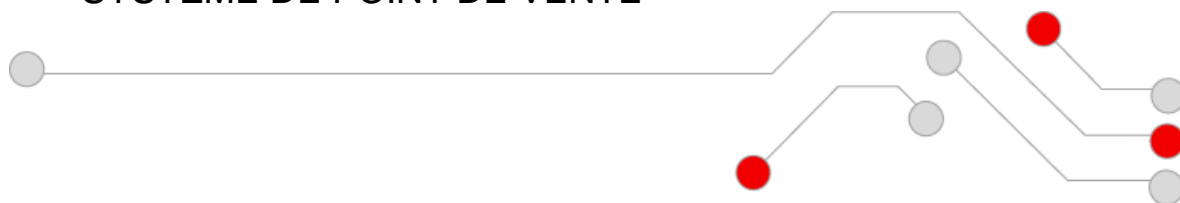


SYSTÈME DE POINT DE VENTE



ASSISTANCE CHDPOS v8.5.0+ w/ NF525



Archive et valideur



Computer Hardware Design SIA

Version : 2.2_2

Date : 04/2023

Historique des révisions

Version	Date	Modifications	Notes
1.0	29.05.2019	Version initiale	CHD
1.1	01.11.2019	Version du validateur d'archives fiscales mise à jour	CHD
2.1_1	05.2021	Révisé et mis à jour selon NF525 v2.1	CHD
2.1_2	07.2021	SHA-1 -> SHA256	CHD
2.2_1	05.2022	Révisé et mis à jour selon NF525 v2.2	CHD
2.2_2	04.2023	Révisé et mis à jour selon NF525 v2.2 (8.5.0+)	CHD

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1. Création et description de fichiers d'archives

1.1. Architecture

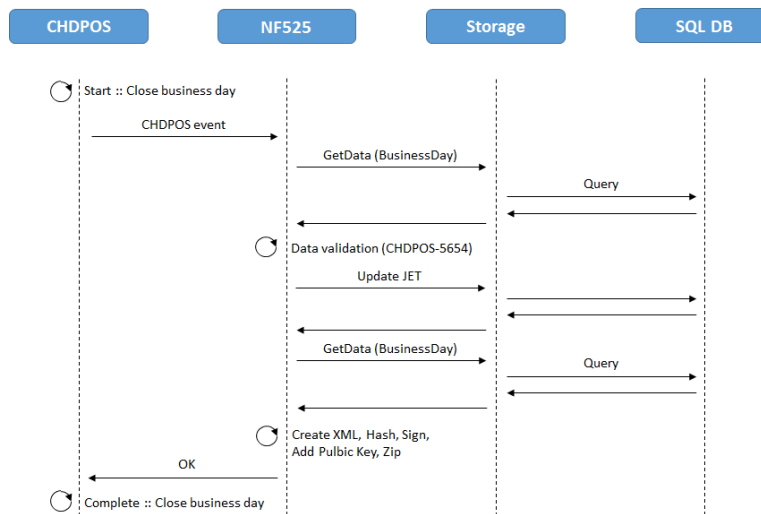


Figure 1 Création de fichier d'archive.

CHDPOS – NF525 – Stockage – SQL DB

Colonne 1 : Début : fermer le jour ouvrable – Événement CHDPOS – OK – Terminer : fermer le jour ouvrable

Colonne 2 : GetData (BusinessDay) – Validation des données (CHDPOS-5654) – Mise à jour JET – GetData (BusinessDay) – Créer XML, hacher, signer, ajouter clé publique, mettre au format zip

Colonne 3 : Demande – Demande

CHDPOS initialise la fermeture de la période. Au cours de ce processus, la norme NF525 est invoquée et agrège les données pour la période commerciale actuelle (jour ouvrable) en demandant ces informations à la base de données par le biais du pilote de stockage.

La validation des données est effectuée à l'étape suivante et toute incohérence est signalée dans le journal d'événements techniques :

- 1) Tous les enregistrements de chaque chaîne sont validés
- 2) Les lacunes dans les ID des séquences sont vérifiées

Le journal d'événements techniques est mis à jour pour enregistrer les résultats de la validation. Les données sont à nouveau extraites de la base de données, le fichier XML est généré, haché et signé. La dernière étape consiste à ajouter la clé publique au fichier XML et à créer un fichier d'archive (zip).

