



TOTAL RETURN FUTURES ON THE CAC 40® INDEX

THE LISTED SOLUTION TO TRADE THE IMPLIED EQUITY REPO RATE
ON THE CAC 40® INDEX



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BENEFITS OF TRADING THE TRF ON THE CAC 40

The Total Return Future on the CAC 40® Index (TRF):

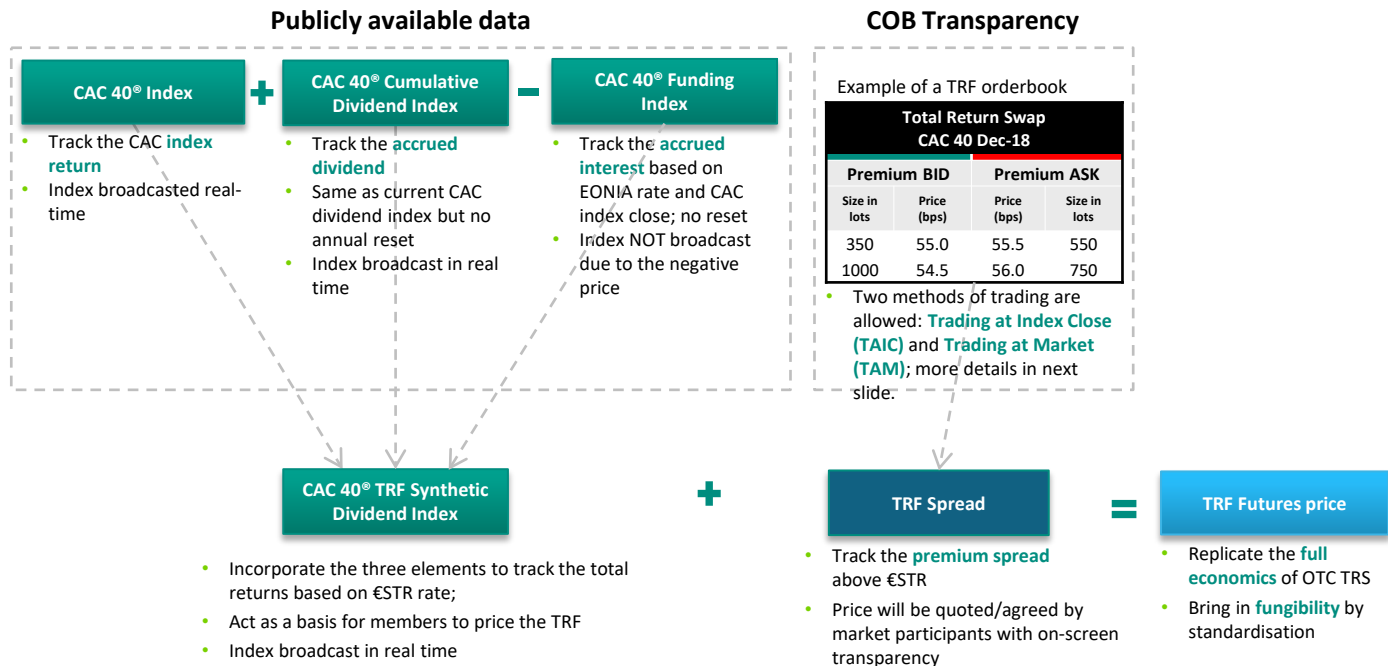
- offers a **listed solution to trade the implied equity repo rate on the CAC 40**, until now traded OTC as total return swaps (TRS). The TRF spread is expressed as an annualised rate (+/-) in basis points;
- offers **long-term exposure** with maturities available up to 5 years and 3 months (21 nearest quarterly months of the March, June, September and December cycle);
- offers a **cost-efficient approach** to trade the TRS, which **mitigates counterparty risk** and **provide strong margin offsets** when trading the CAC 40 Index future and the TRF (see [margin efficiency and offsets](#) slide);
- offers **payoff accuracy** and **fungibility** through a clear daily settlement procedure and possibility of trading at index close;
- provides **market transparency** and improved liquidity through a centralised order book;
- aims to attract new clients (pension funds, asset managers) wanting to use repo as a new asset class.

The TRF is designed to replicate the full economics of OTC total return swaps in a cost-effective manner, while simplifying the product settings to make it more suited to the exchange environment.



