(8)	1	3	YYYYMMDD
4	Member Code	X(8)	1	4	
5	Bank Code	9(4)	1	5	
6	Custody Code	X(3)	1	6	Must be CUS/WT0/WT1/WT2
7	Nominal Amount	9(13)	1	7	
8	Call Price	9(3)v9(5)	1	8	Call price per lot for partial redemption of the securities

- Field 1 to 8 will be repetitive for each redemption request record.
- Each redemption request record must start on a new line.
- All fields/columns should be delimited with a delimiter ‘;’. If other delimiter such as “pipe” is used, system will not be able to process the data accordingly. Hence, it is expected that the file will fail in MEPS+.
- ‘9’ denotes field having numeric value. Unused area will be padded with leading zeroes.
- ‘X’ denotes field having alphanumeric value. Unused area will be padded with trailing spaces.

### 1.13.2 Field Definitions

1. ISIN Code
  - i) This will contain the ISIN code for the Savings Bond.
2. Issue Code
  - i) This will contain the issue code for the Savings Bond.
3. Redemption Date
  - i) This will contain the redemption date for the partial redemption. Must be in YYYYMMDD format.

4. Member Code
  - i) For Participants, this will contain their 8-character BIC code. For Non-Participants, this will contain the 8-character member code assigned to them.
  
5. Bank Code
  - i) This will contain the 4-digit bank code of the member.
  
6. Custody Code
  - i) This will contain the custody code of the member that the securities will be redeemed from. Must be CUS / WT0 / WT1 / WT2.
  
7. Nominal Amount
  - i) This will contain the nominal amount to be redeemed under the specified member's custody code.
  
8. Call Price
  - i) This will contain the call price per lot for partial redemption of the Savings Bond.

### **1.13.3 Type of Validation**

The message handler performs the following validation when the file is received. For failed validations, a TEC alert will be displayed.

	<b>Validation</b>	<b>Error Status</b>	<b>TECMessage</b>
1.	Interface file must not be empty and must not contain empty line within the file.	Empty line.	[MEP05024] EApps Savings Bonds Partial Redemption Requests – Empty file/message received.

The job processor performs the following validations. For failed validations, the error status will be logged in the interface report SGBP0901.

A new TEC alert will be displayed for failed validations.

[MEP05025] EApps Savings Bonds Partial Redemption Requests – Interface information rejected by system. Refer to interface report (SGBP0901 - SGS) for details.

	<b>Validation</b>	<b>Error Status</b>
1.	Any erroneous format causing the program to be unable to process the data.	Unable to process data.
2.	Invalid ISIN Code.	Invalid ISIN Code.
3.	ISIN Type should be Savings Bond.	Invalid ISIN Type.
4.	The ISIN must not be closed.	The ISIN is already closed.
5.	Issue code specified must be valid and matches the ISIN code.	Issue code specified in interface file is incorrect.
6.	Redemption date must be current or future dated.	Invalid redemption date.
7.	Member code must exist in SGS.	Invalid member code.
8.	Member status must be valid in SGS.	The member is already closed.
9.	Bank code must exist in SGS and matches the member code specified.	Invalid bank code.
10.	Custody code must be CUS / WT0 / WT1 / WT2.	Invalid custody code.
11.	Value and format for nominal amount must be valid.	Invalid nominal amount.
12.	Nominal amount should not be zero.	Nominal amount should not be zero.
13.	Value and format for call price must be valid.	Invalid call price.
14.	Interface file must not contain duplicate records within the file or duplicate with records that are already accepted in the system previously.	Duplicate record.

#### 1.13.4 Processing Requirement

eApps will consolidate the requests and send the redemption request files to SGS at the end of the month, prior to the redemption date.

SGS will accept a partial redemption request as long as it is sent before end of the partial redemption date (T).

- For redemption requests received before the partial redemption date, the redemption process will take place in SGS during end of day of the partial redemption date (T-1).
- For redemption requests that are received on the partial redemption date (T), i.e. same-day partial redemption, MAS have to activate the partial redemption process manually via the Activate Redemption function.

Upon receiving the data file, SGS will perform validations on the file. The file will be validated at the record level, i.e. per line basis. For example:

- The partial redemption file contains two redemption requests. The first request is rejected due to invalid redemption date and the second request is accepted with positive validation. In this case, the first request will be rejected but the second request will be accepted by SGS for further processing.

SGS will perform the following duplicate check on the partial redemption records. Duplicate records will be rejected.

- For duplicate records within the same interface file, the first record will be considered valid if it passed all other validations, and the second record will be rejected for duplicate.
- For records which already exist in SGS, the duplicate records in the interface file will be rejected.

For successful file, SGS will create the partial redemption records. These records will be stored in the system and SGS will perform the redemption on the partial redemption date.

#### 1.13.5 Manual Contingency

During contingency, the partial redemption can be uploaded via the Manual Contingency function in SGS. No specific filename needs to be used for the uploaded file. The file type selected on the upload screen will indicate the nature of the file.

MAS users can also create or modify the partial redemption records manually via the Partial Redemption for Selected Members function.