Un exemple de fichier XML est fourni dans la section « 3 Échantillon de fichier d'archive (XML) ».

1.2. Hachage et signature

L'approche suivante est utilisée :

- 1) Créer un hachage à l'aide de l'algorithme SHA-256
- 2) Signer le hachage à l'aide d'une clé privée
- 3) Ajouter la clé publique au fichier XML

1.3. Nommer les éléments du fichier de données (XML)

La convention de nommage dans le fichier de données est la même que celle définie dans les normes NF525 R12 et R13. Par exemple, le champ ENC-TIK-TAG-VER dans le champ de données a la même signification (version du logiciel) que celle définie dans les documents NF525 R12 et/ou R13.

1.4. Structure

Clés XML	Description
<Archive Date="YYYYMMDD" Version="2.0">	Date et version
<SaleHeaderTable>	Ligne d'en-tête
<SaleHeader>	
...	
FIELDS	Champs de données avec le label FIDELE
...	
<PreviousSignature>...</PreviousSignature>	Signature précédente
<SignableData>...</SignableData>	Chaîne de données signables
</SaleHeader>	
</SaleHeaderTable>	
<SaleDataTable>	Données de la ligne
<SaleData>	
...	
FIELDS	Champs de données avec le label FIDELE
...	
</SaleData>	
</SaleDataTable>	
<SaleVATTable>	Données TVA
<SaleVAT>	
...	
FIELDS	Champs de données avec le label FIDELE
...	
</SaleVAT>	
</SaleVATTable>	
<SaleTotalTable>	
<SaleTotal>	
...	
FIELDS	Champs de données avec le label FIDELE
...	
</SaleTotal>	
</SaleTotalTable>	
<SaleComplementaryTable>	
<SaleComplementary>	
...	
FIELDS	Champs de données avec le label FIDELE
...	
</SaleComplementary>	
</SaleComplementaryTable>	
<SaleRegulationTable>	
<SaleRegulation>	
...	
FIELDS	Champs de données avec le label FIDELE
...	
</SaleRegulation>	
</SaleRegulationTable>	
<DuplicataTable>	Données du duplicata

<Duplicata>	
...	Champs de données avec le label FIDELE
FIELDS	
...	Signature précédente
<PreviousSignature>...</PreviousSignature>	Chaîne de données signables
<SignableData>...</SignableData>	
</Duplicata>	
</DuplicataTable>	Grand total données
<GrandTotalTable>	
<GrandTotal>	
...	Champs de données avec le label FIDELE
FIELDS	
...	Signature précédente
<PreviousSignature>...</PreviousSignature>	Chaîne de données signables
<SignableData>...</SignableData>	
</GrandTotal>	
</GrandTotalTable>	Données JET
<JETTable>	
<JET>	
...	Champs de données avec le label FIDELE
FIELDS	
...	Signature précédente
<PreviousSignature>...</PreviousSignature>	Chaîne de données signables
<SignableData>...</SignableData>	
</JET>	
</JETTable>	
<PublicKey>	Certificat de clé publique
-----BEGIN CERTIFICATE-----	
...	
-----END CERTIFICATE-----	
</PublicKey>	
<Signature xmlns="http://www.w3.org/2000/09/xmldsig#">	
<SignedInfo>	
...	
</SignedInfo>	Signature
<SignatureValue>...</SignatureValue>	
</Signature>	Fin du fichier d'archive
</Archive>	

1.5. Code

```

public static void SignXml (XmlDocument xmlDoc, RSA key)
{
    // Check arguments.
    if (xmlDoc == null)
        throw new ArgumentException ("xmlDoc");
    if (key == null)
        throw new ArgumentException ("key");

    // Create a SignedXml object.
    var signedXml = new SignedXml (xmlDoc) {SigningKey = key};

    // Add the key to the SignedXml document.

    // Create a reference to be signed.
    var reference = new Reference {Uri = ""};