TRADING METHODOLOGY (1/2)

The basic economics of a TRF contract include 4 elements, where **the Synthetic Dividend Index price** is publicly available and the **TRF Spread** will be quoted/agreed by market participants with on-screen transparency.



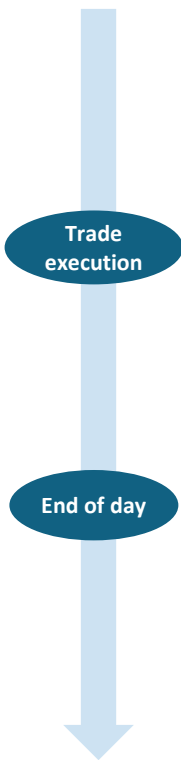
TRADING METHODOLOGY (2/2)

Members can trade the TRF using two modes:

- A. Trading At Index Close (TAIC)
- B. Trading At Market (TAM)

| | A. Trading At Index Close (TAIC) | B. Trading At Market (TAM) |
|------------------|--|--|
| TRADING FACILITY | Via Central Order Book & Wholesale | Via Wholesale only |
| ORDER ENTRY | TRF Spread in bps, e.g. 50.5 bps | TRF Futures price in index points, e.g. 5,300.77 points |
| TRADE PRICE | Final futures price is known at the end of the day (After the index close is known) | Final futures price is known at the time of trading |

EXAMPLE OF A TAIC TRADE



Trade execution

End of day

| Total Return Futures CAC 40 Dec-18 | | | |
|---------------------------------------|-------------|-------------|--------------|
| Premium BID | | Premium ASK | |
| Size in lots | Price (bps) | Price (bps) | Size in lots |
| 300 | 50.0 | 50.0 | 300 |
| 420 | 49.5 | 50.5 | 250 |

Buyer ↔ Seller

On 20 Aug 2018, the equilibrium in the order book generates one transaction:
300 lots of CAC TRF Dec-18 Expiry are traded at 50.0 bps; Trading mode: Trading at Index Close (TAIC)

| Trade Info | |
|---------------------|------------|
| Trade date | 20/08/2018 |
| Traded Spread (bps) | 50.0 bps |
| Traded Quantity | 300 lots |
| Expiry date (T) | 21/12/2018 |

At the end of day, final futures price will be calculated based on CAC Synthetic Dividend Index Close
300 lots of CAC TRF futures Dec-18 Expiry will be delivered at the price of 5,733.61

| Final futures price calculation | |
|-------------------------------------|-----------------|
| CAC Index closing at 20/08/2018 (1) | 5,370.14 |
| Cumul. Dividend index close (2) | 323.09 |
| Funding index closing (3) | -30.91 |
| Basis traded (4) | 9.47 |
| Traded futures price | |
| = (1) + (2) - (3) + (4) | 5,733.61 |

TRANSACTION FEE AND MARKET MAKING SCHEME

TRANSACTION FEE

- **Trading + Clearing fee:** €0.9 per lot
- **Settlement fee:** €0.9 per lot

MARKET MAKER REVENUE-SHARING PROGRAMME

Quotation requirement

- Presence time: at least 80% on COB between 09:01 and 17:25 CET, in accordance with the below spread/size requirement

| Maturities | Maximum spread in basis points | Minimum size |
|--------------|--------------------------------|--------------|
| 1st maturity | 20 | 25 |
| 2nd maturity | 15 | 25 |
| 3rd maturity | 10 | 10 |

Market Maker Revenue Sharing programme

- Qualified Market Makers will share 15% of the net trading revenues
- Members are invited to consult the dedicated Info-Flash for more details of the programme, available on the [Euronext website](#)

MARGIN EFFICIENCY AND OFFSETS (1/2)

Two steps to calibrate the Initial Margin on TRF:

- The **Initial Margin** parameter is calibrated using absolute returns on a **2-day** holding period
- The **Initial Margin** parameter is floored at the CAC 40[®] initial margin parameter; when necessary, a **penalty of 0.15%** will be added to cover any Daily Settlement Basis decorrelation

LCH SA Initial Margin:

- **Naked positions** on TRF:
 - Estimated Initial margin parameter on TRF without offset with CAC 40[®] future is: **7.22%**
- “**Perfect**” spread position of TRF vs CAC 40 future:
 - The margin parameter is **1.44%**
- Effective initial margin will depend on the constituents and buy/sell positions of each portfolio.*

MARGIN EFFICIENCY AND OFFSETS (2/2)

Margin offsets

The Total Return Future on the CAC 40® Index is cleared by LCH SA. Participants therefore benefit from:

- mitigation of counterparty risk due to Central Counterparty Clearing
- margin offsets across listed equity index products.

