Transnet Freight Rail Dashboard Functional Specification

KPA Name(s)	Asset Utilisation / Increasing Volumes
Project Name	Dashboard
Project Sponsor:	Dirk Nieuwoudt
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Primary Author(s):	André J. Ferreira (Monkey)
Co-Author(s):	

BUSINESS SPECIFICATIONS FOR LOCOMOTIVES STANDING LONGER THAN A SELECTED NUMBER OF HOURS / DEPOT DASHBOARD AUTOMATION

1. Business Context

- Measurement of locomotive utilisation through idle time i.e. locomotives standing longer than a selected number of hours at any location
- Linked to the *Capacity Management, Improve / Optimise, Monitoring & Control, Production Planning, Order Execution and Customer Interaction* (from value chain and L1 level) – **Specific locations to be confirmed with business processes in due course**

2. Project Context

- Name: Business Specifications – KPI / Depot Dashboard Automation
- Purpose: Automate dashboards in use in yards/depots - this is to provide management a view of locomotives standing longer than a selected number of hours.

3. KPI Definition

3.1 Locomotives standing longer than a selected number of hours

- Locomotives that will be acted upon is those that are stationary for more than **a selected number of** hours
- These locomotives can be standing in any location (or can be derailed), i.e. Yards, Exchange Yards, stations, private sidings, workshops, repair depots and holding areas
- This KPI measure the actual number of locomotives standing longer than **a selected number of** hours – Detail is also available.

4. Measure Context

- Feed to / feed from:

  This measurement does not use another measure in its calculation but is used in the calculation of locomotive utilization (wagon model / OEE measures). It is also aggregated on various levels per location.

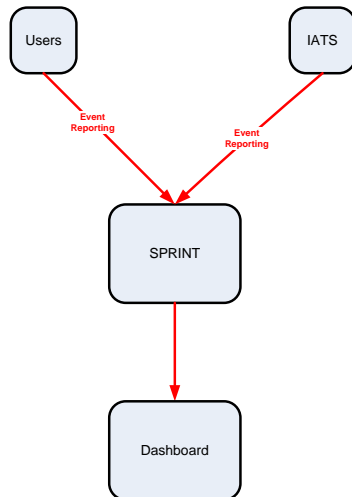- This measure is currently only used in Depot Dashboards

Locomotives standing longer than **the selected number of** hours are currently only available on Real time Monitoring System and IATS graphical viewer.

5. Data Description

- Source systems

  - Capture onto the Sprint and IATS systems

- Data flows model

- Components of the calculation required: N/A

6. Solution Requirements

- Minimum requirements:

  - Dimensions / parameters:
    - Operational structure; starting on location level and aggregated to Yard, Area, Cluster, Region and TFR level
    - Primary requirement is to track locomotives standing longer than **a selected number of** hours.
  - TFR yards, locations should be easily extracted from a location perspective.
  - Reporting periods: Daily,
  - Graphics: Printable bar graphs and tables in PDF-format – rolling 30 days
  - Ability to navigate between levels
  - Linked to other measures in the "Depot Dashboard"

- Additional requirements to optimise this solution:

  - Dimensions / parameters: More detail re. Locations, Areas, Regions, etc.(sortable per criteria).

7. Solution Proposal

- Solution detail:

To obtain the KPIs, a link **"Train and Rolling Stock Performance Indicators"** will be published on the portal. When the user clicks on this link, a list of resources under which the different summarised list of KPI's resorts, will be displayed. I.e. Trains, Locomotives and Wagons.

Trains
Locomotives
Wagons

The user would then be able to drill down on each of these summarised list. In this case, they would select **"Locomotives"**

Trains
On Time Arrivals - Minutes late per train
On Time Departures - Minutes late per train
Run more trains - Trains run per day
Run trains with all possible wagons - Wagons per train
Staged loads
Locomotives
Locos standing longer than a selected number of hours
Wagons
Wagons standing longer than a selected number of hours

When the user clicks on a specific KPI, e.g. Locomotives standing longer than **a selected number of** hours, the screen with the selection parameters will be displayed for that KPI **(See diagram below).** The "DISPLAY TYPE" will default to "GRAPH"

The following dropdowns should be available

Region:	Drop down with the following: All, Central, Eastern, and Western.
Cluster:	Drop down related to region selected, if no region selected all clusters.
Area:	Drop down related to region selected, if no region selected all areas.
Location:	Drop down related to region and/or area selected as specific yard/depot can be selected.
Type:	Drop down of locomotive types, (E/D/ALL or all). If all is selected all locomotives will be displayed.
Class:	Drop down of locomotive classes per type.
Group:	Drop down of locomotive groups.
Display type:	The output can be either in Graph or Detail format
Period (from/to)	User can select with calendars the From – To dates.
Display resolution	This can be selected to provide information per Day (Max 31), Week (Max 52), Month (Max 24)
Hours:	**This will only be displayed when "DISPLAY TYPE" = "DETAIL".** This is an input field where the user can provide the number of hours that locomotives are standing which need to be monitored. "The hour button is not reflected on the menu list below"

After completing the above screen the execution of the report to generate information will automatically be performed displaying a bar graph according to the information selected. The "DISPLAY TYPE" will default to "GRAPH"

The user can now change the different dropdown to get the desired results in either Graph of Detail view.

If detail is needed, the number of hours that need to be managed must be provided in the "STANDING HOURS" field.

See the detail screen below and the description of every field regarding the detail screen.

LOCOMOTIVES STANDING

REGION [ALL ▼]   CLUSTER [ALL ▼]   AREA [ALL ▼]   LOCATION [ALL ▼]

TYPE [ALL ▼]   CLASS [ALL ▼]   GROUP [ALL ▼]

DISPLAY TYPE [DETAIL ▼]   HOURS STANDING [12]

| Locomotive | | | Service | | Status | Current | Train | Last reported | | Standing |
Number	Class	Active	Date	Type		Location	Number	Date	Time	Hours
1167	6E	Y	2009.04.18	C	ARRV	BLE-LOKO		2009.04.14	09:45	12
1168	6E	Y	2009.04.15	B	ARRV	WOR-NOORD	F1W1002261140409	2009.04.14	13:35	13
1171	6E	Y	2009.04.28	A	ENRT	WOR-NOORD	N1Z1007321140409			45
1173	6E	N	2009.04.11	C	ARRV	BLE-EWW		2009.04.11	03:50	54
1214	6E1	N	2009.05.06	C	ARRV	BLE-EWW	F1L1002153090409	2009.04.13	06:00	41
1641	6E1	Y	2009.05.17	A	ARRV	BLE-LOKO		2009.04.14	09:45	12
1834	6E1	N	2009.04.27	A	ARRV	BLE-EWW		2009.04.13	10:20	19
1844	6E1	N	2009.05.02	A	ARRV	BLE-EWW		2009.04.12	06:00	22
1855	6E1	Y	2009.05.16	A	ARRV	WORCESTER	A1W1017007140409	2009.04.14	13:50	54
1862	6E1	Y	2009.04.20	A	ARRV	BLE-LOKO		2009.04.14	09:45	194
14110	14E	Y	2009.04.27	A	ARRV	BLE-LOKO	A1F1081002140409	2009.04.14	13:44	19

Column description
- ❖ Locomotive number = Locomotive number
- ❖ Locomotive class = Locomotive class
- ❖ Active = Whether active or not – Y = Yes, N= No.
- ❖ Service Date = Service Date
- ❖ Service Type = Service Type
- ❖ Status = Current status, ARRV – Arrived, ENRT = En-route
- ❖ Current Location = Current location
- ❖ Train number = Number of movement train
- ❖ Last reported Date = Last reporting date
- ❖ Last reported Time = Last reporting time
- ❖ Standing hours = Number of hours that locomotive is standing

The [A↕Z] button provides a sorting option in the column provided.

- Proposed approach (best way to solve current needs/issues)

  - To be decided and finalised

8. Business rules

- **Region**
  - It can only belong to one of the following, Central, Eastern, or Western and must exist in Locnet.
- **Cluster**
  - It can only belong to one region and must exist in MIS.
- **Area**
  - Can only be an area that exists in Locnet.
- **Location**
  - Can only be a location that exist in Locnet and where wagons are delayed.
- Type
  - Can only be E = Electric or D = Diesel
- Class
  - Can only be a valid locomotive class according to the locomotive core data system.
- Group
  - Can only be a valid group as exist in Sprint.
- **Locomotive number**
  - Must exist on the database.
- **Locomotive class**
  - Must be linked to the specific locomotive
- **Active**
  - Must be alpha characters and either "Y" of "N"
- **Service Date**
  - Must be a valid date
- **Service Type**
  - Must be a valid service type and must have the value of A, B or C.
- **Status**
  - Must be a value of 0 or 1 – 0 = Arrived and 1 = En-route.
- **Current Location**
  - Must be a valid location and must exist on LOCNET
- **Train number**
  - Must be a valid train number consisting of 16 digits
- **Last reported Date**
  - Must be a valid date and must be in the past
- **Last reported Time**
  - Must be a valid time and must be in the past
- **Standing hours**
  - Must be grater than the number of hours entered on the input screen.

9. Dataset

```
****************************************************************
* DCLGEN TABLE(RAIL.LOKO_TAB)                                  *
*        LIBRARY(GQTN1.BEDRYF.TKCOPY(LOCOS6B))                 *
*        ACTION(REPLACE)                                       *
*        APOST                                                 *
*        LABEL(YES)                                            *
* ... IS THE DCLGEN COMMAND THAT MADE THE FOLLOWING STATEMENTS *
```

```
*******************************************************************
         EXEC SQL DECLARE LOKO_TAB TABLE
( LOCOTIPE6B                      CHAR(1) NOT NULL,
  LOCONOMM6B                      CHAR(6) NOT NULL,
  CURARSYS6B                      CHAR(2) NOT NULL,
  CURARTER6B                      CHAR(3) NOT NULL,
  CURARGEB6B                      CHAR(3) NOT NULL,
  CURARSYL6B                      CHAR(6) NOT NULL,
  EIENAARK6B                      CHAR(2) NOT NULL,
  LOCOKLAS6B                      CHAR(6) NOT NULL,
  LOCOTONS6B                      DECIMAL(7, 0) NOT NULL,
  LOCOLNGT6B                      DECIMAL(5, 0) NOT NULL,
  LOCOAXLE6B                      DECIMAL(3, 0) NOT NULL,
  KILNEWTN6B                      DECIMAL(5, 0) NOT NULL,
  TUISDEPT6B                      CHAR(3) NOT NULL,
  TUISDARE6B                      CHAR(14) NOT NULL,
  DIENSDEP6B                      CHAR(3) NOT NULL,
  DIENSARE6B                      CHAR(14) NOT NULL,



  DIENSDAT6B                      DECIMAL(9, 0) NOT NULL,
  REPAIRCD6B                      CHAR(3) NOT NULL,
  VERVRYDT6B                      DECIMAL(9, 0) NOT NULL,
  VERVRYTM6B                      DECIMAL(5, 0) NOT NULL,
  STOPDATM6B                      DECIMAL(9, 0) NOT NULL,
  STOPKODE6B                      CHAR(3) NOT NULL,
  STOPTERM6B                      CHAR(8) NOT NULL,
  RITINSPP6B                      CHAR(3) NOT NULL,
  RITINSPD6B                      DECIMAL(9, 0) NOT NULL,
  MISMOVPL6B                      CHAR(3) NOT NULL,
  MISMOVIN6B                      CHAR(1) NOT NULL,
  MISMOVDT6B                      DECIMAL(9, 0) NOT NULL,
  MISMOVTM6B                      DECIMAL(5, 0) NOT NULL,
  BESKIKBR6B                      CHAR(1) NOT NULL,
  LOCOWORK6B                      CHAR(1) NOT NULL,
  OPMERKNG6B                      CHAR(60) NOT NULL,
  MOVESTAT6B                      CHAR(1) NOT NULL,
  TREINNOM6B                      CHAR(16) NOT NULL,
  LOCOSTAT6B                      CHAR(2) NOT NULL,
  TIMENORM6B                      DECIMAL(3, 0) NOT NULL,
  VERTSTAT6B                      CHAR(2) NOT NULL,
  VRBESKIK6B                      CHAR(1) NOT NULL,
  LOCOSVAN6B                      CHAR(3) NOT NULL,
  VANSTASP6B                      CHAR(20) NOT NULL,
  AREAVANK6B                      CHAR(14) NOT NULL,
  VERTRKDT6B                      DECIMAL(9, 0) NOT NULL,
  VERTRKTD6B                      DECIMAL(5, 0) NOT NULL,
  VTRANIDC6B                      CHAR(4) NOT NULL,
  VTERMADD6B                      CHAR(8) NOT NULL,
  VSIGNONS6B                      CHAR(10) NOT NULL,
  VTRANDAT6B                      DECIMAL(9, 0) NOT NULL,
  VTRANTIM6B                      DECIMAL(5, 0) NOT NULL,
  AANSTATS6B                      CHAR(2) NOT NULL,
  AANBESKT6B                      CHAR(1) NOT NULL,
  STASIENA6B                      CHAR(3) NOT NULL,
  STANASPE6B                      CHAR(20) NOT NULL,
  AREANAKD6B                      CHAR(14) NOT NULL,
  ARENASYS6B                      CHAR(2) NOT NULL,
  ARENATER6B                      CHAR(3) NOT NULL,
  ARENAGEB6B                      CHAR(3) NOT NULL,
  ARENASYL6B                      CHAR(6) NOT NULL,
  ARIVALDT6B                      DECIMAL(9, 0) NOT NULL,
  ARIVALTM6B                      DECIMAL(5, 0) NOT NULL,
  ATRANIDC6B                      CHAR(4) NOT NULL,
  ATERMADD6B                      CHAR(8) NOT NULL,
  ASIGNONS6B                      CHAR(10) NOT NULL,
  ATRANDAT6B                      DECIMAL(9, 0) NOT NULL,
```

```
              ATRANTIM6B
DECIMAL(5, 0) NOT NULL,
              BLOKSPEL6B
CHAR(20) NOT NULL,
              BLOKAREA6B
CHAR(14) NOT NULL,
              BLOKYARD6B                        CHAR(3) NOT NULL,
              BLOKDATE6B                        DECIMAL(9, 0) NOT NULL,
              BLOKTIME6B                        DECIMAL(5, 0) NOT NULL,
              BLOKTRAN6B                        CHAR(4) NOT NULL,
              BLOKADDR6B                        CHAR(8) NOT NULL,
              BLOKSIGN6B                        CHAR(10) NOT NULL,
              BLOKTDAT6B                        DECIMAL(9, 0) NOT NULL,
              BLOKTTYD6B                        DECIMAL(5, 0) NOT NULL,
              DIENSTIP6B                        CHAR(1) NOT NULL,
              ONDERVDL6B                        CHAR(2) NOT NULL,
              ONTREKDT6B                        DECIMAL(9,0) NOT NULL,
              ONTREKTM6B                        DECIMAL(5,0) NOT NULL,
              VERHUURN6B                        CHAR(30) NOT NULL,
              HUURVNDT6B                        DECIMAL(9,0) NOT NULL,
              HUURTODT6B                        DECIMAL(9,0) NOT NULL,
              ASSETCDE6B                        CHAR(07)     NOT NULL,
              SRVSTDTE6B                        DECIMAL(9,0) NOT NULL,
              SRVSTTIM6B                        DECIMAL(5,0) NOT NULL,
              SRVENDTE6B                        DECIMAL(9,0) NOT NULL,
              SRVENTIM6B                        DECIMAL(5,0) NOT NULL
          ) END-EXEC.
     ****************************************************************
     * COBOL DECLARATION FOR TABLE RAIL.LOKO_TAB                   *
     ****************************************************************
      01  DCLLOKO-TAB.
          10 LOCOTIPE6B          PIC X(1).
     **** E=ELEKTRIES D=DIESEL S=STOOM F=FOREIGN
     ****************************************************************
          10 LOCONOMM6B          PIC X(6).
     **** LOCO NOMMER
     ****************************************************************
          10 CURARSYS6B          PIC X(2).
     **** AFDELING WAAR LOKO NOU IS
     ****************************************************************
          10 CURARTER6B          PIC X(3).
     **** TERREIN WAAR LOKO NOU IS
     ****************************************************************
          10 CURARGEB6B          PIC X(3).
     **** GEBIED WAAR LOKO NOU IS
     ****************************************************************
          10 CURARSYL6B          PIC X(6).
     **** SYLYN WAAR LOKO NOU IS
     ****************************************************************
          10 EIENAARK6B          PIC X(2).
     **** EIENAAR KODE
     ****************************************************************
          10 LOCOKLAS6B          PIC X(6).
     **** LOCO KLAS
     ****************************************************************
          10 LOCOTONS6B          PIC S9999999V USAGE COMP-3.
     **** MASSA VAN LOKO
     ****************************************************************
          10 LOCOLNGT6B          PIC S99999V USAGE COMP-3.
     **** LENGTE VAN LOKO
     ****************************************************************
          10 LOCOAXLE6B          PIC S999V USAGE COMP-3.
     **** ASSE
     ****************************************************************
          10 KILNEWTN6B          PIC S99999V USAGE COMP-3.
     **** LOKO SE TREKKRAG
     ****************************************************************
          10 TUISDEPT6B          PIC X(3).
     **** TUISDEPOT
     ****************************************************************
          10 TUISDARE6B          PIC X(14).
     **** TUISDEPOT SE AREAKODE
     ****************************************************************
          10 DIENSDEP6B          PIC X(3).
     **** DIENSDEPOT
     ****************************************************************
          10 DIENSARE6B          PIC X(14).
```

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```
**** DIENSDEPOT SE AREAKODE