```

```
// Add an enveloped transformation to the reference.
var env = new XmlDsigEnvelopedSignatureTransform ();
reference.AddTransform (env);

// Add the reference to the SignedXml object.
signedXml.AddReference (reference);

// Compute the signature.
signedXml.ComputeSignature();

// Get the XML representation of the signature and save
// it to an XmlElement object.
var xmlDigitalSignature = signedXml.GetXml ();

// Append the element to the XML document.
xmlDoc.DocumentElement.AppendChild (xmlDoc.ImportNode (xmlDigitalSignature, true));
}
```

1.6. Espace requis sur le disque dur pour les archives

Hypothèses :

- 1) 300 tickets par jour
- 2) 10 articles par ticket

Faits :

- 1) 5 tickets avec 10 articles par ticket prend environ 20 kb (en format zip)

Mathématiques : $20 \text{ ko} * 60 * 365 \text{ jours} * 7 \text{ ans} = \sim 3 \text{ Go}$

2. Validation des fichiers d'archives

Utilisez Fiscal Archive Validator (FiscalArchiveValidator.exe) pour valider les fichiers d'archives. Il est possible de valider un seul fichier ou plusieurs fichiers stockés dans un répertoire. Des options de ligne de commande sont également disponibles. La version actuelle est 1.0.0.4.

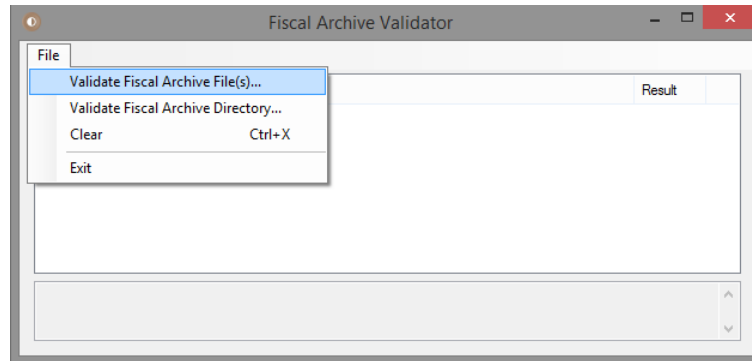


Figure 2 Fiscal Archive Validator

Fiscal Archive Validator supporte toutes les versions de CHDPOS avec NF525. La version du fichier d'archive est détectée automatiquement.

Pour valider le fichier d'archive :

- 1) Lancez FiscalArchiveValidator.exe.
- 2) Sélectionnez le fichier ou le répertoire.
- 3) Vérifiez les résultats pour chaque fichier.
- 4) Cliquez sur un fichier pour obtenir des résultats détaillés.

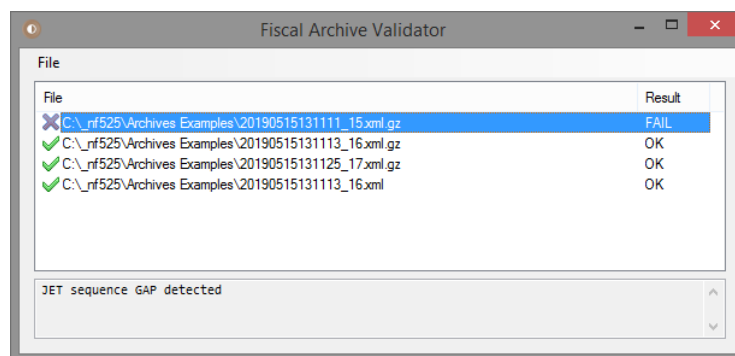


Figure 3 Résultats de validation

3. Échantillon de fichier d'archive (XML)