Illustration of most frequently traded strategy:

When going long the TRF on CAC 40® Index and short the CAC 40® Index Future, investors will benefit from margin savings up to 92%* as follows:

| Portfolio | Individual Initial Margins | Total Margin** before offset | Final Margin** before offset | Offset*** between 2 underlyings |
|----------------------|----------------------------|------------------------------|------------------------------|---------------------------------|
| Long TRF CAC 40® | 5.05% or €276 | 5.01% or €537 | 0.38% or €44 | up to 92% |
| Short CAC 40® Future | 4.96% or €261 | | | |

Below are multiple examples of margin savings across frequently used portfolios:

| Product Long / Product Short | Initial Margin with offset applied** | Offset effect** |
|---|--------------------------------------|-----------------|
| TRF CAC 40® versus Index Futures | | |
| TRF CAC 40® / CAC 40® Future | 0.38% | up to 92% |
| TRF CAC 40® / AEX® Future | 2.19% | up to 57% |
| TRF CAC 40® versus Single Stock Futures (SSF) | | |
| TRF CAC 40® / Total SSF | 4.10% | up to 50% |
| TRF CAC 40® / Total SSF + BNP Paribas SSF + Unicredit SSF | 3.38% | up to 63% |
| TRF CAC 40® versus Index Dividend Futures | | |
| TRF CAC 40® / CAC 40® Dividend Future | 4.01% | up to 30% |

*92% is the offset on the long/short strategy: as required by EMIR where portfolio margining covers multiple instruments, the amount of margin reductions will comply with the EMIR regulatory cap set at 80% of the sum of the margins for each product calculated on an individual basis.

** The margin parameters are updated on a regular basis and can be found at www.lch.com/risk-collateral-management/risk-notice. The ones used in these examples were estimated as of June 2017 and are provided for illustration purposes only. Please refer to the LCH website www.lch.com for the full methodology and application rules.

CONTRACT SPECIFICATIONS

| | |
|---|---|
| CONTRACT | Total Return Futures (TRF) on CAC 40® Index |
| EURONEXT DERIVATIVE MARKET | Paris |
| UNDERLYING INDICES | CAC 40® Index, CAC 40® Cumulative Dividend Index and CAC 40® Funding Index referring to €STR (combined as CAC 40® Synthetic Dividend Index) |
| CONTRACT MULTIPLIER (CONTRACT SIZE) | € 10 per index point (e.g. value € 41,000 at 4,100.0) |
| MINIMUM TRF SPREAD | +/- 0.5 bps (1 basis point = 0.0001) |
| QUOTATION TRF SPREAD (BASIS POINTS) | TRF spread as annualised rate expressed in basis points with one decimal (+/-/0) |
| ORDER TYPES | Trade at Index Close (TAIC) with an index level based on the daily CAC 40® Index close. Trade at Market (TAM) with a custom-defined index level. |
| TRADING HOURS | Central Order Book (TAIC): 09:30 - 17:30 CET Large-in-Scale Facility (TAIC & TAM): 09:30 - 18:30 CET |
| ACCRUED DISTRIBUTIONS & ACCRUED FUNDING (INDEX POINTS) | The distribution and funding rate payments will be accumulated from the TRF product launch and added to the TRF futures price in index points. The daily changes in distributions and funding payments are paid out via variation margin. |
| WHOLESALE SERVICE | Large-in-Scale |
| MATURITIES/TENOR | Up to five years and 3 months – the 21 nearest quarterly months of the March, June, September and December cycle. |
| EXPIRY DATE | The 3 rd Friday of the expiry month in the Mar, Jun, Sep, Dec cycle. If the third Friday is not an exchange trading day, expiry will be on the trading day immediately preceding that day |
| TIME CONVENTION | Actual/360 |
| DAILY SETTLEMENT TRF SPREAD (BASIS POINTS) | Daily Settlement Basis in bps for each maturity is decided by (1) VWAP of all trades in last 30 mins; (2) if no trade during this time period, then the mid-BBO at the closing time is used; (3) if no BBO available then the previous Daily Settlement Basis is used. |
| DAILY SETTLEMENT PRICE (INDEX POINTS) | Established on the current exchange trading day based on the following components: Close CAC, Daily Settlement Basis, Accumulated Dividend Index and Accumulated Funding Index |
| SETTLEMENT | Cash settlement, due on the first exchange trading day after final settlement day |
| LAST TRADING DAY | The Euronext exchange trading day immediately preceding the expiration day |
| FINAL SETTLEMENT PRICE (INDEX POINTS) | Established on expiry day and based on the following components: Final settlement price of all CAC 40® Index Futures (CAC), accrued distributions and accrued funding from the product launch until the expiry date. |
| MINIMUM SIZE FOR LARGE-IN-SCALE TRADE | 10 lots |
| VENDOR CODES | Bloomberg: TRCA <Index> Reuters: 0#FCTS |