********************************************************************
      10 DIENSDAT6B           PIC S999999999V USAGE COMP-3.
**** VOLGENDE DIENSDATUM
********************************************************************
      10 REPAIRCD6B           PIC X(3).
**** HERSTEL/DIENSKODE
**** 001 = OUTOMATIES GESTOP
********************************************************************
      10 VERVRYDT6B           PIC S999999999V USAGE COMP-3.
**** VERWAGTE VRYSTELLINGS DATUM UIT WERKSWINKEL
********************************************************************
      10 VERVRYTM6B           PIC S99999V USAGE COMP-3.
**** VERWAGTE VRYSTELLINGS TYD UIT WERKSWINKEL
********************************************************************
      10 STOPDATM6B           PIC S999999999V USAGE COMP-3.
**** STOPDATUM
********************************************************************
      10 STOPKODE6B           PIC X(3).
**** BESKRYWING
**** 077 = RANGEERDIENS BEGIN
**** 078 = RANGEERDIENS EINDIG
**** 079 = HERSTEL BEGIN
**** 080 = HERSTEL EINDIG
**** 081 = RITINSPEKSIE BEGIN
**** 082 = RITINSPEKSIE EINDIG
**** 086 = HERSTEL EINDIG NOG STEDDS ONKLAAR
********************************************************************
      10 STOPTERM6B           PIC X(8).
**** TERMINAAL WAT LOKO OP STOP GEPLAAS HET
********************************************************************
      10 RITINSPP6B           PIC X(3).
**** VOLGENDE RITINSPEKSIE DEPOT
********************************************************************
      10 RITINSPD6B           PIC S999999999V USAGE COMP-3.
**** VOLGENDE RITINSPEKSIE DATUM
********************************************************************
      10 MISMOVPL6B           PIC X(3).
**** PLEK WAAR N VERMISTE RAPPORTERING NOG UITSTAANDE IS
********************************************************************
      10 MISMOVIN6B           PIC X(1).
**** TIPE VERMISTE BEWEGING
****   0 = VERTREK
****   1 = AANKOMS
********************************************************************
      10 MISMOVDT6B           PIC S999999999V USAGE COMP-3.
**** DATUM VAN VERMISTE BEWEGING
********************************************************************
      10 MISMOVTM6B           PIC S99999V USAGE COMP-3.
**** TYD VAN VERMISTE BEWEGING
********************************************************************
      10 BESKIKBR6B           PIC X(1).
**** BESKIKBAARHEIDSAANWYSER
**** 0 = AVAILABLE (YES)
**** 1 = AVAILABLE FOR RESTRICTED USE
**** 2 = NOT AVAILABLE (NO)
********************************************************************
      10 LOCOWORK6B           PIC X(1).
**** 0 = GEWOON 1 = SHUNT 2 = HAULER 3 = TRAIN
********************************************************************
      10 OPMERKNG6B           PIC X(60).
**** OPMERKING
********************************************************************
      10 MOVESTAT6B           PIC X(1).
**** BEWEGINGS STATUS VAN LOKO
**** 0 = VERTREK
**** 1 = AANGEKOM
********************************************************************
      10 TREINNOM6B           PIC X(16).
**** TREIN NOMMER
********************************************************************
      10 LOCOSTAT6B           PIC X(2).
```
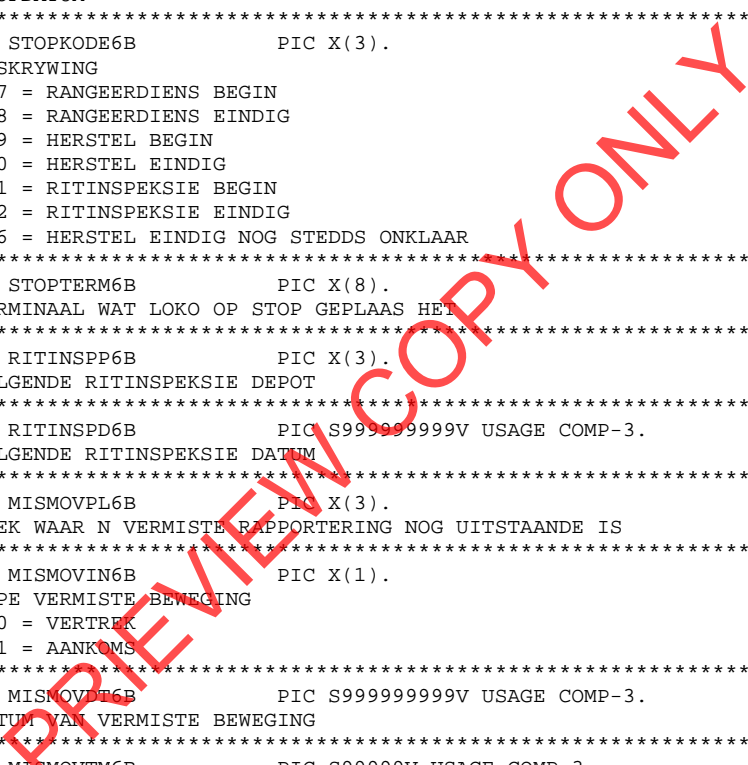
```
      **** LOKOMOTIEF STATUS AAN TREIN
      **** A = ACTIVE
      **** D = DEAD(FAILED OR STOPPED FOR
FURTHER USE)
      **** S = SPARE(AVAILABLE LOCOMOTIVES
TRAVELLING WITHOUT POWER)
      **** L = LIGHT
      ********************************************************************
         10 TIMENORM6B          PIC S999V USAGE COMP-3.
      **** TYDNORM TUSSEN TERREINE(URE)
      ********************************************************************
         10 VERTSTAT6B          PIC X(2).
      **** STATUS VAN LOKO BY VERTREK
      **** 00 = GEEN VERTREK NIE
      **** 03 = VERTREK ANN TREIN
      **** 04 = VERTREK AAN ROTBLOK TREIN
      **** 05 = HERREEL VAN LOKO
      **** 06 = RUIM.NA DOOD OF AFGEHAAKTE TREIN
      **** 07 = VERTREK VAN TERREIN NA LOODS
      **** 08 = VERTREK VAN LOODS NA TERREIN
      **** 09 = VERTREK VAN LOODS NA LOODS
      **** 10 = VERTREK VAN LOODS NA WERKSWINKEL
      **** 11 = VERTREK VAN WERKSWINKEL NA LOODS
      **** 12 = AANHAK VAN LOKO
      **** 13 = VERTREK OORPLAAS VAN LOKOMOTIEF
      **** 14 = NUWE LOKO IN DIENS GEPLAAS
      **** 15 = VERTREK OORPLAAS VAN LOKOMOTIEF
      ********************************************************************
         10 VRBESKIK6B          PIC X(1).
      **** BESKIKBAARHEIDSINDIKATOR BY VERTREK
      **** 0 = AVAILABLE (YES)
      **** 1 = AVAILABLE FOR RESTRICTED USE
      **** 2 = NOT AVAILABLE (NO)
      ********************************************************************
         10 LOCOSVAN6B          PIC X(3).
      **** LOCO STASIE VAN/WAAR
      ********************************************************************
         10 VANSTASP6B          PIC X(20).
      **** VAN/WAAR KORREKTE SPELLING
      ********************************************************************
         10 AREAVANK6B          PIC X(14).
      **** VAN/WAAR STASIE SE AREAKODE
      ********************************************************************
         10 VERTRKDT6B          PIC S999999999V USAGE COMP-3.
      **** VERTREK DATUM
      ********************************************************************
         10 VERTRKTD6B          PIC S99999V USAGE COMP-3.
      **** VERTREK TYD
      ********************************************************************
         10 VTRANLOC6B          PIC X(4).
      **** VERTREK TRANSAKSIE KODE
      ********************************************************************
         10 VTERMADD6B          PIC X(8).
      **** VERTREK TERMINAAL ADRES
      ********************************************************************
         10 VSIGNONS6B          PIC X(10).
      **** VERTREK AANTEKENINGS KODE
      ********************************************************************
         10 VTRANDAT6B          PIC S999999999V USAGE COMP-3.
      **** VERTREK DATUM BYWERKING GEDOEN IS
      ********************************************************************
         10 VTRANTIM6B          PIC S99999V USAGE COMP-3.
      **** VERTREK TYD BYWERKING GEDOEN IS
      ********************************************************************
         10 AANSTATS6B          PIC X(2).
      **** STATUS VAN LOKO BY AANKOMS
      **** 00 = NOG NIE AANGEKOM NIE
      **** 05 = HERREEL AANKOMS
      **** 51 = AANKOMS ROT TREIN
      **** 52 = AANKOMS ROTBLOC TREIN
      **** 53 = DOOD/AFHAAK VAN TREIN
      **** 54 = AANKOMS LOKOLOODS VANAF TERREIN
      **** 55 = AANKOMS LOKOLOODS VANAF LOKOLOODS
      **** 56 = AANKOMS BY TERREIN VANAF LOODS
      **** 57 = AANKOMS BY WERKSWINKEL VANAF LOODS
      **** 58 = AANKOMS BY LOODS VANAF WERKSWINKEL
      **** 59 = AFHAK VAN LOKOMOTIEF
```

11
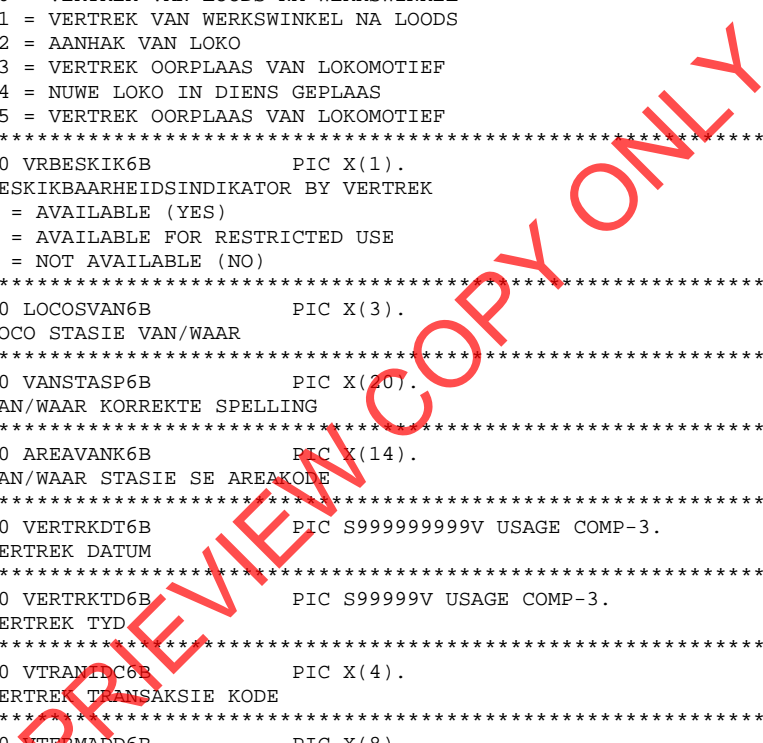
```
      **** 60 = AFHAK VAN LOKOMOTIEF A.G.V
ONKLAAR RAKING
      **** 61 = AANKOMS VAN OORPLAAS
LOKOMOTIEF
      **** 62 = AANKOMS VAN LOKOS BY 'NA'
      **** 63 = NUWE LOKO IN DIENS GEPLAAS
      **** 64 = AANKOMS VAN OORPLAAS LOKOMOTIEF
      ************************************************************
          10 AANBESKT6B          PIC X(1).
      **** BESKIKBAARHEIDSINDIKATOR BY AANKOMS/AKSIE
      **** 0 = AVAILABLE (YES)
      **** 1 = AVAILABLE FOR RESTRICTED USE
      **** 2 = NOT AVAILABLE (NO)
      ************************************************************
          10 STASIENA6B          PIC X(3).
      **** LOKO STASIE NA
      ************************************************************
          10 STANASPE6B          PIC X(20).
      **** KORREKTE SPELLING VAN LOKO STASIE NA
      ************************************************************
          10 AREANAKD6B          PIC X(14).
      **** TERREIN/STASIE WAARHEEN LOKO OP PAD IS SE A/KODE
      ************************************************************
          10 ARENASYS6B          PIC X(2).
      **** AFDELING
      ************************************************************
          10 ARENATER6B          PIC X(3).
      **** TERREIN
      ************************************************************
          10 ARENAGEB6B          PIC X(3).
      **** GEBIED
      ************************************************************
          10 ARENASYL6B          PIC X(6).
      **** SYLYN
      ************************************************************
          10 ARIVALDT6B          PIC S999999999V USAGE COMP-3.
      **** AANKOMS DATUM
      ************************************************************
          10 ARIVALTM6B          PIC S99999V USAGE COMP-3.
      **** AANKOMS TYD
      ************************************************************
          10 ATRANIDC6B          PIC X(4).
      **** AANKOMS TRANSAKSIE KODE
      ************************************************************
          10 ATERMADD6B          PIC X(8).
      **** AANKOMS TERMINAAL ADRES
      ************************************************************
          10 ASIGNONS6B          PIC X(10).
      **** AANKOMS AANTEKENINGS KODE
      ************************************************************
          10 ATRANDAT6B          PIC S999999999V USAGE COMP-3.
      **** AANKOMS DATUM BYWERKING GEDOEN
      ************************************************************
          10 ATRANTIM6B          PIC S99999V USAGE COMP-3.
      **** AANKOMS TYD BYWERKING GEDOEN
      ************************************************************
          10 BLOKSPEL6B          PIC X(20).
      **** BLOK BERIG - AANKOMS PLEK
      ************************************************************
          10 BLOKAREA6B          PIC X(14).
      **** BLOK BERIG - AREAKODE
      ************************************************************
          10 BLOKYARD6B          PIC X(3).
      **** BLOK BERIG - STDCODE
      ************************************************************
          10 BLOKDATE6B          PIC S999999999V USAGE COMP-3.
      **** BLOK BERIG - AANKOMS DATUM
      ************************************************************
          10 BLOKTIME6B          PIC S99999V USAGE COMP-3.
      **** BLOK BERIG - AANKOMS TYDK
      ************************************************************
          10 BLOKTRAN6B          PIC X(4).
      **** BLOK BERIG - TRANSAKSIE BYWERKING GEDOEN
      ************************************************************
          10 BLOKADDR6B          PIC X(8).
      **** BLOK BERIG - TERMINAAL BYWERKING GEDOEN
      ************************************************************
```
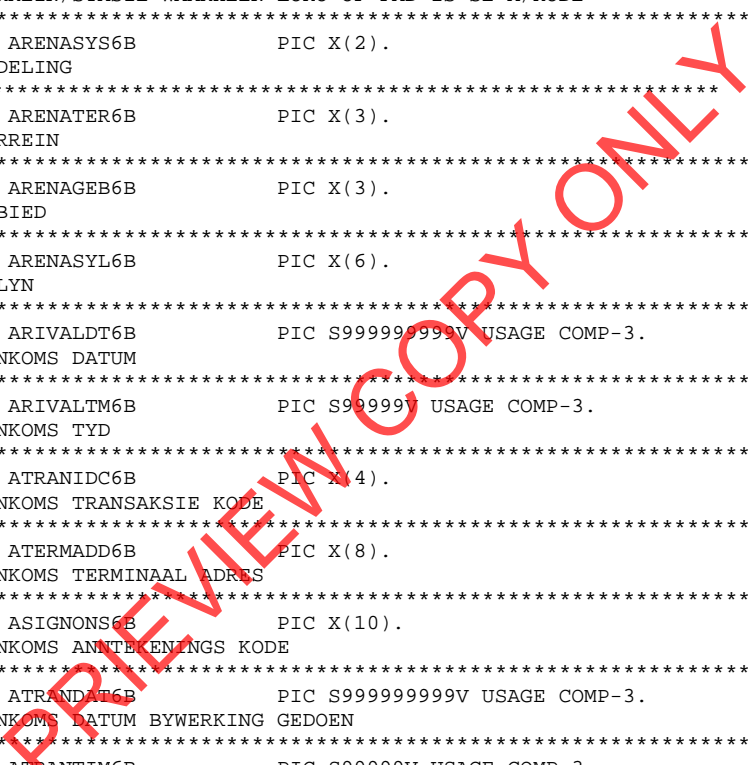
```
        10 BLOKSIGN6B            PIC X(10).
     **** BLOK BERIG - AANTEKENKODE
BYWERKING GEDOEN


***********************************************************
        10 BLOKTDAT6B            PIC S999999999V USAGE COMP-3.
     **** BLOK BERIG - TRANSAKSIE DATUM
     *********************************************************************
        10 BLOKTTYD6B            PIC S99999V USAGE COMP-3.
     **** BLOK BERIG - TRANSAKSIE TYD
     *********************************************************************
        10 DIENSTIP6B            PIC X(1).
     **** A TIPE DIENS OF B TIPE DIENS
     *********************************************************************
        10 ONDERVDL6B            PIC X(2).
     **** ONDERVERDEEL VELD
     *********************************************************************
        10 ONTREKDT6B            PIC S9(09) COMP-3.
     **** ONTREK DATUM
     *********************************************************************
        10 ONTREKTM6B            PIC S9(05) COMP-3.
     **** ONTREK TYD
     *********************************************************************
        10 VERHUURN6B            PIC X(30).
     **** VERHUUR AAN
     *********************************************************************
        10 HUURVNDT6B            PIC S9(09) COMP-3.
     **** OP HUUR VAN DATUM
     *********************************************************************
        10 HUURTODT6B            PIC S9(09) COMP-3.
     **** OP HUUR TOT DATUM
     *********************************************************************
        10 ASSETCDE6B            PIC X(07).
     *********************************************************************
        10 SRVSTDTE6B            PIC S9(09) COMP-3.
     **** SERVICE STARTING DATE (AI)
     *********************************************************************
        10 SRVSTTIM6B            PIC S9(05) COMP-3.
     **** SERVICE STARTING TIME (AI)
     *********************************************************************
        10 SRVENDTE6B            PIC S9(09) COMP-3.
     **** SERVICE END DATE (AI)
     *********************************************************************
        10 SRVENTIM6B            PIC S9(05) COMP-3.
     **** SERVICE END TIME (AI)
     *********************************************************************
     *********************************************************************
     * THE NUMBER OF COLUMNS DESCRIBED BY THIS DECLARATION IS 77        *
     *          INDEXS - DGQTX6BA - LOCOTIPE6B                          *
     *                               LOCONOMM6B                         *
     *                   DGQTX6BB - LOCOKLAS6B                          *
     *                   DGQTX6BC - CURARSYS6B                          *
     *                               CURARTER6B                         *
     *                               CURARGEB6B                         *
     *                               CURARSYL6B                         *
     *                   DGQTX6BD - ARENASYS6B                          *
     *                               ARENATER6B                         *
     *                               ARENAGEB6B                         *
     *                               ARENASYL6B                         *
     *                   DGQTX6BE - TUISDEPT6B                          *
     *                   DGQTX6BF - DIENSDAT6B                          *
     *                   DGQTX6BF - STOPDATM6B                          *
     *                   DGQTX6BH - ONDERVDL6B                          *
     *********************************************************************
```

10. Technical SQL

Utilise all available locos - Locos standing longer than X hours

Locomotive utilisation information can be extracted from the DB2 tables as a snapshot using the following SQL:-

13