Un échantillon de fichier XML provenant d'une vente simple est disponible ci-dessous.

```
<Archive Date="20220510102945" Version="3.0" POS_Software="CHDPOS 8.4.0" Company="Tiger Stores France SAS"
Address="21 Rue Hoche, Cannes, 06400, France" TVA_Nr="FR 43 801172545" NAF="4759B"
Sirret_Nr="80117254500197" Certificate_Nr="0251" ProductCategory="B">
```

```
<Sequences>
```

```
<Sequence name="Ticket" startValue="82031" endValue="82033" />
```

```
<Sequence name="GrandTotal" startValue="82510" endValue="82513" />
```

```
<Sequence name="Duplicata" startValue="800" endValue="801" />
```

```
<Sequence name="JET" startValue="16294" endValue="16302" />
```

```
</Sequences>
```

```
<SaleHeaderTable>
```

```
<SaleHeader>
```

```
<ENC-TIK-NUM>82032</ENC-TIK-NUM>
```

```
<ENC-TIK-TAG-VER>8.4.0</ENC-TIK-TAG-VER>
```

```
<ENC-TIK-PRN-NBR>1</ENC-TIK-PRN-NBR>
```

```
<ENC-TIK-SOC-ETS>Tiger Stores France SAS</ENC-TIK-SOC-ETS>
```

```
<ENC-TIK-SOC-ADR>21 Rue Hoche</ENC-TIK-SOC-ADR>
```

```
<ENC-TIK-SOC-CCP>06400</ENC-TIK-SOC-CCP>
```

```
<ENC-TIK-SOC-VIL>Cannes</ENC-TIK-SOC-VIL>
```

```
<ENC-TIK-SOC-PAY>France</ENC-TIK-SOC-PAY>
```

```
<ENC-TIK-SOC-SIR>80117254500197</ENC-TIK-SOC-SIR>
```

```
<ENC-TIK-SOC-NAF>4759B</ENC-TIK-SOC-NAF>
```

```
<ENC-TIK-SOC-TVA>FR 43 801172545</ENC-TIK-SOC-TVA>
```

```
<ENC-TIK-VEN-NID>1</ENC-TIK-VEN-NID>
```

```
<ENC-TIK-VEN-NOM>Test Operator</ENC-TIK-VEN-NOM>
```

```
<ENC-TIK-OPS-NID>1</ENC-TIK-OPS-NID>
```

```
<ENC-TIK-OPS-NOM>Test Operator</ENC-TIK-OPS-NOM>
```

```
<ENC-TIK-CAI-NID>S514540017</ENC-TIK-CAI-NID>
```

```
<ENC-TIK-HOR-GDH>20220510102855</ENC-TIK-HOR-GDH>
```

```
<ENC-OPE-TYP>Sale</ENC-OPE-TYP>
```

```
<ENC-TIK-DOC-TYP>Receipt</ENC-TIK-DOC-TYP>
```

```
<ENC-TIK-LIG-NBR>1</ENC-TIK-LIG-NBR>
```

```