CONTACTS

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euronext.com/investors/financial-derivatives/total-return-futures





ANNEX



TRF INDICES

Euronext has built dedicated indices for TRF pricing, combining in real-time the three components: CAC 40® Index, accrued dividend and accrued funding.

| Index name | ISIN code | Mnemo | Bloomberg Code | Reuters code | Base date | Base value |
|-----------------------------|-----------------|-------|----------------|--------------|-----------|------------|
| CAC 40® Synthetic Dividend | FR0013252418 | C4SD | C4SD | .C4SD | 19-12-16 | 4822,77 |
| CAC 40® Funding | Not broadcasted | C4FU | | | 01-10-18 | 0 |
| CAC 40® Cumulative Dividend | FR0013252392 | C4CD | C4CD | .C4CD | 19-12-16 | 0 |
| CAC 40® | FR0003500008 | PX1 | CAC | .FCHI | 31-12-87 | 1000 |

CAC 40® Synthetic Dividend Index

CAC 40® Synthetic Dividend Index = CAC 40® Index (1) + CAC 40® Cumulative Index (2) – CAC 40® Funding Index (3)

(1) CAC 40® Index

(2) CAC 40® Cumulative Index

The index follows the same index rule as CAC 40® Dividend Index, but without reset.

(3) CAC 40® Funding Index (not broadcast)

Funding index_t = Funding index_{t-1} + Daily accrued funding_t

Daily accrued funding_t = CAC Index Close_{t-1} * recalibrated EONIA_{t-1} * [(t+2BD)-((t-1)+2BD)]/360

Though not broadcast, the funding index can be easily retrieved from 1) the data file published twice a day or 2) the Synthetic Dividend Index formula above (all 3 other elements are known).

TRADING FORMULAS

1) Trading At Index Close:

TRF Futures Price = CAC Synthetic Dividend Index Close_t + TRF spread price in index point

TRF spread price in index point = TRF spread price in bps * CAC Index Close_t * Days to Maturity_t

Days to Maturity_t = (Expiry date + 2BD) – (t + 2BD)

2) Trading At Market:

TRF Futures Price = the Traded Price (the custom-defined index level)

3) Daily Settlement Price:

DSP = CAC Synthetic Dividend Index Close + TRF Daily Settlement spread of the respective expiry

4) Final Settlement Price (EDSP):

EDSP = Final Settlement Price of CAC index futures (FCE) + Cumul. Dividend Index close – Funding Index close

TRADING AND CLEARING MESSAGES

TRADING MEMBER MESSAGING

At the trading member level, one execution report (message 8) will be received for TAM trade, and two execution reports will be received for TAIC trade

- **For Trading At Market (TAM) trade**
 - A confirmed execution report in index points (clearing notation) with an Exec Type = 'C'
 - **For Trading At Index Close (TAIC) trade**
 - A temporary Execution report in both Basis Price and Temporary Index Price with an Exec Type = 'B'
 - A confirmed execution report with both Basis Price and updated Final Index Price (clearing notation) with an Exec Type = 'C'
- Note: TradeID & ExecID will be the same for the same pair of temporary/final trades.

CLEARING MEMBER MESSAGING

At the clearing member level, to allow members to track the **TAIC trade** (Preliminary & Final) and differentiate from **TAM trade**, clearing members will receive the **ExternalTradeID** from LCH following the rules below:

- TAIC temporary (create and delete) trade will always end with '5'
- TAIC final trade and TAM trade will always end with '0' (COB) or '9' (wholesale)
- TAIC temporary and final trades will share the same Trade ID except the last digit
 - Temporary: 1111115, validity indicator = 'T'
 - Final: 1111110 or 1111119, validity indicator = 'F'

For the same trade: 'TradeID' on the trading side is the same as on the clearing side except for the last digit: e.g."111111" for trading, "1111110" for clearing
In this way, clearing members are able to identify/reconcile the two types of trade.