```
SELECT
DISTINCT
LOCONOMM6B||LOCOTIPE6B||LOCOKLAS6B AS
LOCODET,TUISDEPT6B||DIENS
DEP6B AS
HOMSERV,DIENSDAT6B,REPAIRCD6B AS REPCD,STANASPE6B AS WHERE,
SUBSTR(GROUPNME99,1,8) AS AREAOFFC,ZONEDESC99 AS REGION,SUBSTR(DIGITS(AR
IVALDT6B),2,8)||' '||SUBSTR(DIGITS(ARIVALTM6B),2,4) AS ARRDTTM,
CASE WHEN STOPKODE6B = '077' THEN 'SHNT   ' WHEN STOPKODE6B = '078' THEN
 'IDLE   ' WHEN STOPKODE6B = '079' THEN 'REPAIRS' WHEN STOPKODE6B = '080
' THEN 'IDLE   ' WHEN STOPKODE6B = '081' THEN 'TRIPINS' WHEN STOPKODE6B
 = '082' THEN 'IDLE   ' ELSE 'IDLE ' END AS STATE
FROM RAIL.LOKO_TAB,RAIL.AREAGROUP_TAB
WHERE AANSTATS6B ¬= '00'
  AND CURARSYS6B||CURARTER6B||CURARGEB6B||CURARSYL6B = AREACODE99
  AND LOCOTIPE6B IN ('E','D') AND TUISDEPT6B ¬= 'BEZ'
ORDER BY STANASPE6B
WITH UR
```

Ideal Sequence?	Role	Accountability (I hereby declare that I have reviewed this document and it …)
1	ICTM – Programme Management	… is within the scope of the project / programme as defined
2	Process Owner	… correctly defines the business context and measure … references the correct business processes … correctly describes related available data and source systems … identified the current utilisation of the measure
3	Functional MIS representative (where available)	co-sign with process owner and … designed the display such that it will fit with other dashboards
4	Performance Enablement	… the KPI definition is correct / have been added to the list of definitions … designed the display such that it will fit with other dashboards
5	ICTM – Portfolio Management	… complies with the standard and contains all the required and relevant content
6	ICTM – Technical / Information Architecture	… provides sufficient information to develop the technical specifications from
7	Sponsor	… addresses the business need as defined

5. Sign

Project name	TBI Stream C		
Signatories		**Signature**	**Date**
Dirk Nieuwoudt	Project sponsor	*DSW Nieuwoudt*	18/06/09
NGABi MAREKO	Process Owner	*Mareko*	18/06/09
Mark Snyders	Portfolio Management		
	Programme Management		
Kesegan Nair	ICTM – Technical / Information Architecture		

15

Transnet Freight Rail Dashboard Functional Specification

KPA Name(s)	Asset Utilisation / Increasing Volumes
Project Name	Dashboard
Project Sponsor:	Dirk Nieuwoudt
Version:	3.0
Document Title:	Wagons standing longer than a selected number of hours _V1
Creation Date:	03 March 2009
Revision Date:	
Document Reference:	
Primary Author(s):	Andre J. Ferreira (Monkey)
Co-Author(s):	

BUSINESS SPECIFICATIONS FOR WAGONS STANDING LONGER THAN A SELECTED NUMBER OF HOURS / DEPOT DASHBOARD AUTOMATION

1. Business Context

- Measurement of Wagons utilisation through idle time i.e. Wagons standing longer than a selected number of hours at any location
- Linked to the *Capacity Management, Improve / Optimise, Monitoring & Control, Production Planning, Order Execution and Customer Interaction* (from value chain and L1 level) – **Specific locations to be confirmed with business processes in due course**

2. Project Context

- Name: Business Specifications – KPI / Depot Dashboard Automation
- Purpose: Automate dashboards in use in yards/depots - this is to provide management a view of wagons standing longer than a selected number of hours.

3. KPI Definition

3.1 Wagons standing longer than a selected number of hours (All wagons per category, i.e. Empty wagons available, Empty wagons not available, Loaded wagons, Repair Wagons on hand, Repair Wagons en route, Workshop wagons on hand, Workshop wagons en route, Workshop wagons in holding area, Storage wagons, Wreck Wagons
- Wagons that will be acted upon is those that are stationary for more than the selected number of hours
- These wagons can be standing in any location (or can be derailed), i.e. Yards, Exchange Yards, stations, private sidings, workshops, repair depots and holding areas
- This KPI measure the actual number of wagons standing longer than a selected number of hours – Detail is also available.

4. Measure Context

- Feed to / feed from:

  This measurement does not use another measure in its calculation but is used in the calculation of wagon utilization (wagon model / OEE measures). It is also aggregated on various levels per category and location.

- This measure is currently only used in Depot Dashboards

  Wagons standing longer than a selected number of hours are currently only available on Real time Monitoring System and IATS graphical viewer.

2

5. Data Description

- Source systems

  - Capture onto the Sprint and IATS systems

- Data flows model
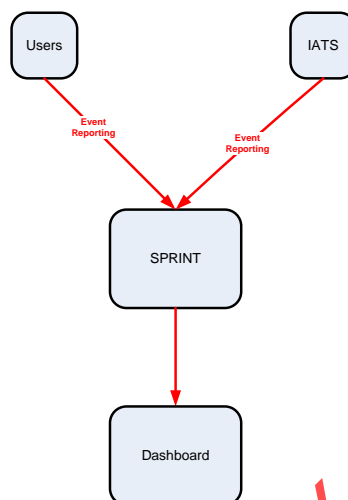
- Components of the calculation required: N/A

6. Solution Requirements

- Minimum requirements:

  - Dimensions / parameters:
    - Operational structure; starting on location level and aggregated to Yard, Area, Cluster, Region and TFR level
    - Primary requirement is to track wagons standing longer than **a selected number of** hours.
  - TFR yards, locations should be easily extracted from a location perspective.
  - Reporting periods: Daily,
  - Graphics: Printable bar graphs and tables in PDF-format – rolling 30 days
  - Ability to navigate between levels
  - Linked to other measures in the "Depot Dashboard"

- Additional requirements to optimise this solution:

  - Dimensions / parameters: More detail re. Locations, Areas, Regions, etc.(sortable per criteria).

7. Solution Proposal

- Solution detail:

To obtain the KPIs, a link **"Train and Rolling Stock Performance Indicators"** will be published on the portal. When the user clicks on this link, a list of resources under which the different summarised list of KPI's resorts, will be displayed. I.e. Trains, Locomotives and Wagons.

Trains
Locomotives
Wagons

The user would then be able to drill down on each of this summarised list. In this case, they would select **"Wagons"**

Trains
On Time Arrivals - Minutes late per train
On Time Departures - Minutes late per train
Run more trains - Trains run per day
Run trains with all possible wagons - Wagons per train
Staged loads
Locomotives
Locos standing longer than a selected number of hours
Wagons
Wagons standing longer than a selected number of hours

When the user clicks on a specific KPI, e.g. **"wagons standing longer than a selected number of hours"**, the screen with the selection parameters will be displayed for that KPI **(See diagram below).** The **"DISPLAY TYPE"** will default to **"GRAPH"**

4

The following dropdowns will be made
available
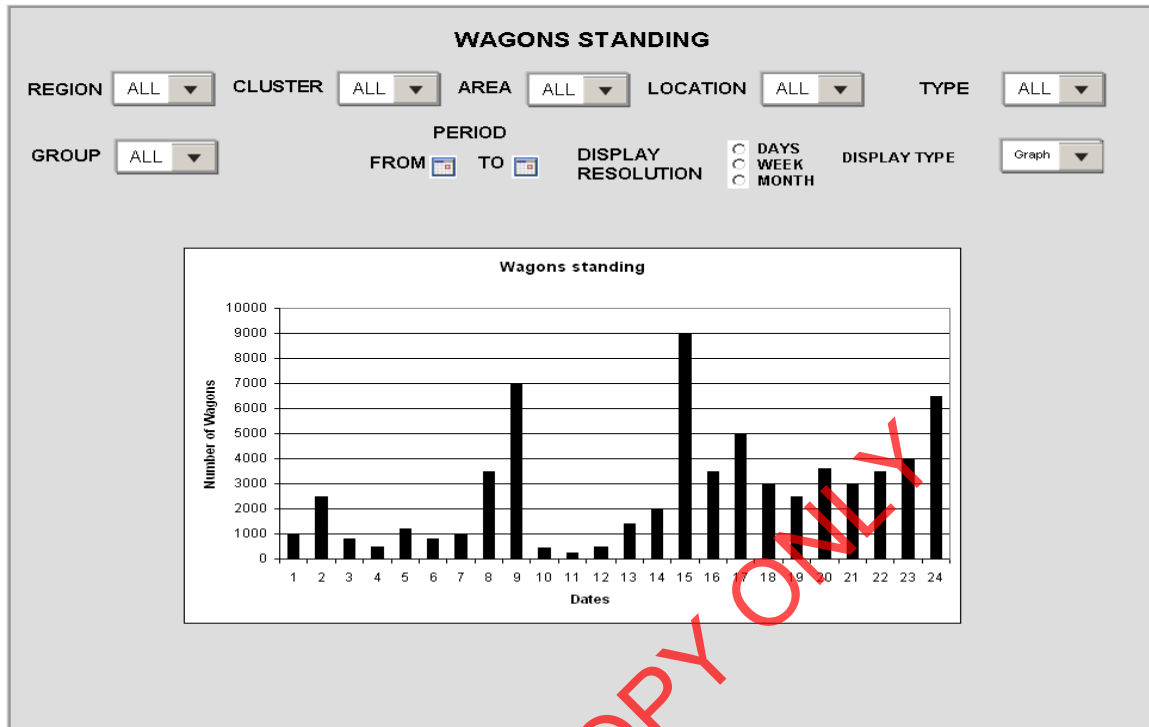
Region:	Drop down with the following: All, Central, Eastern, and Western.
Cluster:	Drop down related to region selected, if no region selected all clusters.
Area:	Drop down related to region selected, if no region selected all areas.
Location:	Drop down related to region and/or area selected as specific yard/depot can be selected.
Type	All wagon types
Group	All groups according to the Sprint system
Period (from/to)	User can select with calendars the From – To dates.
Display resolution	This can be selected to provide information per Day (Max 30), Week (Max 52), Month (Max 24)
Display type:	The output can be either in Graph or Detail format

After completing the above screen the execution of the report to generate
information will automatically be performed displaying a bar graph according to
the information selected.

The user can now change the different dropdown to get the desired results in
either Graph of Detail view.

When **"DISPLAY TYPE"** is change to **"DETAIL"** the following screens will be made available.

WAGONS STANDING

REGION [ALL ▼]   CLUSTER [ALL ▼]   AREA [ALL ▼]   LOCATION [ALL ▼]   TYPE [ALL ▼]

GROUP [ALL ▼]   PERIOD FROM [ ] TO [ ]   DISPLAY RESOLUTION   ○ DAYS ○ WEEK ○ MONTH   DISPLAY TYPE [DETAIL ▼]

Wagons standing longer than XX hours at Sentrarand	
Classification	**Total wagons**
Empty wagons available	43
Empty wagons not available	65
Loaded wagons	23
Repair Wagons on hand	65
Repair Wagons en route	422
Workshop wagons on hand	21
Workshop wagons en route	109
Workshop wagons in holding area	123
Storage wagons	21
Wreck Wagons	15

Column description

❖ Classification - Different classification based on Sprint handling codes.

❖ Total wagons - Total number of wagons standing long. This will provide a link to drill down to a detail level. If this is selected the following screen will be displayed.

The button provides a sorting option in the column provided.

When the user clicks on one of the "Total wagons" which will be underlined, the following detail will be displayed.

WAGONS STANDING

REGION [ALL ▼]   CLUSTER [ALL ▼]   AREA [ALL ▼]   LOCATION [ALL ▼]   TYPE [ALL ▼]

GROUP [ALL ▼]   DISPLAY TYPE [Detail ▼]   HOURS STANDING [   ]

Classification	Number	Type	Loading location	Destination	Handling code	Reserved for	Standing time
Loaded wagons	17016126	SWLJ19	MWF/S663344	NAS/S762326	05VST	Steel	168
Loaded wagons	17061725	SSLJ3	NBN-HERSTEL	DNR/S660981	18ONG	Steel	12347
Loaded wagons	17067049	SWLJ8	MWF/S663344	NAS/S762326	05VST	Steel	168
Loaded wagons	17067111	SWLJ8	MWF/S663344	NAS/S762326	05VST	Steel	168
Loaded wagons	17067340	SWLJ8	MWF/S663344	NAS/S762326	05VST	Steel	168
Loaded wagons	17067391	SWLJ8	MWF/S663344	NAS/S762326	05VST	Steel	168
Loaded wagons	17067413	SWLJ8	MWF/S663344	NAS/S762326	05VST	Steel	168
Loaded wagons	17067537	SWLJ8	MWF/S663344	NAS/S762326	05VST	Steel	168
Loaded wagons	17103991	STJ13	DRAYCOTT	MWF/S645583	05NGHT	Steel	60
Loaded wagons	17900042	SWJ3	MWF/S663344	NAS/S762326	05VST	Steel	168
Loaded wagons	17900050	SWJ3	MWF/S663344	NAS/S762326	05VST	Steel	168
Loaded wagons	17900131	SWJ3	MWF/S663344	NAS/S762326	05VST	Steel	168

Column description
- ❖ Classification = Classification of Sprint handling codes
- ❖ Number = Wagon number
- ❖ Type = Type of wagon
- ❖ Load place / Siding = Loading location
- ❖ Destination = Destination of wagon
- ❖ Handling code = Handling code
- ❖ Reserved for = If a wagons in dedicated to carry certain commodities
- ❖ Standing time(Hours) = Standing time in hours. This information will display in "RED" if the wagons are standing longer than 12 Hours.

The [⇅] button provides a sorting option in the column provided.

- Proposed approach (best way to solve current needs/issues)

  - To be decided and implemented

8.   Business rules
- **Region**
  - o It can only belong to one of the following, Central, Eastern, or Western and must exist in Locnet

- **Cluster**
  - It can only belong to one region and must exist in MIS.
- **Area**
  - Can only be an area that exists in Locnet.
- **Location**
  - Can only be a location that exist in Locnet and where wagons are delayed.
- **Classification**
  - Can only be one of the following
    - Empty wagons available.
    - Empty wagons not available.
    - Loaded wagons.
    - Repair Wagons on hand.
    - Repair Wagons en route.
    - Workshop wagons on hand.
    - Workshop wagons en route.
    - Workshop wagons in holding area.
    - Storage wagons.
    - Wreck Wagons.
- **Wagon number**
  - Must be a valid wagon number existing on the Sprint database.
- **Type**
  - Must be a valid mechanical wagon type existing against the wagons on Sprint
- **Group**
  - Can only be a valid group as exist in Sprint.
- **Loading Location**
  - Can only be a location that exist in Locnet and is open for traffic
- **Destination**
  - Can only be a location that exist in Locnet and is open for traffic
- **Handling code**
  - Must exist in Commodity Core system and on the Sprint handling code table
- **Reserved for**
  - Must exist in Sprint on the reserved for table
- **Standing time**
  - Calculated by subtracting the Arrival date/Time from the Date/Time of enquiry.

9. Dataset

```
********************************************************************00000100
* DCLGEN TABLE(RAIL.TROKOPR_TAB)                            *00000200
*        LIBRARY(GQTN1.BEDRYF.TKCOPY(TRKOPR2A))             *00000300
*        ACTION(REPLACE)                                    *00000400
*        QUOTE                                              *00000500
* ... IS THE DCLGEN COMMAND THAT MADE THE FOLLOWING STATEMENTS  *00000600
```

```
****************************************************************00000700
*                                                             *00000800
* IF THIS TABLE CHANGES PROGRAMS GQT100C9 MUST BE ALTERED AS WELL*00000900
* FILE CONSISTS OF FIXED DETAILS, CURRENT LOAD DETAILS, CURRENT *00001000
* MOVEMENT DETAILS, PRELIMINARY TRAIN DETAILS,TEMPORARY DETAILS *00001100
* AND BLOCK DETAILS PER TRUCK NUMBER/OWNER.                    *00001200
* WHENEVER THE TRUCK MOVES THE CURRENT MOVEMENT DETAILS ARE     *00001300
* WRITTEN TO THE MOVEMENT HISTORY TABLE TRKHIS2F.              *00001400
* CURRENT LOAD DETAILS ARE ALWAYS ALSO WRITTEN TO THE LOAD      *00001500
* DETAIL HISTORY TRKHIS2E.                                     *00001600
*                                                             *00001700
*             O P E R A T I O N A L   T A B L E               *00001800
*             ---------------------------------               *00001900
* THE OPERATIONAL TABLE IS SET UP TO CONTAIN ONLY THE CURRENT OR *00002000
* LATEST DETAIL OF A TRAIN OR TRUCK.                          *00002100
* ONLY INFORMATION NECCESSARY TO MOVE A TRUCK OR TRAIN ARE KEPT *00002200
* ON THIS TABLE.                                              *00002300
* THE TABLE CONTAINS THE LATEST LOAD DETAILS OF A TRUCK AS WELL *00002400
* AS ONE COMPLETE MOVEMENT OR AN ENROUTE MOVEMENT.            *00002500
* THE TABLE ALSO CONTAINS DETAILS FOR ONE PRELIMINARY TRAIN PER *00002600
* TRUCK AND ALL OTHER PRELIMINARY DETAILS ARE ON TRKVOR2B      *00002700
* INCOMPLETE MOVEMENTS WIL BE WRITTEN TO TRKHIS2F IF A LATER   *00002800
* TRUCK MOVEMENT IS REPORTED. THIS OLD MOVEMENT WILL THEN BE   *00002900
* UPDATED AS SOON AS THE REPORTING IS DONE FOR THE ARRIVAL OF THE*00003000
* MOVEMENT.                                                   *00003100
* LOAD DETAILS ARE UPDATED WITH TRANSACTIONS BTAA, BTBA, BTA0, *00003200
* BTA3, BTA9, BTAJ AND SMRI (SM RELEASE DETAILS)              *00003300
* MOVEMENT DETAILS ARE UPDATED WITH BTA1, BTA3, BTA4, BTA2, BTAB *00003400
* BTA9, BTAD, BTAE, BTAC, BTAJ, BTA7, BTAH TRANSACTIONS.       *00003500
* FIXED DETAILS REMAIN UNCHANGED UNLESS MODIFIED BY BTA7.       *00003600
* WITH EVERY NEW MOVEMENT (NEW DEPARTURE DATE/TIME) THE CURRENT *00003700
* MOVEMENT ON THE TABLE IS WRITTEN TO THE MOVEMENT HISTORY TABLE*00003800
* TRKHIS2F.                                                   *00003900
* WHEN A VEHICLE LIST IS PRINTED IT USES THE LOAD DETAILS FROM  *00004000
* TRKHIS2E THAT CORRESPOND TO BWGLAIDDT AND BWGLAITM FIELDS     *00004100
*                                                             *00004200
* THE OPERATIONAL TABLE CAN NEVER BE SEPERATED FROM THE HISTORY *00004300
* RECORDS BECAUSE MISSING MOVEMENTS MUST BE UPDATED AND ALL THE *00004400
* ENQUIRY PROGRAMS USE INPUT KEY FIELDS OFF ALL 3 TABLES TO    *00004500
* MATCH EACH OTHER.                                           *00004600
*                                                             *00004700
* PRELIMINARY DETAILS ARE UPDATED BY BTA0, BTAA, BTA3, BTAD,   *00004800
* BTA2 AND BTAC TRANSACTIONS.                                 *00004900
*                                                             *00005000
****************************************************************00005100
****************************************************************00023300
 01  DCLTRKOPR-TAB.                                            00023400
     10 TRUCKKEY2A.                                            00023500
**** CONSISTS OF THE FOLLOWING DETAILS -                      00023600
****************************************************************00023700
       13 EIENKODE2A       PIC X(2).                          00023800
**** TRUCK OWNER CODE EG 00 = SAV   SAVP  SAVSS  SAVHB        00023900
****                     01 = NRZ   NRZC                      00024000
****                     02 = DNPCF                           00024100
****                     03 = ZAI                             00024200
****                     04 = SZL                             00024300
****                     06 = ZAM                             00024400
****                     07 = NVK   NVKC                      00024500
****                     10 = BOT                             00024600
****************************************************************00024700
       13 TRKGRPCD2A       PIC X(2).                          00024800
**** TRUCK GROUP CODE EG 00 = TRUCK                           00024900
****                     01 = PASSENGER TRUCK                 00025000
****                     02 = HARBOUR TRUCK                   00025100
****                     03 = NARROW GAUGE TRUCK              00025200
****                     04 = CRANE                           00025300
****************************************************************00025400
```