<ENC-TIK-STA>Production</ENC-TIK-STA>
```

```
<ENC-TIK-TAG-SIG>Q9vPmEz36Yle9Yf9v-k2IV25wyQ-
```

```
TK9E2_znsvqAl8Y81t084w7How1COBHo4Z2H7mkRtiqhp08SloKf5sLowdWpFM_0SnhvXDiklyToxyC4FfTk01A4AHCdwyqgn
vKSXB4wgTzBKNL9kFh55189yBwPn_HAnG-ijNiDfff3cl8bbz59SQCnbYBt-
WNieVawCbRknsQtnZVACu3eXMNTFq3LY0ln2NKgjYeqpvHyTz8y2WvB6NRGTWXQACCMHPE2_BjcW56wOPrNloK0nZ5kg2-
Y5_1QqAfHMoQ3Fuk3Bl-0NNGQk8OKiNXCOWGZimFUy5ZWtHqusEUtPQgFLt-mg</ENC-TIK-TAG-SIG>
```

```
<ENC-TIK-TAG-RET>B0251 (vz9k)</ENC-TIK-TAG-RET>
```

```
<ENC-TIK-LOG>CHDPOS</ENC-TIK-LOG>
```

```
<PreviousSignature>Wm27P6mVI2kBmtNVVfumtQc9O_XWvF2ATCeE3FhUgJs4AtiITefbUIkMB3pTJ8Z9DKITQYI6y9wYQeJ-
```

```
GcXt1_U0ttUomZj9YY3YaXhvMFvJM8HRHHITGD-P2rkfpUSXfeUHQkHb-JauPYsT-
```

```
TFomN5RGsq3J0sX5cssEU_qAM0DFY6GEIrMbgstNY_IX74IVACKkhR8mvjiWyi--
```

```
3sVrceDUZh4S2dusr9Y1Jk0glwnMrULLTN6V4GzTujK0oD2IJ2cke3KP8bpFnI67iB6QJE32vVd3v5Mz4jtK_K0Bj2T6A3h8CPLAvi
```

```
3Rs59R_YtZDOG-zdnX3q15Tp2YleZQ</PreviousSignature>
```

```
<SignableData>2000:300,300,20220510102855,82032,Sale,O,Wm27P6mVI2kBmtNVVfumtQc9O_XWvF2ATCeE3FhUgJs4
```

```
AtiITefbUIkMB3pTJ8Z9DKITQYI6y9wYQeJ-GcXt1_U0ttUomZj9YY3YaXhvMFvJM8HRHHITGD-P2rkfpUSXfeUHQkHb-
```

```
JauPYsT-TFomN5RGsq3J0sX5cssEU_qAM0DFY6GEIrMbgstNY_IX74IVACKkhR8mvjiWyi--
```

```
3sVrceDUZh4S2dusr9Y1Jk0glwnMrULLTN6V4GzTujK0oD2IJ2cke3KP8bpFnI67iB6QJE32vVd3v5Mz4jtK_K0Bj2T6A3h8CPLAvi
```

```
3Rs59R_YtZDOG-zdnX3q15Tp2YleZQ</SignableData>
```

```
</SaleHeader>
```

```
<SaleHeader>
```

```
<ENC-TIK-NUM>82033</ENC-TIK-NUM>
```

```
<ENC-TIK-TAG-VER>8.4.0</ENC-TIK-TAG-VER>
```

```
<ENC-TIK-PRN-NBR>1</ENC-TIK-PRN-NBR>
```

```
<ENC-TIK-SOC-ETS>Tiger Stores France SAS</ENC-TIK-SOC-ETS>
```

```
<ENC-TIK-SOC-ADR>21 Rue Hoche</ENC-TIK-SOC-ADR>
```

```
<ENC-TIK-SOC-CCP>06400</ENC-TIK-SOC-CCP>
```