## 1.14 Daily SORA Index

### 1.14.1 Format

S/No	Field Name	Format	Position		Remarks
			Line	Col	
1	SORA Publication Date	X(8)	1	1	YYYYMMDD E.g. 20201126
2	SORA Value Date	X(8)	1	2	YYYYMMDD E.g. 20201125
3	SORA Index	9(3)v9(10)	1	3	E.g.1240050100000 (124.0050100000)

- Only one record will be allowed per interface file.
- All fields/columns should be delimited with a pipe character ('|'). If other delimiter such as 'semicolon' is used, the system will not be able to process the data accordingly. Hence, it is expected that the file will fail in MEPS+.
- '9' denotes field having numeric value. Unused area will be padded with leading zeroes.
- 'X' denotes field having alphanumeric value. Unused area will be padded with trailing spaces.

### 1.14.2 Field Definitions

1. SORA Publication Date
  - i) This will contain the Published Date of the SORA rate that the file is sent. The SORA Publication Date will always be one business day later than SORA Value Date.
2. SORA Value Date
  - i) This will contain the Value Date of the SORA rate. The SORA Value Date will always be one business day earlier than SORA Value Date.
3. SORA Index
  - i) This will contain the SORA rate for the stated Publication Date to be updated in the SORA Rates function screens in SGS.

### 1.14.3 Type of Validation

The message handler performs the following validation when the file is received. For failed validations, a TEC alert will be displayed.

	<b>Validation</b>	<b>Error Status</b>	<b>TEC Message</b>
1.	Interface file must not be empty and must not contain empty line within the file.	Empty line.	[MEP05006] eApps System SORA Rate – Empty file/message received.

The job processor performs the following validations. For failed validations, the error status will be logged in the interface report SGBP0901.

A TEC alert will be displayed for failed validations.

[MEP05004] eApps System SORA Rate – Interface information rejected by system. Refer to interface report (SGBP0901 - SGS) for details.

<b>S/No.</b>	<b>Validation</b>	<b>Error Status</b>
1.	Any erroneous format causing the program to be unable to process the data.	Unable to process data.
2.	The interface file contain more than 1 line.	Invalid number of line in the file.
3.	Record length must not exceed more than 31 characters.	Invalid Length.
4.	Format for SORA Publication Date must be in "YYYYMMDD" format.	Invalid SORA Publication Date.
5.	SORA Publication Date must not fall on a non-working day.	SORA Publication Date falls on a non-working day.
6.	Format for Value Date must be in "YYYYMMDD" format.	Invalid Value Date.
7.	Value Date must not fall on a non-working day.	Value Date falls on a non-working day.
8.	SORA Publication Date cannot be the same or earlier than Value Date.	SORA Publication Date must be later than the Value Date.

S/No.	Validation	Error Status
9.	Value Date cannot be the same or later than SORA Publication Date.	Value Date must be earlier than the SORA Publication Date.
10.	SORA Rate must be numeric format and in 10 decimal places.	Invalid SORA Rate.

#### 1.14.4 Processing Requirement

eApps will send the daily SORA index file to SGS via WMQ daily at beginning of day when system opens (e.g. at 0900hrs).

Upon receiving the daily SORA index file, SGS will perform validations on the file. The file will be rejected at the first error encountered. As such, user will have to correct the error and re-send the file to MEPS+ in order for MEPS+ to process the file successfully.

SGS will not check for duplication on the SORA rate records found in both file and MEPS+ SGS screen. The latter's SORA Rate record will take precedence and update in SGS.

For successful file, SGS will create the SORA Rate record which will be stored in SGS SORA Rates function screen. Once the rate is created or updated in SGS, it will be effective for the MAS FRN Coupon calculation.

The interface file should (ideally) arrive before the SGS Jobs are brought down for before end of day (EOD) backup. If the interface is not received by the time the system calculates the Coupon Rate for a particular MAS FRN Bond that is maturing or close to its coupon payment date, the coupon rate will be treated as zero percentage and at coupon payment date, the coupon payment amount will be calculated as zero. For this case, MAS will have to perform manual intervention by constructing a normal funds transfer (e.g. MT 202 message) to manually settle the coupon proceeds to the respective securities holders.

In addition, SGS also checks for the SORA rates information are updated into the system daily. In the event that SGS is not able to find any SORA rates information record on that day (e.g. no records with SORA publication date found with the same date as MEPS+ current value), there will be an 'ERRO' severity TEC alert displayed in the SGS Job Logs at end of the day to inform MAS.

Example:

[MEP01062] SORA Rate for DD-MMM-YYYY Publication Date is not found in MEPS+.

Note that housekeeping frequency of SORA Rates records in SGS will be done every 5 years. This is to cater for MAS FRN securities with longer tenor period (e.g. up to 5 years) where system require to retrieve the SORA Rate and perform coupon / daily accrual interest calculation.

#### 1.14.5 Manual Contingency

During contingency, the daily SORA index file can be uploaded via the Manual Contingency function in SGS. Alternatively, MAS users can also manually add or modify the SORA rate records via the SORA Rates function in SGS

#### **End of Document**