```
        13 TROKNOMM2A        PIC X(8).                          00025500
**** TRUCK NUMBER                                               00025600
**** THIS TRUCK NUMBER MUST BE A MODULUS 11 NUMBER AND TOGETHER 00025700
**** WITH THE ALPHA TRUCK OWNER MUST EXIST IN THE MODULE GQT00300.00025800
**** THIS MODULE DOES A RANGE CHECK, MODULUS 11 OR 10 CHECK     00025900
**** (DEPENDING ON THE OWNER), ALPHA OWNER CHECK AND CHECKS THAT 00026000
**** THE ALPHA OWNER AND TRUCK NUMBER RANGE MATCHES.            00026100
**** THE MODULE ON COMPLETION SENDS BACK THE NUMERIC OWNER AND  00026200
**** GROUP CODES. SEE GQTN1.BEDRYF.TKCOPY(MODFLDS) FOR THE COPY 00026300
**** BOOK TO CALL THIS MODULE.                                  00026400
***************************************************************00026500
     10 CURRAREA2A        PIC X(14).                            00026600
**** 14 BYTE AREACODE TO SHOW WHERE THE TRUCKS IS STANDING AT THIS00026700
**** MOMENT. WHEN TRUCKS ARE EN-ROUTE THIS 14 BYTE ARECODE IS THE 00026800
**** DEBIT AREA BETWEEN THE TRAINS FROM AND TO ROUTE AND CAN BE 00026900
**** FOUND IN TABGEO03.                                         00027000
***************************************************************00027100
     10 COAFGESN2A        PIC X(13).                            00027200
**** RESERVED TO CARRY A CERTAIN COMMODITY                      00027300
**** UPDATED BY BTB1 TRANSACTION. THE TRUCKS IS ONLY UPDATED AS 00027400
**** RESERVED FOR A CERTAIN COMMODITY - BUT NO VALIDATIONS ARE  00027500
**** EVER PERFORMED TO CHECK WHETHER THE TRUCK TYPE AND COMMODITY 00027600
**** EVER MATCH.                                                00027700
***************************************************************00027800
     10 OPERTIPE2A        PIC X(7).                             00027900
**** OPERATIONAL TRUCK TYPE EG DZ7                              00028000
**** THERE ARE NO VALIDATIONS TO ENSURE THAT THE COMMODITY LOADED 00028100
**** IN THE TRUCK MATCHES THIS TRUCK TYPE.                      00028200
***************************************************************00028300
     10 INHOUDCD2A        PIC X(6).                             00028400
**** COMMODITY CODE OR CONTENTS THAT ARE LOADED INTO THE TRUCK  00028500
**** THIS FIELD MATCHES LODEMPTY2A TO CHECK IF THIS COMMODITY IS 00028600
**** A LOADED OR EMPTY COMMODITY.                               00028700
***************************************************************00028800
     10 SKIPNOMR2A        PIC X(6).                             00028900
**** SHIP NOMMER- ALL SHIP NUMBERS ARE FOUND ON TABSKP12        00029000
***************************************************************00029100
     10 PERMITNR2A        PIC X(5).                             00029200
**** PERMIT NUMBER. CONSISTS OF -                               00029300
**** BYTE 1-2 = MONTH                                           00029400
**** BYTE 3-4 = DAY                                             00029500
**** BYTE   5 = ANY ALPHANUMERIC CHARACTER (A-Z,1-9)            00029600
**** ANY VALID PERMIT NUMBER IS ALLOWED.                        00029700
***************************************************************00029800
     10 FINDSTAR2A        PIC X(14).                            00029900
**** FINAL DESTINATION ARECODE                                  00030000
**** FOUND ON TAFON01/TABFON02                                  00030100
***************************************************************00030200
     10 NEXTYARD2A        PIC X(14).                            00030300
**** NEXT YARD'S ARECODE - WHERE THE TRUCK WILL NEXT ARRIVE     00030400
***************************************************************00030500
     10 SONERING2A        PIC X(4).                             00030600
**** ZONE CODE FROM TABLE TABSON11 EG 1W,1R                     00030700
***************************************************************00030800
     10 TNBEWEEG2A        PIC X(16).                            00030900
**** TRAIN NUMBER ON WHICH THIS TRUCK IS MOVING OR ON WHICH THIS 00031000
**** TRUCK HAS ARRIVED.                                         00031100
**** FOR INTER YARD PLACEMENTS THIS FIELD = 'PLAAS'             00031200
**** FOR YARD TO YARD PLACEMENTS THIS FIELD = 'PLAS000000000000' 00031300
**** FOR CLEARANCES THIS FIELD = 'RUIM'                         00031400
***************************************************************00031500
     10 TNVORLOP2A        PIC X(16).                            00031600
**** PRELIMINARY TRAIN NUMBER TO WHICH TRUCK IS ATTATCHED       00031700
**** IF THE TRUCK IS BUILT ON MORE THAN ONE PRELIMINARY TRAIN AT 00031800
**** THE SAME FROM STATION, THE TRUCK IS AUTOMATICALLY DETATCHED 00031900
**** FROM THE TRAIN AND ATATCHED TO THE NEW TRAIN NUMBER.       00032000
***************************************************************00032100
```