<ENC-TIK-SOC-VIL>Cannes</ENC-TIK-SOC-VIL>
<ENC-TIK-SOC-PAY>France</ENC-TIK-SOC-PAY>
<ENC-TIK-SOC-SIR>80117254500197</ENC-TIK-SOC-SIR>
<ENC-TIK-SOC-NAF>4759B</ENC-TIK-SOC-NAF>
<ENC-TIK-SOC-TVA>FR 43 801172545</ENC-TIK-SOC-TVA>
<ENC-TIK-VEN-NID>1</ENC-TIK-VEN-NID>
<ENC-TIK-VEN-NOM>Test Operator</ENC-TIK-VEN-NOM>
<ENC-TIK-OPS-NID>1</ENC-TIK-OPS-NID>
<ENC-TIK-OPS-NOM>Test Operator</ENC-TIK-OPS-NOM>
<ENC-TIK-CAI-NID>S514540017</ENC-TIK-CAI-NID>
<ENC-TIK-HOR-GDH>20220510102927</ENC-TIK-HOR-GDH>
<ENC-OPE-TYP>Refund</ENC-OPE-TYP>
<ENC-TIK-DOC-TYP>Receipt</ENC-TIK-DOC-TYP>
<ENC-TIK-LIG-NBR>1</ENC-TIK-LIG-NBR>
<ENC-TIK-STA>Production</ENC-TIK-STA>
<ENC-TIK-TAG-SIG>Ar8mL-lkOwGGXQbc5sJan-
sLL6tDVp_jHqQTCye8Hlu49qxfp8CiyXMw3Lv1oQM8ym95DhuWCKUNP2vaWpJB6EHBrG5fDsHIGq-QV_m_T27Jy-1A2-
_hxifyvxxgciXiA1wNQjb6G_3TI3PCCwT_f6rQo1PplqQ0RWz40NIAFXD0BRHUPiWAIM58ZhQz8MF8C051evhfOtNZyEINPsKX8F
yv3rfbpdTeGPqGWhKSbmFch04E9CMvyYWI_e1wsSB7bE7nK9mhel-
mELuQgtnoCuLdeqLWZxBKU7dVwpsxwNIM8zuUXQGAotk_zSzv8FDrm1XGYxreLOVsHEjXS09EdQ</ENC-TIK-TAG-SIG>
<ENC-TIK-TAG-RET>B0251 (8IXJ)</ENC-TIK-TAG-RET>
<ENC-TIK-LOG>CHDPOS</ENC-TIK-LOG>
<PreviousSignature>Q9vPmEz36Yle9Yf9v-k2IV25wyQ-
TK9E2_znsvgAl8Y81tO84w7HowlCOBHo4Z2H7mkRtiqhp08SloKf5sLowdWpFM_05nhvXDiklyToxyC4FifTk01A4AHCdwyqgn
vKSXB4wgTZbKNL9kFh55189yBwPn_HAnG-ijNiDfff3cl8bbz59SqCNbYBt-
WNieVawCbRKnsQtNzVACu3eXMNTFq3LY0ln2NKgjYeqpvHyTz8y2WvB6NRGTWXQACcMHP2_Bjcw56wOPrNloK0nZSkG2-
Y5_1QqAFhMoQ3Fuk3Bl-ONNGQk8OKiNXCOWGZimFUY5ZWtHqusEUtPQgFLt-mg</PreviousSignature>
<SignableData>0550:-200,-200,20220510102927,82033,Refund,O,Q9vPmEz36Yle9Yf9v-k2IV25wyQ-
TK9E2_znsvgAl8Y81tO84w7HowlCOBHo4Z2H7mkRtiqhp08SloKf5sLowdWpFM_05nhvXDiklyToxyC4FifTk01A4AHCdwyqgn
vKSXB4wgTZbKNL9kFh55189yBwPn_HAnG-ijNiDfff3cl8bbz59SqCNbYBt-
WNieVawCbRKnsQtNzVACu3eXMNTFq3LY0ln2NKgjYeqpvHyTz8y2WvB6NRGTWXQACcMHP2_Bjcw56wOPrNloK0nZSkG2-
Y5_1QqAFhMoQ3Fuk3Bl-ONNGQk8OKiNXCOWGZimFUY5ZWtHqusEUtPQgFLt-mg</SignableData>
</SaleHeader>
</SaleHeaderTable>
<SaleDataTable>
<SaleData>
<ENC-NID>239629</ENC-NID>
<ENC-TIK-ORI-NUM>82032</ENC-TIK-ORI-NUM>
<ENC-TIK-LIG-NUM>1</ENC-TIK-LIG-NUM>
<ENC-TIK-LIG-PRO-NID>01001010</ENC-TIK-LIG-PRO-NID>
<ENC-TIK-LIG-PRO-LIB>Surprise Box</ENC-TIK-LIG-PRO-LIB>