MARKET DATA FILE

- Euronext publishes a daily TRF data file, which contains all the pricing information.
- The file is published twice a day (Start of Day preliminary version at 09:20 CET / End of Day extended version at 19:05 CET) and is available on the Euronext website and via the Euronext File Server (EFS).

- Please refer to the parameter file specifications on the website

<https://connect2.euronext.com/membership/resources/it-documentation/library?combine=trf>

> TRF Conversion Parameters Files Specifications

Example of data file:

| Publicatio | Contract | Expiry_co | Symbol_ir | ProdBusD | Annualisa | BusinessD | DaySettlD | FundingD | InstBusDa | ExpSettlD | DaysToM | SettlSpre | SettlBasis | SettlClgPr | Funding_I | Cumulata | Prelimina | FinalInde | FundingR | DailyFund | DailyDistr | Synthetic | Dividend | Index |
|------------|----------|-----------|-----------|----------|-----------|-----------|-----------|----------|-----------|-----------|---------|-----------|------------|------------|-----------|----------|-----------|-----------|----------|-----------|------------|-----------|----------|-------|
| 20180910 | :JFFCS | sept-18 | 4.18E+09 | 20180910 | 360 | 2 | 20180912 | 1 | 20180910 | 20180925 | 12 | 0.000176 | 0.01 | 0 | -32.0983 | 323.33 | 5252.218 | 5269.631 | -0.00361 | -0.0527 | 0 | 5625.058 | | |
| 20180910 | :JFFCS | DEC18 | 4.18E+09 | 20180910 | 360 | 2 | 20180912 | 1 | 20180910 | 20181227 | 105 | 0.001537 | 0.01 | 0 | -32.0983 | 323.33 | 5252.218 | 5269.631 | -0.00361 | -0.0527 | 0 | 5625.058 | | |
| 20180910 | :JFFCS | mars-19 | 4.18E+09 | 20180910 | 360 | 2 | 20180912 | 1 | 20180910 | 20190319 | 187 | 0.002737 | 0.01 | 0 | -32.0983 | 323.33 | 5252.218 | 5269.631 | -0.00361 | -0.0527 | 0 | 5625.058 | | |
| 20180910 | :JFFCS | JUN19 | 4.18E+09 | 20180910 | 360 | 2 | 20180912 | 1 | 20180910 | 20190625 | 285 | 0.004172 | 0.01 | 0 | -32.0983 | 323.33 | 5252.218 | 5269.631 | -0.00361 | -0.0527 | 0 | 5625.058 | | |
| 20180910 | :JFFCS | sept-19 | 4.18E+09 | 20180910 | 360 | 2 | 20180912 | 1 | 20180910 | 20190924 | 376 | 0.005504 | 0.01 | 0 | -32.0983 | 323.33 | 5252.218 | 5269.631 | -0.00361 | -0.0527 | 0 | 5625.058 | | |
| 20180910 | :JFFCS | DEC19 | 4.18E+09 | 20180910 | 360 | 2 | 20180912 | 1 | 20180910 | 20191224 | 467 | 0.006836 | 0.01 | 0 | -32.0983 | 323.33 | 5252.218 | 5269.631 | -0.00361 | -0.0527 | 0 | 5625.058 | | |
| 20180910 | :JFFCS | mars-20 | 4.18E+09 | 20180910 | 360 | 2 | 20180912 | 1 | 20180910 | 20200324 | 558 | 0.008168 | 0.01 | 0 | -32.0983 | 323.33 | 5252.218 | 5269.631 | -0.00361 | -0.0527 | 0 | 5625.058 | | |
| 20180910 | :JFFCS | JUN20 | 4.18E+09 | 20180910 | 360 | 2 | 20180912 | 1 | 20180910 | 20200623 | 649 | 0.0095 | 0.01 | 0 | -32.0983 | 323.33 | 5252.218 | 5269.631 | -0.00361 | -0.0527 | 0 | 5625.058 | | |