```
      10 TOEGEKEN2A          PIC X(14).                   00032200
**** TRUCK IS SPECIFICALLY GIVEN TO A SPECIFIC YARD OR AREA FOR    00032300
**** USE.                                                 00032400
******************************************************************00032500
      10 OLDHISDT2A          PIC S999999999V USAGE COMP-3.  00032600
**** LAST ONLINE MOVEMENT DATE - NOT IN USE               00032700
******************************************************************00032800
      10 MEGATIPE2A          PIC X(7).                     00032900
**** REPLICATION OF OPERTIPE2A                            00033000
******************************************************************00033100
      10 TRKTARRA2A          PIC S9999999V USAGE COMP-3.   00033200
**** TRUCK TARE WHEN EMPTY - FIXED                        00033300
******************************************************************00033400
      10 TRKKAPAS2A          PIC S9999999V USAGE COMP-3.   00033500
**** TRUCK CAPACITY - FIXED                               00033600
******************************************************************00033700
      10 TKMAXLOD2A          PIC S9999999V USAGE COMP-3.   00033800
**** MAXIMUM TRUCK MAY WEIGH WHEN LOADED - A MAX OF 10 TONE  00033900
**** OVER THIS WEIGHT IS ALLOWED - FIXED                  00034000
******************************************************************00034100
      10 TKLENGTE2A          PIC S99999V USAGE COMP-3.     00034200
**** TRUCK LENGTH - FIXED                                 00034300
******************************************************************00034400
      10 TROKASSE2A          PIC S999V USAGE COMP-3.       00034500
**** NUMBER OF AXLES THE TRUCK HAS - FIXED                00034600
******************************************************************00034700
      10 TKOOPTOE2A          PIC X(1).                     00034800
**** OPEN OR CLOSED TRUCK : 0 = OPEN,1 = CLOSED,2 = TENT TRUCK  00034900
******************************************************************00035000
      10 TKEENHDS2A          PIC X(1).                     00035100
**** LOCO CONTROLLED TRUCK : 0 = NO, 1 = YES              00035200
******************************************************************00035300
      10 DIENSIND2A          PIC X(1).                     00035400
**** DOES TRUCK HAVE SERVICE DETAILS : 0 = NO, 1 = YES    00035500
******************************************************************00035600
      10 EIENAARN2A          PIC X(5).                     00035700
**** ALPHA OWNER CODE EG SAV - SPOORNET, ZAM - ZAMBIAN    00035800
**** FIXED.                                               00035900
******************************************************************00036000
      10 KILOLOAD2A          PIC S999999999999999V USAGE COMP-3.  00036100
**** KILOMETERS WORKED LOADED                             00036200
******************************************************************00036300
      10 TONNELOD2A          PIC S999999999999999V USAGE COMP-3.  00036400
**** GROSS TONS TRANSPORTED                               00036500
******************************************************************00036600
      10 KILOEMPT2A          PIC S999999999999999V USAGE COMP-3.  00036700
**** KILOMETERS WORKED EMPTY                              00036800
******************************************************************00036900
      10 AFSONSTA2A          PIC X(20).                    00037000
**** PLACE WHERE A TRUCK IS ASSIGNED FOR A SPECIFIC COMMODITY  00037100
******************************************************************00037200
      10 LAAIPLEK2A          PIC X(20).                    00037300
**** LOADING OR FORWARDING STATION - SPELLING             00037400
******************************************************************00037500
      10 LAAISTDC2A          PIC X(3).                     00037600
**** LOADING OR FORWARDING STATION - STANDARD STATION CODE  00037700
******************************************************************00037800
      10 LAREACDE2A.                                       00037900
**** LOADING OR FORWARDING STATION - AREACODE             00038000
******************************************************************00038100
        13 LAFTRGEB2A.                                     00038200
**** LOADING REGION, YARD,AREA                            00038300
******************************************************************00038400
          15 LAFDTERR2A.                                   00038500
**** LOADING REGION, YARD                                 00038600
******************************************************************00038700
            17 LAFDELIN2A    PIC X(2).                     00038800
**** LOADING REGION                                       00038900
******************************************************************00039000
            17 LTERREIN2A    PIC X(3).                     00039100
**** LOADING YARD                                         00039200
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*******************************************************************00039300
         15 LGEBIEDS2A           PIC X(3).                          00039400
**** LOADING AREA                                                  00039500
*******************************************************************00039600
       13 LSYLYNNE2A            PIC X(6).                           00039700
**** LOADING SIDING                                                00039800
*******************************************************************00039900
    10 VRYGDATE2A              PIC S999999999V USAGE COMP-3.        00040000
**** DATE LOADED OR UNLOADED                                       00040100
*******************************************************************00040200
    10 VRYGTIME2A              PIC S99999V USAGE COMP-3.            00040300
**** TIM LOADED OR UNLOADED                                        00040400
*******************************************************************00040500
    10 PVRYGDAT2A              PIC S999999999V USAGE COMP-3.        00040600
**** PREVIOUS LOAD DATE                                            00040700
*******************************************************************00040800
    10 PVRYGTYD2A              PIC S99999V USAGE COMP-3.            00040900
**** PREVIOUS LOAD TIME                                            00041000
*******************************************************************00041100
    10 TRKMASSA2A              PIC S9999999V USAGE COMP-3.          00041200
**** TRUCK MASS - TARE + CONTENT WEIGHT                            00041300
*******************************************************************00041400
    10 HZRDCODE2A              PIC X(2).                            00041500
**** TYPE OF HAZARD CODE EG. 01 = PETROL                           00041600
*******************************************************************00041700
    10 LODEMPTY2A              PIC X(1).                            00041800
**** IS TRUCK LOADED/EMPTY OR A WRECK - 0=LEEG,1=BELAAI,2=WRAK     00041900
*******************************************************************00042000
    10 ANWSKOMM2A              PIC X(2).                            00042100
**** COMMODITY INDICATOR EG. 01 = WERKSWINKEL                      00042200
*******************************************************************00042300
    10 FINALBES2A              PIC X(20).                           00042400
**** FINAL DESTINATION SPELLING - TO CHECK WHEN A TRUCK HAS BEEN   00042500
**** POD'ED - CURRAREA2A = FINDSTAR2A                              00042600
*******************************************************************00042700
    10 FINALSTD2A              PIC X(3).                            00042800
**** FINAL DESTINATION STANDARD STATION CODE                       00042900
*******************************************************************00043000
    10 LVIASPEL2A              PIC X(20).                           00043100
**** VIA STATION SPELLING - NOT IN USE                             00043200
*******************************************************************00043300
    10 LVIASTDC2A              PIC X(3).                            00043400
**** VIA STATION STANDARD STATION CODE - NOT IN USE                00043500
*******************************************************************00043600
    10 LVIAARE2A               PIC X(14).                           00043700
**** VIA STATION AREACODE - NOT IN USE                             00043800
*******************************************************************00043900
    10 VBESTMNG2A              PIC X(3).                            00044000
**** PREVIOUS DESTINATION - FOR EMPTY TRUCKS                       00044100
*******************************************************************00044200
    10 VBSTAREA2A              PIC X(14).                           00044300
**** PREVIOUS DESTINATION ARE CODE                                 00044400
*******************************************************************00044500
    10 CONTRACT2A              PIC S99999V USAGE COMP-3.            00044600
**** CONTRACT NUMBER - NOT IN USE                                  00044700
*******************************************************************00044800
    10 TRKSEILE2A              PIC S999V USAGE COMP-3.              00044900
**** NUMBER OF TARPAULINS ON TRUCK                                 00045000
*******************************************************************00045100
    10 TRKCHAIN2A              PIC S999V USAGE COMP-3.              00045200
**** NUMBER OF CHAINS ON TRUCK                                     00045300
*******************************************************************00045400
    10 FIXSHEDD2A              PIC S999999999V USAGE COMP-3.        00045500
**** SHEDULED ARRIVAL DATE AT DESTINATION. CALCULATES LOOPTYD11    00045600
**** (FROM TABSON11) + LOAD DATE AND TIME                          00045700
**** ONLY CALCULATED WITH NEW LOAD DETAILS.                        00045800
*******************************************************************00045900
    10 FIXSHEDT2A              PIC S99999V USAGE COMP-3.            00046000
**** SHEDULED ARRIVAL TIME AT DESTINATION.                         00046100
*******************************************************************00046200
    10 NEWLODIN2A              PIC X(1).                            00046300
```
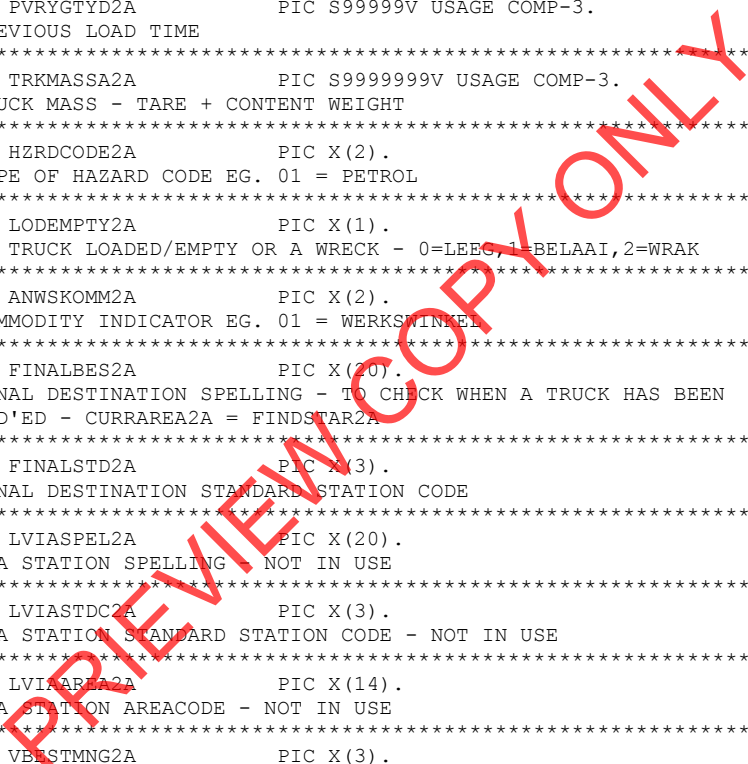
```
****  NEW LOAD DETAILS ENTERED - HAS TRUCK MOVED ?                00046400
****  EG.  0 = NOT MOVED, 1 = MOVED                               00046500
*****************************************************************00046600
      10 LINKNAAM2A          PIC X(12).                           00046700
****  LINK NAME OF COMPUTER - NOT USED                            00046800
*****************************************************************00046900
      10 LLSTTRAN2A          PIC X(4).                            00047000
****  LAST TRANSACTION TO UPDATE LOAD DETAILS                     00047100
*****************************************************************00047200
      10 LTERMINL2A          PIC X(8).                            00047300
****  LAST TERMINAL ADDRESS TO UPDATE LOAD DETAILS                00047400
*****************************************************************00047500
      10 LSGNONID2A          PIC X(10).                           00047600
****  LAST SIGNON ID UPDATED LOAD DETAILS                         00047700
*****************************************************************00047800
      10 LTERMDAT2A          PIC S999999999V USAGE COMP-3.        00047900
****  DATE LOAD DETAILS WERE CHANGED                              00048000
*****************************************************************00048100
      10 LTERMTIM2A          PIC S99999V USAGE COMP-3.            00048200
****  TIME LOAD DETAILS WERE CHANGED                              00048300
*****************************************************************00048400
      10 MOVESTAT2A          PIC X(2).                            00048500
****  MOVEMENT STATUS OF TRUCK: 01 = EN-ROUTE                     00048600
****                           02 = ARRIVED                       00048700
****  WHEN A NEW TRUCK IS ADDED THIS FIELD IS ALWAYS SET TO ARRIVED00048800
*****************************************************************00048900
      10 DEPSTATS2A          PIC X(2).                            00049000
****  STATUS OF MOVEMENT AT DEPARTURE:                            00049100
****   03 = NORMAL DEPARTURE                                      00049200
****   04 = ROTBLOCK DEPARTURE                                    00049300
****   05 = DIVERTED                                              00049400
****   06 = CLEARED                                               00049500
****   20 = PICKUP IN A YARD                                      00049600
****   21 = PICKUP ON A ROTBLOCK TRAIN                            00049700
****   22 = CLEARED FROM A SIDING                                 00049800
****   23 = PLACED IN A SIDING                                    00049900
****   24 = PLACED FROM STATION TO STATION NOT IN THE SAME AREA   00050000
*****************************************************************00050100
      10 TREINNOM2A          PIC X(16).                           00050200
****  REPLICATION OF TNBEWEEG2A - USED AS AN INDEX FOR ENQUIRIES  00050300
*****************************************************************00050400
      10 PREVTROK2A          PIC X(12).                           00050500
****  PREVIOUS TRUCK ON TRAIN                                     00050600
*****************************************************************00050700
      10 VERMISBW2A          PIC X(3).                            00050800
****  MISSING MOVEMENT STANDARD STATION CODE - THIS IS WHEN THE   00050900
****  STATION WHERE THE TRUCK LAST ARRIVED DOES NOT = THE TRUCKS  00051000
****  CURRENT DEPARTURE STATION.                                  00051100
*****************************************************************00051200
      10 NEXTTROK2A          PIC X(12).                           00051300
****  NEXT TRUCK ON THE TRAIN                                     00051400
*****************************************************************00051500
      10 TRNSEQNO2A          PIC X(9).                            00051600
****  SEQUENCE NUMBER OF THE TRUCK ON AN ENROUTE TRAIN            00051700
****  THIS SEQUENCE NUMBER IS USED TO SORT THE TRUCKS INTO THE    00051800
****  SEQUENCE THE ARE ATATCHED TO ON THE TRAIN WHEN PRINTING A   00051900
****  VEHICLE LIST.                                               00052000
*****************************************************************00052100
      10 VRAGNOMM2A          PIC X(6).                            00052200
****  FREIGHT NUMBER OF THE TRAIN THIS TRUCK IS ATATCHED TO       00052300
*****************************************************************00052400
      10 VRTRKSPL2A          PIC X(20).                           00052500
****  TRUCKS DEPARTURE STATION - SPELLING                         00052600
*****************************************************************00052700
      10 VRTRKSTD2A          PIC X(3).                            00052800
****  TRUCKS DEPARTURE STATION - STANDARD STATION CODE            00052900
*****************************************************************00053000
      10 VRTRKARE2A          PIC X(14).                           00053100
****  TRUCKS DEPARTURE STATION - AREACODE                         00053200
*****************************************************************00053300
      10 RIGVRTRK2A          PIC X(2).                            00053400
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****  DIRECTION DEPARTED FROM TRUCKS FROM STATION                  00053500
****************************************************************00053600
     10 BWGLAIDT2A          PIC S999999999V USAGE COMP-3.         00053700
****  DEPARTURE LOAD DATE                                          00053800
****  THIS FIELD CONTAINS THE LOAD DATE WITH WHICH THE TRUCK       00053900
****  DEPARTED. IT DOES NOT ALWAYS HAVE TO EQUAL THE CURRENT LOAD  00054000
****  DATE ESPECIALLY WHEN A MISSING MOVEMENT IS BEING REPORTED.   00054100
****************************************************************00054200
     10 BWGLAITM2A          PIC S99999V USAGE COMP-3.             00054300
****  DEPARTURE LOAD TIME                                          00054400
****************************************************************00054500
     10 DEPARTDT2A          PIC S999999999V USAGE COMP-3.         00054600
****  DATE TRUCK DEPARTED OR WAS PICKED UP                         00054700
****************************************************************00054800
     10 DEPARTTM2A          PIC S99999V USAGE COMP-3.             00054900
****  TIME TRUCK WAS DEPARTED OR PICKED UP                         00055000
****************************************************************00055100
     10 VSCHEDDT2A          PIC S999999999V USAGE COMP-3.         00055200
****  SCHEDULED DEPARTURE DATE                                     00055300
****************************************************************00055400
     10 VSCHEDTM2A          PIC S99999V USAGE COMP-3.             00055500
****  SCHEDULED DEPARTURE TIME                                     00055600
****************************************************************00055700
     10 ANKOMSPL2A          PIC X(20).                            00055800
****  ARRIVAL STATION - SPELLING                                   00055900
****************************************************************00056000
     10 ANKOMSTD2A          PIC X(3).                             00056100
****  ARRIVAL STATION - STANDARD STATION CODE                      00056200
****************************************************************00056300
     10 VIASPELL2A          PIC X(20).                            00056400
****  VIA STATION IF TRAIN IS DEPARTED VIA A CERTAIN ROUTE -       00056500
****  SPELLING                                                     00056600
****************************************************************00056700
     10 VIASTDCD2A          PIC X(3).                             00056800
****  VIA STATION - STANDARD STATION CODE                          00056900
****************************************************************00057000
     10 VIAAREAC2A          PIC X(14).                            00057100
****  VIA STATION - ARECODE                                        00057200
****************************************************************00057300
     10 BLOCKCDE2A          PIC X(6).                             00057400
****  BLOCK CODE WHITH WHICH THE TRAIN WAS DEPARTED                00057500
****************************************************************00057600
     10 TRKAFHA2A           PIC X(1).                             00057700
****  1 = DESTINATION OF TRUCK BETWEEN TRAINS FROM AND TO STATIONS 00057800
****************************************************************00057900
     10 AFHAKSTD2A          PIC X(3).                             00058000
****  STATION TRUCK IS ATATCHED OR DETATCHED                       00058100
****************************************************************00058200
     10 RIGAANKM2A          PIC X(2).                             00058300
****  DIRECTION TRUCK ARRIVED AT TO STATION                        00058400
****************************************************************00058500
     10 ARRSTATS2A          PIC X(2).                             00058600
****  ARRIVAL STATUS                                               00058700
****  00 = TROK STILL EN-ROUTE                                     00058800
****  05 = ARRIVAL OF A DIVERTED TRAIN                             00058900
****  22 = CLEARED FROM A SIDING                                   00059000
****  23 = PLACED AT A SIDING                                      00059100
****  24 = PLACED FROM STATION TO STATION                          00059200
****  51 = ARRIVAL ROT TRAIN - ROT = RECEIVER OF TRAIN             00059300
****  52 = ARRIVAL ROTBLOCK TRAIN                                  00059400
****  53 = TRAIN WAS DETATCHED                                     00059500
****  70 = DETATCHED IN A YARD                                     00059600
****  71 = DEATATCHED FROM A ROTBLOCK TRAIN                        00059700
****  72 = AUTOMATIC DETATCHMENT FROM A ROTBLOCK TRAIN             00059800
****************************************************************00059900
     10 SYLYNIND2A          PIC X(2).                             00060000
****  SIDING INDICATOR TO SHOW WAIT FOR PLACE = 01                 00060100
****************************************************************00060200
     10 SYLYNDAT2A          PIC S999999999V USAGE COMP-3.         00060300
****  DATE WAIT FOR PLACEMENT                                      00060400
****************************************************************00060500
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      10 SYLYNTIM2A           PIC S99999V USAGE COMP-3.        00060600
**** TIME WAIT FOR PLACEMENT                                   00060700
***************************************************************00060800
      10 AANKDATE2A           PIC S999999999V USAGE COMP-3.    00060900
**** ARRIVAL DATE                                             00061000
***************************************************************00061100
      10 AANKTIME2A           PIC S99999V USAGE COMP-3.        00061200
**** ARRIVAL TIME                                             00061300
***************************************************************00061400
      10 ASCHEDDT2A           PIC S999999999V USAGE COMP-3.    00061500
**** SCHEDULED ARRIVAL DATE AT NEXT STAION - TABGEO03         00061600
***************************************************************00061700
      10 ASCHEDTM2A           PIC S99999V USAGE COMP-3.        00061800
**** SCEHDULED ARRIVAL TIME AT NEXT STATION                   00061900
***************************************************************00062000
      10 AGTERTYD2A           PIC S999V USAGE COMP-3.          00062100
**** TIME BEHIND NORMAL RUNNING TIME - SHOWN AS HOURS         00062200
**** CALCULATED AS - TIME DIFF BETWEEN THE LOAD DATE AND TIME 00062300
**** AND DEPARTURE DATE AND TIME LESS THE RUN TIME.           00062400
**** RUN TIME = DIFF LOAD DATE AND SCHEDULED ARRIVAL DATE AT THE 00062500
**** TRUCKS DESTINATION LESS RUN TIME FROM DEPARTURE STATION  00062600
**** TO DESTINATION STATION.                                  00062700
**** IF THIS CALCULATION IS NEGATIVE THEN THE TRUCK IS RUNNING 00062800
**** LATE.                                                    00062900
***************************************************************00063000
      10 LOOPTYDD2A           PIC S99999V USAGE COMP-3.        00063100
**** RUN TIME TO DESTINATION FROM THE CURRENT ARRIVAL STATION. 00063200
**** RECEIVED FROM FILE TABSON11                              00063300
***************************************************************00063400
      10 VANNAKIL2A           PIC S99999V USAGE COMP-3.        00063500
**** KILOMETER DISTANCE FOR THIS MOVEMENT.                    00063600
***************************************************************00063700
      10 EXPECTDT2A           PIC S999999999V USAGE COMP-3.    00063800
**** EXPECTED ARRIVAL DATE AT DESTINATION                     00063900
***************************************************************00064000
      10 EXPECTTM2A           PIC S99999V USAGE COMP-3.        00064100
**** EXPECTED ARRIVAL TIME AT DESTINATION                     00064200
***************************************************************00064300
      10 OVERBDDT2A           PIC S999999999V USAGE COMP-3.    00064400
**** DATE TRUCK MOVDE OVER THE BORDER                         00064500
***************************************************************00064600
      10 OVERBDTM2A           PIC S99999V USAGE COMP-3.        00064700
**** TIME TRUCK MOVED OVER THE BORDER                         00064800
***************************************************************00064900
      10 DEURVOL2A            PIC S999V USAGE COMP-3.          00065000
**** THROUGH TIME AT DEPARTURE STATION. IE. THE TIME DIFFERENCE 00065100
**** BETWEEN THE TIME ARRIVED IN THE YARD AND THE TIME DEPARTED 00065200
**** FROM THE YARD                                            00065300
***************************************************************00065400
      10 BLSTTRAN2A           PIC X(4).                        00065500
**** LAST TRANSACTION TO MODIFY THE MOVEMENT                  00065600
***************************************************************00065700
      10 BTERMINL2A           PIC X(8).                        00065800
**** LAST TERMINAL ADDRESS TO MODIFY THE MOVEMENT             00065900
***************************************************************00066000
      10 BSGNONID2A           PIC X(10).                       00066100
**** LAST SIGNON ID TO MODIFY THE MOVEMENT                    00066200
***************************************************************00066300
      10 BTERMDAT2A           PIC S999999999V USAGE COMP-3.    00066400
**** DATE MOVEMENT WAS MODIFIED                               00066500
***************************************************************00066600
      10 BTERMTIM2A           PIC S99999V USAGE COMP-3.        00066700
**** TIME MOVEMENT WAS MODIFIED                               00066800
***************************************************************00066900
      10 VRPRVTRK2A           PIC X(12).                       00067000
**** PREVIOUS TRUCK NUMBER ON THE SAME PRELIMINARY TRAIN      00067100
***************************************************************00067200
      10 VRNXTTRK2A           PIC X(12).                       00067300
**** NEXT TRUCK NUMBER ON THE SAME PRELIMINARY TRAIN          00067400
***************************************************************00067500
      10 VRSEQNOM2A           PIC X(9).                        00067600
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****  SEQUENCE NUMBER OF THIS TRUCK ON THE PRELIMINARY TRAIN      00067700
*********************************************************************00067800
     10 VRVRYGDT2A          PIC S999999999V USAGE COMP-3.          00067900
****  PRELIMINARY LOAD DATE                                        00068000
*********************************************************************00068100
     10 VRVRYGTM2A          PIC S99999V USAGE COMP-3.              00068200
****  PRELIMINARY LOAD TIME                                        00068300
*********************************************************************00068400
     10 VRSTDVAN2A          PIC X(3).                              00068500
****  PRELIMINARY TRAIN STATION FROM - STANDARD STATION CODE       00068600
*********************************************************************00068700
     10 VRAREVAN2A          PIC X(14).                             00068800
****  PRELIMINARY TRAIN STATION FORM - AREACODE                    00068900
*********************************************************************00069000
     10 VRSTDNAA2A          PIC X(3).                              00069100
****  PRELIMINARY STATION TO - STANDARD STATION CODE               00069200
*********************************************************************00069300
     10 VRARENAA2A          PIC X(14).                             00069400
****  PRELIMINARY STATION TO - AREACODE                            00069500
*********************************************************************00069600
     10 VVIASPEL2A          PIC X(20).                             00069700
****  PRELIMINARY VIA STATION - SPELLING - NOT USED                00069800
*********************************************************************00069900
     10 VVIASTDC2A          PIC X(3).                              00070000
****  PRELIMINARY VIA STATION - STANDARD STATION CODE - NOT USED   00070100
*********************************************************************00070200
     10 VVIAAREA2A          PIC X(14).                             00070300
****  PRELIMINARY VIA STATION - AREACODE - NOT USED                00070400
*********************************************************************00070500
     10 VRSTATTK2A          PIC X(2).                              00070600
****  PRELIMINARY STATUS OF TRUCK                                  00070700
****  01 = PRELIMINARY TRAIN                                       00070800
****  02 = PRELIMINARY ROTBLOCK TRAIN                              00070900
****  21 = PRELIMINARY PICK UP OF A TRUCK                          00071000
*********************************************************************00071100
     10 VRTAFHAK2A          PIC X(1).                              00071200
****  PRELIMINARY STATION TRUCK TO BE DETATCHED FROM TRAIN         00071300
****  0 = NO, 1 = YES                                              00071400
*********************************************************************00071500
     10 VRTAFHST2A          PIC X(3).                              00071600
****  STANDARD STATION CODE OF PLACE WHERE TRUCK WILL BE DETATCHED 00071700
*********************************************************************00071800
     10 VRTRNCNT2A          PIC S999V USAGE COMP-3.                00071900
****  NUMBER OF PRELIMINARY TRAINS THIS TRUCK IS ON                00072000
*********************************************************************00072100
     10 VLOOPTYD2A          PIC S99999V USAGE COMP-3.              00072200
****  PRELIMINARY RUN TIME BETWEEN TRAINS FROM AND TO STATIONS     00072300
*********************************************************************00072400
     10 VRIGANKM2A          PIC X(2).                              00072500
****  DIRECTION IN AT ARRIVAL STATION                              00072600
*********************************************************************00072700
     10 VLSTTRAN2A          PIC X(4).                              00072800
****  LAST TRANSACTION TO UPDATE PRELIMINARY DETAILS               00072900
*********************************************************************00073000
     10 VTERMINL2A          PIC X(8).                              00073100
****  LAST TERMINAL ADDRESS TO UPDATE PRELIMINARY DETAILS          00073200
*********************************************************************00073300
     10 VSGNONID2A          PIC X(10).                             00073400
****  LAST SIGNON ID TO UPDATE PRELIMINARY DETAILS                 00073500
*********************************************************************00073600
     10 VTERMDAT2A          PIC S999999999V USAGE COMP-3.          00073700
****  DATE PRELIMINARY DETAILS WERE UPDATED                        00073800
*********************************************************************00073900
     10 VTERMTIM2A          PIC S99999V USAGE COMP-3.              00074000
****  TIME PRELIMINARY DETAILS WERE UPDATED                        00074100
*********************************************************************00074200
     10 FAKTUURN2A          PIC X(10).                             00074300
****  F.T.O. NUMBER / INVOICE NUMBER / CONSIGNMENT NUMBER          00074400
****  ALL THESES FIELDS RELATE TO THE CONSIGNMENT NUMBER FROM SM   00074500
*********************************************************************00074600
     10 BLOKSPEL2A          PIC X(20).                             00074700
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****  STATION TRAIN BLOCKED - SPELLING                            00074800
******************************************************************00074900
    10 BLOKAREA2A         PIC X(14).                              00075000
****  STATION TRAIN BLOCKED - AREACODE                            00075100
******************************************************************00075200
    10 BLOKYARD2A         PIC X(3).                               00075300
****  STATION TRAIN BLOCKED - STANDARD STATION CODE               00075400
******************************************************************00075500
    10 BLOKDATE2A         PIC S999999999V USAGE COMP-3.           00075600
****  DATE TRAIN BLOCKED                                          00075700
******************************************************************00075800
    10 BLOKTIME2A         PIC S99999V USAGE COMP-3.               00075900
****  TIME TRAIN BLOCKED                                          00076000
******************************************************************00076100
    10 BLOKTRAN2A         PIC X(4).                               00076200
****  LAST TRANSACTION TO BLOCK TRAIN                             00076300
******************************************************************00076400
    10 BLOKADDR2A         PIC X(8).                               00076500
****  LAST TERMINAL ADDRESS TO BLOCK TRAIN                        00076600
******************************************************************00076700
    10 BLOKSIGN2A         PIC X(10).                              00076800
****  LAST SIGNON ID TO BLOCK TRAIN                               00076900
******************************************************************00077000
    10 BLOKTDAT2A         PIC S999999999V USAGE COMP-3.           00077100
****  DATE TRAIN WAS BLOCKED                                      00077200
******************************************************************00077300
    10 BLOKTTYD2A         PIC S99999V USAGE COMP-3.               00077400
****  TIME TRAIN WAS BLOCKED                                      00077500
******************************************************************00077600
    10 ORDNVORS2A         PIC X(8).                               00077700
****  ORDER NO TRUCK WAS SUPPLIED TO                              00077800
******************************************************************00077900
    10 ORDNALOC2A         PIC X(8).                               00078000
****  ORDER NO TRUCK WAS ALLOCATED TO                             00078100
******************************************************************00078200
    10 PRESERCD2A         PIC X(2).                               00078300
****  TYPE OF PRESERVICE CODE FOR TRUCK ORDER                     00078400
******************************************************************00078500
    10 PRESERPL2A         PIC X(3).                               00078600
****  PRESERVICE PLACE FOR ORDER                                  00078700
******************************************************************00078800
    10 PRESERIN2A         PIC X(1).                               00078900
****  SHOWS IF TRUCK WAS PLACED/LOADED FOR PRESERVICE CONDITIONS  00079000
****  0 = PLACED, 1 = LOADED                                      00079100
******************************************************************00079200
    10 PRESERDT2A         PIC S999999999V USAGE COMP-3.           00079300
****  DATE TRUCK PLACED/LOADED FOR PRESERVICE CONDITIONS          00079400
******************************************************************00079500
    10 CURRZTSS2A         PIC X(8).                               00079600
****  CURRAREAS ZONE TRACK SPOT                                   00079700
******************************************************************00079800
    10 LAAIZTSS2A         PIC X(8).                               00079900
****  LOAD STATION ZTS                                            00080000
******************************************************************00080100
    10 LFNLZTSS2A         PIC X(8).                               00080200
****  FINAL DESTINATION ZTS                                       00080300
******************************************************************00080400
    10 ROLSCRAP2A         PIC X(1).                               00080500
****  SHOWS WHEN A TRUCK DELETED FROM ROLLING STOCK SYSTEM        00080600
****  0 = NOT DELETED, 1 = DELETED                                00080700
******************************************************************00080800
    10 INDINDIC2A         PIC X(1).                               00080900
****  INTERCEPT AND DIVERT 0 = NO I&D,1 =TO I&DED,2 =I&DED        00081000
****  NOT USED                                                    00081100
******************************************************************00081200
    10 INDDESTI2A         PIC X(7).                               00081300
****  I & D DESTINATION - KEYFONET                                00081400
****  NOT USED                                                    00081500
******************************************************************00081600
    10 INDCONSG2A         PIC X(10).                              00081700
****  I & D NEW CONSIGNMENT NUMBER                                00081800
```

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```
****  NOT USED                                                      00081900
****************************************************************00082000
     10 INDSIGNO2A        PIC X(10).                               00082100
****  I & D SIGNON ID                                              00082200
****  NOT USED                                                     00082300
****************************************************************00082400
     10 INDREFER2A        PIC X(10).                               00082500
****  I & D REFERENCE NUMBER                                       00082600
****  NOT USED                                                     00082700
****************************************************************00082800
     10 TYDBESTM2A        PIC X(20).                               00082900
****  TEMPORARY DESTINATION IF TRUCK TEMP DESTINED TO ANOTHER PLACE00083000
****************************************************************00083100
     10 TYDLSTDC2A        PIC X(03).                               00083200
****  TEMPORARY DESTINATION - STANDARD STATION CODE               00083300
****************************************************************00083400
     10 TYDLAREA2A        PIC X(14).                               00083500
****  TEMPORARY DESTINATION - AREACODE                            00083600
****************************************************************00083700
     10 TYDLINDC2A        PIC X(01).                               00083800
****  TEMPORARY DESTINATION STATUS - H=REPAIR,T=TO BE MASS MEASURED00083900
****                            O=TRUCK OVER LOADED               00084000
****************************************************************00084100
     10 TYDINHOD2A        PIC X(06).                               00084200
****  TEMPORARY CONTENTS -                                        00084300
****  WITH WEIGH BRIDGE SYSTEM DEFAULTS TO 05WBG                  00084400
****************************************************************00084500
     10 OORLINDC2A        PIC X(01).                               00084600
****  RE-LOAD INDICATOR                                           00084700
****  0 - TRUCK NOT RE-LOADED ,1=RE-LOADED TRUCK                  00084800
****  2 - TRUCK WHICH HAS BEEN LOADED INTO                        00084900
****************************************************************00085000
     10 NOSMRLSE2A        PIC X(01).                               00085100
****  LOAD DETAILS NOT FROM SERVICE MANAGEMENT 0=NO, 1=YES        00085200
****************************************************************00085300
     10 FAKTUURL2A        PIC X(01).                               00085400
****  SWITCH TO SHOW WHEN LOADED DETAILS ARE RECEIVED FROM SERVICE 00085500
****  MANAGEMENT OR DETAILS ARE INPUTTED WITH A "U" OPTION.       00085600
****************************************************************00085700
     10 MASSMEAS2A        PIC X(01).                               00085800
****  SWITCH TO SHOW WHEN MASS MEASURE - BFZ4 HAS BEEN DONE ON A  00085900
****  TRUCK - USED IN BTM8 BTMI BTM7                              00086000
****************************************************************00086100
     10 PTREASON2A        PIC X(74).                               00086200
****  REASON WHEN A RESERVED TRUCK HAS NOT BEEN DEPARTED ON A     00086300
****  RESERVED TRAIN                                              00086400
****************************************************************00086500
     10 PREVINHD2A        PIC X(06).                               00086600
****  PREVIOUS COMMODITY OF THE TRUCK                             00086700
****************************************************************00086800
     10 CLIENTNO2A        PIC X(10).                               00086900
****  SENDERS STAKEHOLDER NUMBER                                  00087000
****************************************************************00087100
     10 WAGPLAAS2A        PIC X(01).                               00087200
****  WAIT FOR PLACEMENT INDICATOR 0=OFF 1=ON                     00087300
****************************************************************00087400
     10 TRAINNUM2A        PIC X(16).                               00087500
****  TRAIN NUMBER LINKED TO WORKSORDER TRAINS                    00087600
****************************************************************00087700
     10 TOTLINDC2A        PIC X(03).                               00087800
****  TOT INDICATOR SAME AS BD                                    00087900
****************************************************************00088000
     10 ASSETCDE2A        PIC X(07).                               00088100
****  ASSET CODE                                                  00088200
****************************************************************00088300
     10 DISTCODE2A        PIC X(02).                               00088400
****  DISTRIBUTION CODE                                           00088500
****************************************************************00088600
* THE NUMBER OF COLUMNS DESCRIBED BY THIS DECLARATION IS 155   *00088700
*        INDEXS - DGQTX2AA - EIENKODE2A                        *00088800
*                        - TRKGRPCD2A                          *00088900
```

```
*                                      -  TROKNOMM2A                          *00089000
*                          DGQTX2AB  -  CURRAREA2A                             *00089100
*                                      -  TROKNOMM2A                          *00089200
*                          DGQTX2AC  -  COAFGESN2A                             *00089300
*                                      -  TROKNOMM2A                          *00089400
*                          DGQTX2AD  -  OPERTIPE2A                             *00089500
*                                      -  TROKNOMM2A                          *00089600
*                          DGQTX2AE  -  INHOUDCD2A                             *00089700
*                                      -  TROKNOMM2A                          *00089800
*                          DGQTX2AF  -  SKIPNOMR2A                             *00089900
*                                      -  TROKNOMM2A                          *00090000
*                          DGQTX2AG  -  PERMITNR2A                             *00090100
*                                      -  TROKNOMM2A                          *00090200
*                          DGQTX2AH  -  FINDSTAR2A                             *00090300
*                                      -  TROKNOMM2A                          *00090400
*                          DGQTX2AI  -  NEXTYARD2A                             *00090500
*                                      -  TROKNOMM2A                          *00090600
*                          DGQTX2AJ  -  SONERING2A                             *00090700
*                                      -  TROKNOMM2A                          *00090800
*                          DGQTX2AK  -  TNBEWEEG2A                             *00090900
*                                      -  TROKNOMM2A                          *00091000
*                          DGQTX2AL  -  TNVORLOP2A                             *00091100
*                                      -  TROKNOMM2A                          *00091200
*                          DGQTX2AM  -  TOEGEKEN2A                             *00091300
*                                      -  TROKNOMM2A                          *00091400
*                          DGQTX2AN  -  EIENAARN2A                             *00091500
*                                      -  TROKNOMM2A                          *00091600
*                          DGQTX2AO  -  OLDHISDT2A                             *00091700
*                          DGQTX2AP  -  INDINDIC2A                             *00091800
*                          DGQTX2AR  -  FAKTUURN2A                             *00091900
*********************************************************************00092000
```