<ENC-TIK-LIG-PRO-QTE>1</ENC-TIK-LIG-PRO-QTE>
<ENC-TIK-LIG-TAX-NID>A</ENC-TIK-LIG-TAX-NID>
<ENC-TIK-LIG-TAX-TXX>20.00</ENC-TIK-LIG-TAX-TXX>
<ENC-TIK-LIG-PRO-TTC>3.00</ENC-TIK-LIG-PRO-TTC>
<ENC-TIK-LIG-TOT-MHT>2.50</ENC-TIK-LIG-TOT-MHT>
<ENC-TIK-LIG-TOT-TTC>3.00</ENC-TIK-LIG-TOT-TTC>
<ENC-TIK-LIG-HOR-GDH>20220510102855</ENC-TIK-LIG-HOR-GDH>
</SaleData>
<SaleData>
<ENC-NID>239630</ENC-NID>
<ENC-TIK-ORI-NUM>82033</ENC-TIK-ORI-NUM>
<ENC-TIK-LIG-NUM>1</ENC-TIK-LIG-NUM>
<ENC-TIK-LIG-PRO-NID>0200001000003</ENC-TIK-LIG-PRO-NID>
<ENC-TIK-LIG-PRO-LIB>CHIPS TORTILLA NATURE200 G</ENC-TIK-LIG-PRO-LIB>
<ENC-TIK-LIG-PRO-QTE>1</ENC-TIK-LIG-PRO-QTE>
<ENC-TIK-LIG-TAX-NID>B</ENC-TIK-LIG-TAX-NID>
<ENC-TIK-LIG-TAX-TXX>5.50</ENC-TIK-LIG-TAX-TXX>
<ENC-TIK-LIG-PRO-TTC>2.00</ENC-TIK-LIG-PRO-TTC>
<ENC-TIK-LIG-TOT-MHT>1.90</ENC-TIK-LIG-TOT-MHT>
<ENC-TIK-LIG-TOT-TTC>2.00</ENC-TIK-LIG-TOT-TTC>
<ENC-TIK-LIG-HOR-GDH>20220510102927</ENC-TIK-LIG-HOR-GDH>
</SaleData>
</SaleDataTable>

```

<SaleVATTable>
  <SaleVAT>
    <ENC-TIK-NUM>82032</ENC-TIK-NUM>
    <ENC-TIK-TOT-MHT>2.50</ENC-TIK-TOT-MHT>
    <ENC-TIK-TVA-NID>A</ENC-TIK-TVA-NID>
    <ENC-TIK-TVA-TXX>20.0000</ENC-TIK-TVA-TXX>
    <ENC-TIK-TVA-MTN>0.50</ENC-TIK-TVA-MTN>
    <ENC-TIK-TOT-TTC>3.00</ENC-TIK-TOT-TTC>
  </SaleVAT>
  <SaleVAT>
    <ENC-TIK-NUM>82033</ENC-TIK-NUM>
    <ENC-TIK-TOT-MHT>-1.90</ENC-TIK-TOT-MHT>
    <ENC-TIK-TVA-NID>B</ENC-TIK-TVA-NID>
    <ENC-TIK-TVA-TXX>5.5000</ENC-TIK-TVA-TXX>
    <ENC-TIK-TVA-MTN>-0.10</ENC-TIK-TVA-MTN>
    <ENC-TIK-TOT-TTC>-2.00</ENC-TIK-TOT-TTC>
  </SaleVAT>
</SaleVATTable>
<SaleTotalTable>
  <SaleTotal>
    <ENC-TIK-NUM>82032</ENC-TIK-NUM>
    <ENC-TIK-TOT-MHT>2.50</ENC-TIK-TOT-MHT>
    <ENC-TIK-TOT-TTC>3.00</ENC-TIK-TOT-TTC>
  </SaleTotal>
  <SaleTotal>
    <ENC-TIK-NUM>82033</ENC-TIK-NUM>
    <ENC-TIK-TOT-MHT>-1.90</ENC-TIK-TOT-MHT>
    <ENC-TIK-TOT-TTC>-2.00</ENC-TIK-TOT-TTC>
  </SaleTotal>
</SaleTotalTable>
<SaleComplementaryTable>
  <SaleComplementary>
    <ENC-TIK-NUM>82032</ENC-TIK-NUM>
    <ENC-TIK-TOT-TTC>3.00</ENC-TIK-TOT-TTC>
  </SaleComplementary>
  <SaleComplementary>
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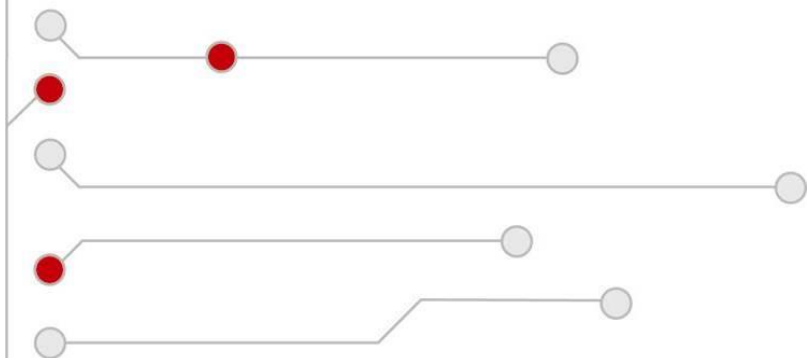
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