| 20180910 | :JFFCS | sept-20 | 4.18E+09 | 20180910 | 360 | 2 | 20180912 | 1 | 20180910 | 20200922 | 740 | 0.010832 | 0.01 | 0 | -32.0983 | 323.33 | 5252.218 | 5269.631 | -0.00361 | -0.0527 | 0 | 5625.058 | | |
| 20180910 | :JFFCS | DEC20 | 4.18E+09 | 20180910 | 360 | 2 | 20180912 | 1 | 20180910 | 20201222 | 831 | 0.012164 | 0.01 | 0 | -32.0983 | 323.33 | 5252.218 | 5269.631 | -0.00361 | -0.0527 | 0 | 5625.058 | | |
| 20180910 | :JFFCS | mars-21 | 4.18E+09 | 20180910 | 360 | 2 | 20180912 | 1 | 20180910 | 20210323 | 922 | 0.013496 | 0.01 | 0 | -32.0983 | 323.33 | 5252.218 | 5269.631 | -0.00361 | -0.0527 | 0 | 5625.058 | | |
| 20180910 | :JFFCS | JUN21 | 4.18E+09 | 20180910 | 360 | 2 | 20180912 | 1 | 20180910 | 20210622 | 1013 | 0.014828 | 0.01 | 0 | -32.0983 | 323.33 | 5252.218 | 5269.631 | -0.00361 | -0.0527 | 0 | 5625.058 | | |
| 20180910 | :JFFCS | sept-21 | 4.18E+09 | 20180910 | 360 | 2 | 20180912 | 1 | 20180910 | 20210921 | 1104 | 0.01616 | 0.01 | 0 | -32.0983 | 323.33 | 5252.218 | 5269.631 | -0.00361 | -0.0527 | 0 | 5625.058 | | |
| 20180910 | :JFFCS | DEC21 | 4.18E+09 | 20180910 | 360 | 2 | 20180912 | 1 | 20180910 | 20211221 | 1195 | 0.017492 | 0.01 | 0 | -32.0983 | 323.33 | 5252.218 | 5269.631 | -0.00361 | -0.0527 | 0 | 5625.058 | | |
| 20180910 | :JFFCS | mars-22 | 4.18E+09 | 20180910 | 360 | 2 | 20180912 | 1 | 20180910 | 20220322 | 1286 | 0.018824 | 0.01 | 0 | -32.0983 | 323.33 | 5252.218 | 5269.631 | -0.00361 | -0.0527 | 0 | 5625.058 | | |
| 20180910 | :JFFCS | JUN22 | 4.18E+09 | 20180910 | 360 | 2 | 20180912 | 1 | 20180910 | 20220621 | 1377 | 0.020156 | 0.01 | 0 | -32.0983 | 323.33 | 5252.218 | 5269.631 | -0.00361 | -0.0527 | 0 | 5625.058 | | |
| 20180910 | :JFFCS | sept-22 | 4.18E+09 | 20180910 | 360 | 2 | 20180912 | 1 | 20180910 | 20220920 | 1468 | 0.021488 | 0.01 | 0 | -32.0983 | 323.33 | 5252.218 | 5269.631 | -0.00361 | -0.0527 | 0 | 5625.058 | | |
| 20180910 | :JFFCS | DEC22 | 4.18E+09 | 20180910 | 360 | 2 | 20180912 | 1 | 20180910 | 20221220 | 1559 | 0.02282 | 0.01 | 0 | -32.0983 | 323.33 | 5252.218 | 5269.631 | -0.00361 | -0.0527 | 0 | 5625.058 | | |
| 20180910 | :JFFCS | mars-23 | 4.18E+09 | 20180910 | 360 | 2 | 20180912 | 1 | 20180910 | 20230321 | 1650 | 0.024152 | 0.01 | 0 | -32.0983 | 323.33 | 5252.218 | 5269.631 | -0.00361 | -0.0527 | 0 | 5625.058 | | |
| 20180910 | :JFFCS | JUN23 | 4.18E+09 | 20180910 | 360 | 2 | 20180912 | 1 | 20180910 | 20230620 | 1741 | 0.025485 | 0.01 | 0 | -32.0983 | 323.33 | 5252.218 | 5269.631 | -0.00361 | -0.0527 | 0 | 5625.058 | | |
| 20180910 | :JFFCS | sept-23 | 4.18E+09 | 20180910 | 360 | 2 | 20180912 | 1 | 20180910 | 20230919 | 1832 | 0.026817 | 0.01 | 0 | -32.0983 | 323.33 | 5252.218 | 5269.631 | -0.00361 | -0.0527 | 0 | 5625.058 | | |



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