10. Technical SQL

Data information can be extracted from the DB2 tables, using the following SQL

```
SELECT
TROKNOMM2A AS 'WAGON NUMBER',SUBSTR(EIENAARN2A,1,5) AS OWNER,
SUBSTR(OPERTIPE2A,1,7) AS 'WAGON TYPE',SUBSTR(FINALBES2A,1,16) AS
 'DESTINATION',SUBSTR(INHOUDCD2A,1,6) AS 'COMMOD',
SUBSTR(LAAIPLEK2A,1,16) AS 'LOADPLACE',
SUBSTR(DIGITS(VRYGDATE2A),2,8)||' '||SUBSTR(DIGITS(VRYGTIME2A),2,4) AS
'LOAD DATE',CASE WHEN LODEMPTY2A = '0' THEN 'EMPTY'
WHEN LODEMPTY2A = '1' THEN 'LOADED' WHEN LODEMPTY2A = '2' THEN 'WRECK'
ELSE 'UNKNOWN' END AS 'STATUS',SUBSTR(ANKOMSPL2A,1,16) AS 'WHERE PLACE',
SUBSTR(DIGITS(AANKDATE2A),2,8)||' '||SUBSTR(DIGITS(AANKTIME2A),2,4) AS
'ARRIVAL DATE',SUBSTR(GROUPNME99,5,2) AS 'AREA',ZONECODE99 AS 'REGION'
FROM RAIL.TROKOPR_TAB,RAIL.AREAGROUP_TAB   WHERE
CURRAREA2A = AREACODE99 AND EIENKODE2A = '00' AND TRKGRPCD2A = '00' AND
OPERTIPE2A ¬= 'UNK' AND MOVESTAT2A = '02' AND INHOUDCD2A IN (:NAME) AND
(GROUPNAME99 = ':AREA' OR ZONECODE99 = ':ZONE')
WITH UR
```

The above SQL will only provide wagons in an arrived status and will exclude all
wagons en route at time of snapshot..

In the above SQL in the where clause, the value for the fields to be populated by
selection from user input is:

GROUPNAME99 here indicated as **:AREA** for a specific area

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ZONECODE99 here indicated as **:ZONE**
for a specific region.
These two fields can be handled for
selecting region or area similar than the wagon transfers under the wagon view.

INHOUDCD2A here indicated as **:NAME** by using the names listed here below in bold to represent the different categories

1. **Empty wagons available** for operational use.
   a. "09" or "09AFD" or "09BST" or "09KAR" or "09SKN" or "09REM" or "09TAP" or "09TGK" or " 09WBS"
2. **Empty wagons not available** for operational USE.
   a. "09DRTY" or "09HIRE" or "09OM" or "09WBS" or "09HAZ" or "09UWS" or "09SS"
3. **Loaded wagons**.
   a. Substr(INHOUDCD2A,1,2) <> "09"
4. **Repair Wagons on hand** in repair or in repair depots.
   a. "09HMM" Or "09HOO" Or "09HSS" Or "09HUU"
5. **Repair Wagons en route** for repair or en route to repair depots
   a. "09HM" or "09HO" or "09HS" or "09HU" or "09RBL" or "09RCO" or "09RS" or "09RVK" or "09RYK" or "09H50" or "09HRP" or "09HRT"
6. **Workshop wagons on hand** at workshops
   a. "09WCC" or "09WII" or "09WMM" or "09WOO" or "09WPP" or "09WSS"
7. **Workshop wagons en route** to workshops
   a. "09WI" or "09WM" or "09WO" or "09WP" or "09WS"
8. **Workshop wagons in holding area** for workshops
   a. "09WWC" or "09WWI" or "09WWM" or "09WWP" or "09WWS"
9. **Storage wagons** for storage
   a. "09ST" or "09STA" or "09STG" or "09RWL"
10. **Wreck Wagons**
    a. "09WC" or "09WO" alternatively where LODEMPTY = "WRECK"

Ideal Sequence?	Role	Accountability (I hereby declare that I have reviewed this document and it …)
1	ICTM – Programme Management	… is within the scope of the project / programme as defined
2	Process Owner	… correctly defines the business context and measure … references the correct business processes … correctly describes related available data and source systems … identified the current utilisation of the measure
3	Functional MIS representative (where available)	co-sign with process owner and … designed the display such that it will fit with other dashboards
4	Performance Enablement	… the KPI definition is correct / have been added to the list of definitions … designed the display such that it will fit with other dashboards
5	ICTM – Portfolio Management	… complies with the standard and contains all the required and relevant content
6	ICTM – Technical / Information Architecture	… provides sufficient information to develop the technical specifications from
7	Sponsor	… addresses the business need as defined

5. Sign

Project name	TBI Stream C			
Signatories			**Signature**	**Date**
Dirk Nieuwoudt	Project sponsor		*DStf Nieuwoudt*	19/06/2009
Sawela Shabangu	Process Owner			19/06/2009
Mark Snyders	Portfolio Management			
	Programme Management			
Kesegan Nair	ICTM – Technical / Information Architecture			

KPA Name(s)	Asset Utilisation / Increasing Volumes
Project Name	Dashboard
Project Sponsor:	Dirk Nieuwoudt
Version:	1.0
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Revision Date:	

Transnet Freight Rail Dashboard Functional Specification

Document Reference:	
Primary Author(s):	Andre J. Ferreira (Monkey)
Co-Author(s):	

1

BUSINESS SPECIFICATIONS FOR NUMBER OF TRAINS DEPARTED PER DAY / DEPOT DASHBOARD AUTOMATION.

1. Business Context

- Measurement of the number of trains departed per day from any location.
- Linked to the *Capacity Management, Improve / Optimise, Monitoring & Control, Production Planning, Order Execution and Customer Interaction* (from value chain and L1 level) **Specific locations to be confirmed with business processes in due course**

2. Project Context

- Name: Business Specifications – KPI / Depot Dashboard Automation
- Purpose: Automate dashboards in use in yards/depots - this is to provide management a view of the total number of trains departed per day.

3. KPI Definition

3.1 Number of trains departed per day.
- Trains that will be acted upon will be those that departed on a specific period according to the user's need
- These trains can depart from any location, i.e. Yards, Stations and Private sidings.
- This KPI measure the total number of trains that departed – Detail per train is also available

4. Measure Context

- Feed to / feed from:

    This measurement stands on its own i.e. it does not use another measure in its calculation nor is it used to calculate a higher level measurement. It is however aggregated on various levels of locations.

5. Data Description

- Source systems

    - Capture onto the Sprint and by the IATS systems.

- Data flows model
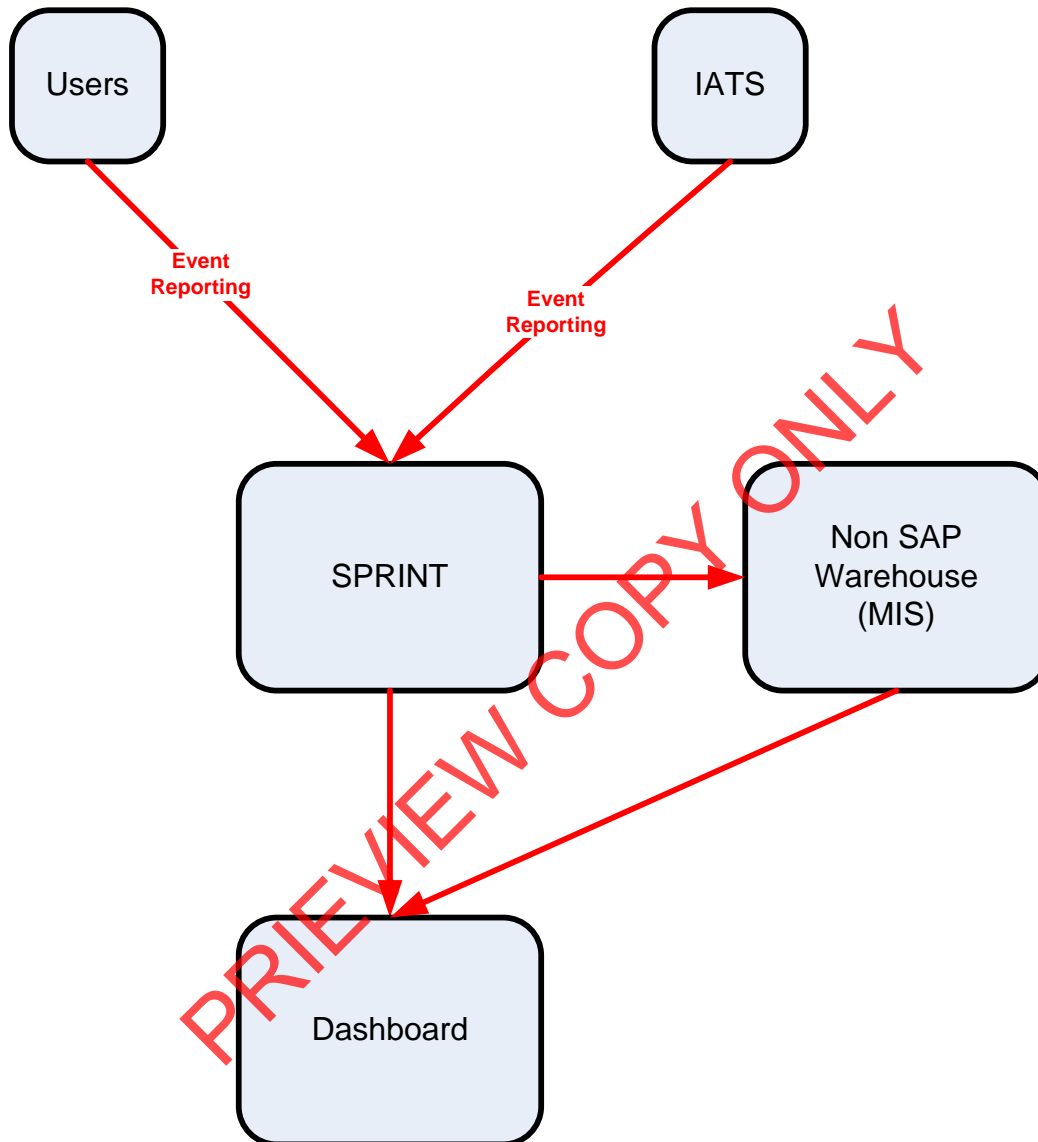
- Components of the calculation required: N/A

6. Solution Requirements

- Minimum requirements:

  - Dimensions / parameters:
    - Operational structure; starting on location level and aggregated to Yard, Area, Cluster, Region and TFR level
    - Primary requirement is to track number of trains that departed.
  - TFR yards, locations should be easily extracted from a location perspective.

- – Reporting periods: Daily,
- – Graphics: Printable bar graphs and tables in PDF-format – rolling 30 days
- – Ability to navigate between levels
- – Linked to other measures in the "Depot Dashboard"

- Additional requirements to optimise this solution:

  - – Dimensions / parameters: More detail re. Locations, Areas, Regions, etc. (sortable per criteria).

7. Solution Proposal

- Solution detail:

To obtain the KPIs, a link **"Train and Rolling Stock Performance Indicators"** will be published on the portal. When the user clicks on this link, a list of resources under which the different summarised list of KPI's will be displayed i.e. Trains, Locomotives and Wagons.

Trains
Locomotives
Wagons

The user would then be able to drill down on each of this summarised list. In this case, they would select **"Trains"**

Trains
On Time Arrivals - Minutes late per train
On Time Departures - Minutes late per train
Run more trains - Trains run per day
All
Scheduled
Unscheduled
Run trains with all possible wagons - Wagons per train
Staged loads
Trains planned and departed
Locomotives
Locos standing longer than a selected number of hours
Wagons
Wagons standing longer than a selected number of hours

When the user clicks on a specific KPI, e.g. **"Run more trains – Trains run per day"**, the screen with the selection parameters will be displayed for that KPI **(See diagram below).** The "DISPLAY TYPE" will default to "GRAPH"
The following dropdowns will be made available

Region:	Drop down with the following: All, Central, Eastern, and Western.
Cluster:	Drop down related to region selected, if no region selected all clusters.
Area:	Drop down related to region selected, if no region selected all areas.
Location:	Drop down related to region and/or area selected as specific yard/depot can be selected.
Services:	As used in the ITP (as found in MIS).
Period (from/to)	User can select with calendars the From – To dates.
Display resolution	This can be selected to provide information per Day (Max 31), Week (Max 52), Month (Max 24)
Display type:	The output can be either in Graph or Detail format

After completing the above screen the execution of the report to generate information will automatically be performed displaying a bar graph according to the information selected. The "DISPLAY TYPE" will default to "GRAPH"

The user can now change the different dropdown to get the desired results in either Graph of Detail view.

When **"DISPLAY TYPE"** is change to **"DETAIL"** the following screens will be made available.

RUN MORE TRAINS

REGION [ALL ▼]   CLUSTER [ALL ▼]   AREA [ALL ▼]   LOCATION [ALL ▼]

SERVICES [AL ▼]

PERIOD
FROM [▦] TO [▦]   DISPLAY RESOLUTION   ○ DAYS ○ WEEK ○ MONTH   DISPLAY TYPE [ALL ▼]

Train number	Depart from	Depart to	Shed type	Shed Dept date	Act Dept date	Time Diff (Minutes)
B1XM 001407 170309	BELLVILLE	SALKOR	1	170309/0145	170309/0220	+35
X1V1 004436 170309	KKK/S142395	KLAWER	1	170309/0220	170309/0254	+94
B1W1 007321 170309	BELLVILLE	WOR-NOORD	4	170309/0843	170309/0943	+60
B1V1 004443 170309	BELLVILLE	KLAWER	5	170309/1344	170309/1244	+60
B1C1 005297 170309	BELLVILLE	CALEDON	5	170309/1822	170309/1800	-12
V1B1 004442 170309	KLAWER	BELLVILLE	2	170309/2210	170309/2120	-60
B1N1 001107 170309	BELLVILLE	HERMON	2	170309/1845	170309/1855	+10
M1A1 002630 170309	MALMESBURY	KAAPSTADPAS	U			
B1J1 007771 170309	BELLVILLE	DALJOSAFAT	1	170309/1932	170309/1940	+08
M1X1 004409 170309	MALMESBUR	DEH/S140988	U			

Column description
❖ Train number   =   Number of the train that arrive late
❖ Depart from   =   Location where the trains departed From
❖ Depart to   =   Location where the trains departed To
❖ Shed type   =   Schedule type, i.e. 1/2/3/4/5 of U = Unscheduled
❖ Shed Dept date   =   Scheduled departure date
❖ Act Dept date   =   Actual departure date
❖ Time Diff (Minutes) = Time difference between scheduled and actual departure date. I.e. ("+" late and "-" Early)

The [⇅] button provides a sorting option in the column provided.

When the user clicks on the underlined train number, the following screen will be displayed

Column description
- ❖ (--First column--)   =   Wagon sequence number
- ❖ Wagon number   =   The wagons number on the train list.
- ❖ Wagon type   =   The type of the wagons in the previous column
- ❖ Owner   =   The owner of the wagons in column 2
- ❖ Contents code   =   The handling code of the specific wagon.
- ❖ Load station   =   The loading location code.
- ❖ Consignment   =   The consignment number of the wagons

- Proposed approach (best way to solve current needs/issues)

  - To be decided and implemented.

Note: All above displays are illustrative. Final displays will be dependent on system functionality and dashboard standardisation.

8.   Business rules
- **Region**
  - o It can only belong to one of the following, Central, Eastern, or Western and must exist in Locnet

- **Area**
  - o Can only be an area that exists in Locnet.
- **Train number**
  - o Must be a valid train number extracted from the database
- **Depart from**
  - o Must be a location from the database from where trains depart and must match the selection

- **Depart to**
  - o Must be a location from the database where to the trains from the selection list departed to

9. Dataset

```
 **************************************************************
 * DCLGEN TABLE(RAIL.TREINSHEDMON_TAB)                        *
 *        LIBRARY(GQTN1.BEDRYF.TKCOPY(TABTRN3G))              *
 *        ACTION(REPLACE)                                     *
 *        LANGUAGE(COBOL)                                     *
 *        QUOTE                                               *
 * ... IS THE DCLGEN COMMAND THAT MADE THE FOLLOWING STATEMENTS *
 **************************************************************
       EXEC SQL DECLARE TREINSHEDMON_TAB TABLE
       ( TRAINFRM3G                    CHAR(20) NOT NULL,
         TRAINTOO3G                    CHAR(20) NOT NULL,
         DEPSHDDT3G                    CHAR(08) NOT NULL,
         DEPSHDTM3G                    CHAR(04) NOT NULL,
         ARRSHDDT3G                    CHAR(08) NOT NULL,
         ARRSHDTM3G                    CHAR(04) NOT NULL,
         DEPENDES3G                    CHAR(20) NOT NULL,
         ORIGINST3G                    CHAR(20) NOT NULL,
         DEPARTDT3G                    CHAR(08) NOT NULL,
         DEPARTTM3G                    CHAR(04) NOT NULL,
         ARRLDATE3G                    CHAR(08) NOT NULL,
         ARRLTIME3G                    CHAR(04) NOT NULL,
         DEPREPDT3G                    CHAR(08) NOT NULL,
         DEPREPTM3G                    CHAR(04) NOT NULL,
         ARRREPDT3G                    CHAR(08) NOT NULL,
         ARRREPTM3G                    CHAR(04) NOT NULL,
         TOTTRUCK3G                    CHAR(05) NOT NULL,
         TOTLOADE3G                    CHAR(05) NOT NULL,
         TOTEMPTY3G                    CHAR(05) NOT NULL,
         TOTRESRV3G                    CHAR(05) NOT NULL,
         TOTUNRES3G                    CHAR(05) NOT NULL,
         RESNOTON3G                    CHAR(05) NOT NULL,
         DEPTRNST3G                    CHAR(20) NOT NULL,
         DEPTRNNO3G                    CHAR(16) NOT NULL,
         DEPTRNTP3G                    CHAR(13) NOT NULL,
         TREINVOR3G                    CHAR(16) NOT NULL,
         TIPESHED3G                    CHAR(01) NOT NULL,
         TOTWRRES3G                    CHAR(05) NOT NULL,
         DEPTMDEV3G                    CHAR(05) NOT NULL,
         ARRTMDEV3G                    CHAR(05) NOT NULL,
         FROMAREA3G                    CHAR(14) NOT NULL,
         ARRVAREA3G                    CHAR(14) NOT NULL,
         DEPTSIGN3G                    CHAR(10) NOT NULL,
         DEPTTERM3G                    CHAR(08) NOT NULL
       ) END-EXEC.
 **************************************************************
 * COBOL DECLARATION FOR TABLE RAIL.TREINSHEDMON_TAB          *
 **************************************************************
  01  DCLTREINSHEDMON-TAB.
      03 TRAINFRM3G                 PIC X(20).
 * FROM TRAIN STATION
```

```
      03 TRAINTOO3G                    PIC X(20).
* TO TRAIN STATION
      03 DEPSHDDT3G                    PIC X(08).
* TRAIN SCHEDULED DEPART DATE (PK)
      03 DEPSHDTM3G                    PIC X(04).
* TRAIN SCHEDULED DEPART TIME (PK)
      03 ARRSHDDT3G                    PIC X(08).
* TRAIN SCHEDULED ARRIVAL DATE (PK)
      03 ARRSHDTM3G                    PIC X(04).
* TRAIN SCHEDULED ARRIVAL TIME (PK)
      03 DEPENDES3G                    PIC X(20).
* TRAIN LOAD DESTINATION
      03 ORIGINST3G                    PIC X(20).
* TRAIN ORIGIN STATION
      03 DEPARTDT3G                    PIC X(08).
* TRAIN DEPART DATE
      03 DEPARTTM3G                    PIC X(04).
* TRAIN DEPART TIME
      03 ARRLDATE3G                    PIC X(08).
* TRAIN ARRIVAL DATE
      03 ARRLTIME3G                    PIC X(04).
* TRAIN ARRIVAL TIME
      03 DEPREPDT3G                    PIC X(08).
* TRAIN DEPART REPORT DATE
      03 DEPREPTM3G                    PIC X(04).
* TRAIN DEPART REPORT TIME
      03 ARRREPDT3G                    PIC X(08).
* TRAIN ARRIVAL REPORT DATE
      03 ARRREPTM3G                    PIC X(04).
* TRAIN ARRIVAL REPORT TIME
      03 TOTTRUCK3G                    PIC X(05).
* TOTAL WAGONS ON TRAIN
      03 TOTLOADE3G                    PIC X(05).
* TOTAL LOADED WAGONS ON TRAIN
      03 TOTEMPTY3G                    PIC X(05).
* TOTAL EMPTY WAGONS ON TRAIN
      03 TOTRESRV3G                    PIC X(05).
* TOTAL RESEVED WAGONS ON TRAIN
      03 TOTUNRES3G                    PIC X(05).
* TOTAL UNRESEVED WAGONS ON TRAIN
      03 RESNOTON3G                    PIC X(05).
* TOTAL RESEVED WAGONS NOT ON TRAIN
      03 DEPTRNST3G                    PIC X(20).
* TRAIN DEPARTURE STATUS
      03 DEPTRNNO3G                    PIC X(16).
* TRAIN NUMBER
      03 DEPTRNTP3G                    PIC X(13).
* TRAIN TYPE
      03 TREINVOR3G                    PIC X(16).
* PREVIOUS TRAIN NUMBER
      03 TIPESHED3G                    PIC X(01).
* TYPE OF SCHEDULE 1, 2, 3, ' '
      03 TOTWRRES3G                    PIC X(05).
* NUMBER OF RESERVED TRUCKS ON THIS TRAIN RESERVED FOR A
* DIFFERENT TRAIN
      03 DEPTMDEV3G                    PIC X(05).
* DIFFERENCE IN MINUTES BETWEEN RESERVED AN ACTUAL DEPART TIMES
      03 ARRTMDEV3G                    PIC X(05).
* DIFFERENCE IN MINUTES BETWEEN RESERVED AN ACTUAL ARRIVAL TIMES
      03 FROMAREA3G                    PIC X(14).
* FROM TRAIN STATION AREACODE
      03 ARRVAREA3G                    PIC X(14).
* TO TRAIN STATION AREACODE
      03 DEPTSIGN3G                    PIC X(10).
* DEPART OR ARRIVAL TREIN SIGNON
      03 DEPTTERM3G                    PIC X(08).
* DEPART OR ARRIVAL TREIN TERMINAL
******************************************************************
* THE NUMBER OF COLUMNS DESCRIBED BY THIS DECLARATION IS 1       *
******************************************************************
```

10. Technical SQL

Detail of trains departing from a specific location can be extracted from the RAIL.TREINSHEDMON_TAB (BTQ4) which is available on the MIS environment using the following SQL:-

Please ensure that, in the where clause, the "**ARRLDATE3G**" = the previous day's date at time of enquiry.

```
SELECT
A.DEPTRNNO3G||A.TIPESHED3G AS TRAINNOSHED,B.FONKOREK01 AS TRNFRM,C.FONKO
REK01 AS TRNTOO,A.TOTTRUCK3G||' '||A.TOTLOADE3G||' '||A.TOTEMPTY3G AS TO
TLODEMP,A.DEPARTDT3G||' '||A.DEPARTTM3G AS DEPART ,A.DEPSHDDT3G||' '||A.
DEPSHDTM3G AS SHEDDEP,SUBSTR(D.ZONEDESC99,1,8)||SUBSTR(D.GROUPNME99,5,2)
 AS REGIONAREA
FROM RAIL.TREINSHEDMON_TAB A,RAIL.STASIEDETAIL_TAB B,RAIL.STASIEDETAIL_T
AB C,RAIL.AREAGROUP_TAB D
WHERE A.FROMAREA3G = D.AREACODE99      AND A.ARRLDATE3G = '00000000'
  AND SUBSTR(A.FROMAREA3G,1,2) ^= '00' AND A.DEPARTDT3G = '20090104'
  AND A.DEPARTTM3G > '0000'            AND A.TRAINFRM3G = B.KEYFONET01
  AND A.TRAINTOO3G = C.KEYFONET01      AND A.ARRLTIME3G = '0000'
WITH UR
```

Ideal Sequence?	Role	Accountability (I hereby declare that I have reviewed this document and it …)
1	ICTM – Programme Management	… is within the scope of the project / programme as defined
2	Process Owner	… correctly defines the business context and measure … references the correct business processes … correctly describes related available data and source systems … identified the current utilisation of the measure
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5. Sign

Project name	TBI Stream C		
Signatories		**Signature**	**Date**
Dirk Nieuwoudt	Project sponsor	*(signature)*	28/07/09
Solomon Rampheng	Process Owner	*(signature)*	28-07-09
Mark Snyders	Portfolio Management		
	Programme Management		
Kesegan Nair	ICTM – Technical / Information Architecture		

KPA Name(s)	Asset Utilisation / Increasing Volumes
Project Name	Dashboard
Project Sponsor:	Dirk Nieuwoudt
Version:	3.0
Document Title:	Run trains with all possible wagons - Wagons per train
Creation Date:	03 March 2009

Transnet Freight Rail Dashboard Functional Specification

Revision Date:	
Document Reference:	
Primary Author(s):	Andre J. Ferreira (Monkey)
Co-Author(s):	

1

BUSINESS SPECIFICATIONS FOR TOTAL NUMBER OF WAGONS PER TRAIN / DEPOT DASHBOARD AUTOMATION

1. Business Context

- Linked to the *Capacity Management, Improve / Optimise, Monitoring & Control, Production Planning, Order Execution and Customer Interaction* (from value chain and L1 level) – **Specific locations to be confirmed with business processes in due course**

2. Project Context

- Name: Business Specifications – KPI / Depot Dashboard Automation
- Purpose: Automate dashboards in use in yards/depots - this is to provide management a view of the total number of wagons per train when underutilized.

3. KPI Definition

3.1 Total number of Wagons per train
- Trains that will be acted upon will be those that do not meet the designed wagons total.
- These trains can depart from any location, i.e. Yards, Stations, Private sidings, etc.
- This KPI measure the total number of trains that departed not meeting the designed totals – Detail is also available.

4. Measure Context

- Feed to / feed from:

   This measurement does not use another measure in its calculation but is used in the calculation of train utilization (wagon model / OEE measures). It is also aggregated on various levels per location.

- This measure is currently only used in Depot Dashboards

   Total number of wagons per train is only available on the Real Time Monitoring toolset.

5. Data Description

- Source systems

   - Capture onto the Sprint and IATS systems.

- Data flows model

```
┌──────────┐                              ┌──────────┐
│          │                              │          │
│  Users   │                              │   IATS   │
│          │                              │          │
└────┬─────┘                              └────┬─────┘
     │                                         │
     │  Event                           Event  │
     │  Reporting                    Reporting │
     │                                         │
     └──────────────┐           ┌──────────────┘
                    ▼           ▼
              ┌──────────┐          ┌──────────────┐
              │          │          │   Non SAP    │
              │  SPRINT  │─────────▶│  Warehouse   │
              │          │          │    (MIS)     │
              └────┬─────┘          └──────┬───────┘
                   │                       │
                   ▼      ◀────────────────┘
              ┌──────────┐
              │          │
              │Dashboard │
              │          │
              └──────────┘
```

PRIEVIEW COPY ONLY
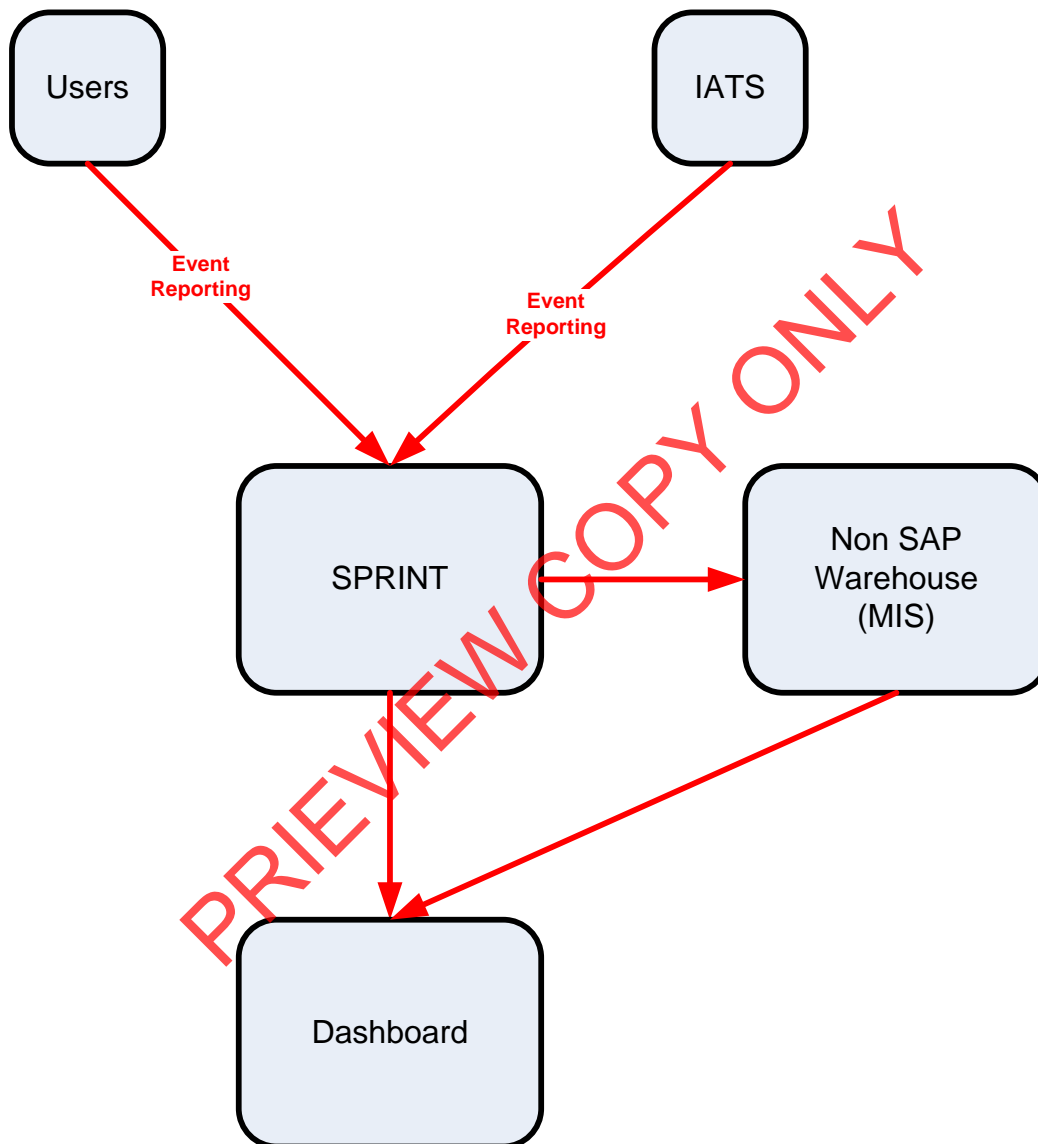
- Components of the calculation required: N/A

6. Solution Requirements

- Minimum requirements:

  - Dimensions / parameters:

- Operational structure; starting on location level and aggregated to Yard, Area, Cluster, Region and TFR level
- Different train types, provide for **VACUUM, LIGHT AIRBRAKE** and **MEDIUM HEAVY**
- Primary requirement is to track number of trains that departed that does not meet the design total.
  - TFR yards, locations should be easily extracted from a location perspective.
  - Reporting periods: Daily,
  - Graphics: Printable bar graphs and tables in PDF-format – rolling 30 days
  - Ability to navigate between levels
  - Linked to other measures in the "Depot Dashboard"

- Additional requirements to optimise this solution:

  - Dimensions / parameters: More detail re. Locations, Areas, Regions, etc. (sortable per criteria).

7. Solution Proposal

- Solution detail:

To obtain the KPIs, a link **"Train and Rolling Stock Performance Indicators"** will be published on the portal. When the user clicks on this link, a list of resources under which the different summarised list of KPI's will be displayed i.e. Trains, Locomotives and Wagons.

Trains
Locomotives
Wagons

The user would then be able to drill down on each of this summarised list. In this case, they would select **"Trains"**

Trains
On Time Arrivals - Minutes late per train
On Time Departures - Minutes late per train
Run more trains - Trains run per day
Run trains with all possible wagons - Wagons per train
Staged loads
Locomotives
Locos standing longer than a selected number of hours
Wagons
Wagons standing longer than a selected number of hours

4

The following dropdowns will be made available when **"Run trains with all possible wagons - Wagons per train"** is selected. , the screen with the selection parameters will be displayed for that KPI **(See diagram below).** The "DISPLAY TYPE" will default to "GRAPH"

Region: Drop down with the following: All, Central, Eastern, and Western.
Cluster: Drop down related to region selected, if no region selected all clusters.
Area: Drop down related to region selected, if no region selected all areas.
Location: Drop down related to region and/or area selected as specific yard/depot can be selected.
Services: As used in the ITP (as found in MIS).
Period (from/to) User can select with calendars the From – To dates.
Display resolution This can be selected to provide information per Day (Max 31), Week (Max 52), Month (Max 24)
Display type: The output can be either in Graph or Detail format

After completing the above screen the execution of the report to generate information will automatically be performed displaying a bar graph according to the information selected. The "DISPLAY TYPE" will default to "GRAPH"

The user can now change the different dropdown to get the desired results in either Graph of Detail view.

When **"DISPLAY TYPE"** is change to **"DETAIL"** the following screens will be made available.

When the user click on a specific percentage (underlined) the following screen will be displayed

TRAINS UNDER UTILISED

REGION [ALL ▼]   CLUSTER [ALL ▼]   AREA [ALL ▼]   LOCATION [ALL ▼]

SERVICES [ALL ▼]

PERIOD
FROM [▫] TO [▫]   DISPLAY RESOLUTION ○ DAYS ○ WEEK ○ MONTH   DISPLAY TYPE [DETAIL ▼]

Train number	Depart from	Depart to	Designed total	Traffic type	Loaded total	Empty total	Actual total
B1XM 001407 170309	BELLVILLE	SALKOR	40	MALT EOHP	23	0	23
X1V1 004436 170309	KKK/S142395	KLAWER	40	GENERAL	2	14	16
B1W1 007321 170309	BELLVILLE	WOR-NOORD	40	BARLEY EOHP	32	0	32
B1V1 004443 170309	BELLVILLE	KLAWER	40	GENERAL	19	0	19
B1C1 005297 170309	BELLVILLE	CALEDON	40	GENERAL	19	0	19
V1B1 004442 170309	KLAWER	BELLVILLE	40	Empty DZ	0	7	7
B1N1 001107 170309	BELLVILLE	HERMON	40	EMPTY- FKD1	0	19	19
M1A1 002630 170309	MALMESBURY	KAAPSTADPAS	50	GENERAL	35	0	35
V1X1 004405 170309	KLAWER	KKK/S142395	40	GENERAL	32	0	32
B1J1 007771 170309	BELLVILLE	DALJOSAFAT	40	MALT EOHP	7	0	7
M1X1 004409 170309	MALMESBURY	DEH/S140988	40	GENERAL	5	14	19

Column description
- ❖ Train number   =   Number of the train that arrive late
- ❖ Depart from   =   Location where the trains departed From
- ❖ Depart to   =   Location where the trains departed To
- ❖ Designed total   =   Total number of wagons designed for this train.
- ❖ Traffic type   =   The type of traffic that this train is supposed to haul according to the ITP.
- ❖ Loaded total   =   Number of loaded wagons on train
- ❖ Empty total   =   Number of Empty wagons on train
- ❖ Actual total   =   Total number of wagons on train.

The [⇅] button provides a sorting option in the column provided.

When the user clicks on the underlined train number, the following screen will be displayed.

Column description
  - ❖ (--First column--) = Wagon sequence number
  - ❖ Wagon number = The wagons number on the train list.
  - ❖ Wagon type = The type of the wagons in the previous column
  - ❖ Owner = The owner of the wagons in column 2
  - ❖ Contents code = The handling code of the specific wagon.
  - ❖ Load station = The loading location code.
  - ❖ Consignment = The consignment number of the wagons

  - • Proposed approach (best way to solve current needs/issues)

    - - To be decided and implemented.

Note: All above displays are illustrative. Final displays will be dependent on system functionality and dashboard standardisation.

8. Business rules

  - • **Region**
    - o It can only belong to one of the following, Central, Eastern, or Western and must exist in Locnet
  - • **Area**

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- o Can only be an area that exists in Locnet.
- **Location**
  - o Can only be a location that exist in Locnet and where trains depart from.
- **Train number**
  - o Must be a valid train number existing on the Sprint database.

- **Depart from**
  - o Can only be a location that exist in Locnet and is open for traffic and have trains departed
- **Depart to**
  - o Can only be a location that exist in Locnet and is open for traffic and have trains departed to.
- **Designed total**
  - o This is the total wagons designed for the specific train.
- **Traffic type**
  - o This is the information capture in the ITP system against the train.
- **Loaded total**
  - o This must be a numeric number.
- **Empty total**
  - o This must be a numeric number.
- **Actual total**
  - o This must be a numeric number.

9. Dataset

```
**************************************************************
* DCLGEN TABLE(RAIL.TREINSHEDMON_TAB)                       *
*        LIBRARY(GQTN1.BEDRYF.TKCOPY(TABTRN3G))             *
*        ACTION(REPLACE)                                    *
*        LANGUAGE(COBOL)                                    *
*        QUOTE                                              *
* ... IS THE DCLGEN COMMAND THAT MADE THE FOLLOWING STATEMENTS *
**************************************************************
      EXEC SQL DECLARE TREINSHEDMON_TAB TABLE
      ( TRAINFRM3G                    CHAR(20) NOT NULL,
        TRAINTOO3G                    CHAR(20) NOT NULL,
        DEPSHDDT3G                    CHAR(08) NOT NULL,
        DEPSHDTM3G                    CHAR(04) NOT NULL,
        ARRSHDDT3G                    CHAR(08) NOT NULL,
        ARRSHDTM3G                    CHAR(04) NOT NULL,
        DEPENDES3G                    CHAR(20) NOT NULL,
        ORIGINST3G                    CHAR(20) NOT NULL,
        DEPARTDT3G                    CHAR(08) NOT NULL,
        DEPARTTM3G                    CHAR(04) NOT NULL,
        ARRLDATE3G                    CHAR(08) NOT NULL,
        ARRLTIME3G                    CHAR(04) NOT NULL,
        DEPREPDT3G                    CHAR(08) NOT NULL,
        DEPREPTM3G                    CHAR(04) NOT NULL,
        ARRREPDT3G                    CHAR(08) NOT NULL,
        ARRREPTM3G                    CHAR(04) NOT NULL,
        TOTTRUCK3G                    CHAR(05) NOT NULL,
        TOTLOADE3G                    CHAR(05) NOT NULL,
        TOTEMPTY3G                    CHAR(05) NOT NULL,
        TOTRESRV3G                    CHAR(05) NOT NULL,
        TOTUNRES3G                    CHAR(05) NOT NULL,
        RESNOTON3G                    CHAR(05) NOT NULL,
        DEPTRNST3G                    CHAR(20) NOT NULL,
        DEPTRNNO3G                    CHAR(16) NOT NULL,
```

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```
                DEPTRNTP3G                      CHAR(13) NOT NULL,
                TREINVOR3G                      CHAR(16) NOT NULL,
                TIPESHED3G                      CHAR(01) NOT NULL,
                TOTWRRES3G                      CHAR(05) NOT NULL,
                DEPTMDEV3G                      CHAR(05) NOT NULL,
                ARRTMDEV3G                      CHAR(05) NOT NULL,
                FROMAREA3G                      CHAR(14) NOT NULL,
                ARRVAREA3G                      CHAR(14) NOT NULL,
                DEPTSIGN3G                      CHAR(10) NOT NULL,
                DEPTTERM3G                      CHAR(08) NOT NULL
       ) END-EXEC.
*********************************************************************
* COBOL DECLARATION FOR TABLE RAIL.TREINSHEDMON_TAB                *
*********************************************************************
 01  DCLTREINSHEDMON-TAB.
       03 TRAINFRM3G                    PIC X(20).
* FROM TRAIN STATION
       03 TRAINTOO3G                    PIC X(20).
* TO TRAIN STATION
       03 DEPSHDDT3G                    PIC X(08).
* TRAIN SCHEDULED DEPART DATE (PK)
       03 DEPSHDTM3G                    PIC X(04).
* TRAIN SCHEDULED DEPART TIME (PK)
       03 ARRSHDDT3G                    PIC X(08).
* TRAIN SCHEDULED ARRIVAL DATE (PK)
       03 ARRSHDTM3G                    PIC X(04).
* TRAIN SCHEDULED ARRIVAL TIME (PK)
       03 DEPENDES3G                    PIC X(20).
* TRAIN LOAD DESTINATION
       03 ORIGINST3G                    PIC X(20).
* TRAIN ORIGIN STATION
       03 DEPARTDT3G                    PIC X(08).
* TRAIN DEPART DATE
       03 DEPARTTM3G                    PIC X(04).
* TRAIN DEPART TIME
       03 ARRLDATE3G                    PIC X(08).
* TRAIN ARRIVAL DATE
       03 ARRLTIME3G                    PIC X(04).
* TRAIN ARRIVAL TIME
       03 DEPREPDT3G                    PIC X(08).
* TRAIN DEPART REPORT DATE
       03 DEPREPTM3G                    PIC X(04).
* TRAIN DEPART REPORT TIME
       03 ARRREPDT3G                    PIC X(08).
* TRAIN ARRIVAL REPORT DATE
       03 ARRREPTM3G                    PIC X(04).
* TRAIN ARRIVAL REPORT TIME
       03 TOTTRUCK3G                    PIC X(05).
* TOTAL WAGONS ON TRAIN
       03 TOTLOADE3G                    PIC X(05).
* TOTAL LOADED WAGONS ON TRAIN
       03 TOTEMPTY3G                    PIC X(05).
* TOTAL EMPTY WAGONS ON TRAIN
       03 TOTRESRV3G                    PIC X(05).
* TOTAL RESEVED WAGONS ON TRAIN
       03 TOTUNRES3G                    PIC X(05).
* TOTAL UNRESEVED WAGONS ON TRAIN
       03 RESNOTON3G                    PIC X(05).
* TOTAL RESEVED WAGONS NOT ON TRAIN
       03 DEPTRNST3G                    PIC X(20).
* TRAIN DEPARTURE STATUS
       03 DEPTRNNO3G                    PIC X(16).
* TRAIN NUMBER
       03 DEPTRNTP3G                    PIC X(13).
* TRAIN TYPE
       03 TREINVOR3G                    PIC X(16).
* PREVIOUS TRAIN NUMBER
       03 TIPESHED3G                    PIC X(01).
* TYPE OF SCHEDULE 1, 2, 3, ' '
       03 TOTWRRES3G                    PIC X(05).
* NUMBER OF RESERVED TRUCKS ON THIS TRAIN RESERVED FOR A
```

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```
* DIFFERENT TRAIN
       03 DEPTMDEV3G                    PIC X(05).
* DIFFERENCE IN MINUTES BETWEEN RESERVED AN ACTUAL DEPART TIMES
       03 ARRTMDEV3G                    PIC X(05).
* DIFFERENCE IN MINUTES BETWEEN RESERVED AN ACTUAL ARRIVAL TIMES
       03 FROMAREA3G                    PIC X(14).
* FROM TRAIN STATION AREACODE
       03 ARRVAREA3G                    PIC X(14).
* TO TRAIN STATION AREACODE
       03 DEPTSIGN3G                    PIC X(10).
* DEPART OR ARRIVAL TREIN SIGNON
       03 DEPTTERM3G                    PIC X(08).
* DEPART OR ARRIVAL TREIN TERMINAL
*******************************************************************
* THE NUMBER OF COLUMNS DESCRIBED BY THIS DECLARATION IS 1       *
*******************************************************************
```

10. Technical SQL

Please ensure that, in the where clause, the ==ARRLDATE3G== = the previous day's date

```
SELECT
DEPTRNNO3G||TIPESHED3G AS TRAINNOSHED,
A.FONKOREK01 AS TRNFRM, B.FONKOREK01 AS TRNTOO,
INTEGER(MAXIASSEPJ/4) AS MAXTRCK, TOTTRUCK3G AS TOTTRKS,
TOTLOADE3G AS TOTLOAD, TOTEMPTY3G AS TOTEMP, TOTRESRV3G AS TOTRES,
TOTUNRES3G AS TOTUNRES, RESNOTON3G AS RESNOTON, TOTWRRES3G AS TOTWRRES,
SUBSTR(ZONEDESC99,1,8)||SUBSTR(GROUPNME99,5,2) AS REGIONAREA
FROM RAIL.TREINSHEDMON_TAB
LEFT OUTER JOIN RAIL.STASIEDETAIL_TAB A ON TRAINFRM3G = A.KEYFONET01
LEFT OUTER JOIN RAIL.STASIEDETAIL_TAB B ON TRAINTOO3G = B.KEYFONET01
LEFT OUTER JOIN RAIL.AREAGROUP_TAB      ON ARRVAREA3G = AREACODE99
LEFT OUTER JOIN RAIL.RSVANTGPTRNRTE_TAB ON DEPTRNNO3G =
TREINRTEPJ||TREINNUMPJ||TREINDAGPJ||TREINMNDPJ||TREINJARPJ
AND    A.AREACODE01 = VANAREACPJ
AND    B.AREACODE01 = NAAREACDPJ
WHERE SUBSTR(FROMAREA3G,1,2) ^= '00' AND ARRLDATE3G = '20090104'
AND    ARRLTIME3G > '0000'
ORDER BY 4
WITH UR
```

The user will have the option of selecting a REGION, which will then provide all the AREAS that resort under that region where trains arrived late according to schedule.

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5. Sign

Project name	TBI Stream C		
Signatories		**Signature**	**Date**
Dirk Nieuwoudt	Project sponsor	*DBHUenwoudt*	28/07/09
Solomon Rampheng	Process Owner	*signature*	28 07.09
Mark Snyders	Portfolio Management		
	Programme Management		
Kesegan Nair	ICTM – Technical / Information Architecture		