

**FAMWEB Data Warehouse Business Rules**

**July 28, 2010**

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## AMIS/ABS

### Business Rules

- 1 Not null state values in the FS\_AVDB\_CHARGES table will be converted to upper case and validated against the STATE lookup table.
  - The state must be valid as determined by the Federal Information Processing Standards (FIPS).
  - City and County will not be validated.
- 2 Descriptions from ABS lookups will replace descriptions from AMIS lookup tables should the codes between the lookup tables match.
- 3 Never throw out a row due to an invalid lookup.
- 4 Use FS\_AVDB\_AIRPORTS lookup for flight origination and flight destination wherever possible. For AMIS source data, use AMIS FLIGHT\_LOCATION lookup as a backup, but do not use FLIGHT\_LOCATION rows where description says 'AMIS CONVERSION FROM AMIS\_FLIGHT\_DETAIL', 'DELETE THIS DEST RECORD', or 'DELETE THIS RECORD'.
- 5 None of the FS\_AVDB\_EATIS data will be loaded into the warehouse.
- 6 FS\_AVDB\_FLIGHT\_LEG.LEG\_TOTAL is calculated as Rate \* Elapsed\_Time from AMIS\_FLIGHT\_DETAIL.
- 7 If FS\_AVDB\_FLIGHT\_LEG START\_TIME and STOP\_TIME are null, then set Elapsed\_Time to 0.
- 8 FS\_AVDB\_FLIGHT\_LEG PILOT\_ONE and PILOT\_TWO are derived from AMIS\_FLIGHT\_DETAIL PERSON\_ID1 and PERSON\_ID2 as AMIS\_PERSON.Last\_Name ', ' AMIS\_PERSON.First\_Name.
- 9 The ODS will maintain current and historical data. Delete checks will be performed on AMIS data for Invoice and Flight Leg; not for ABS data. FAMWEB Data Warehouse load order while AMIS is still online will be AMIS then ABS for like tables. This means that ABS data will replace AMIS data when primary keys match. Do not override Invoices unless all of the following are the same: Tail #, Contr #, and Flight Date. If found, then ABS takes precedence.
 

Per conference call with Brad Harwood (FS) on 01/23/2008, the above rule will not work as INV\_NUM is not "entered" in ABS (it is a sequence number) which results in duplicate INV\_NUMs between AMIS and ABS. After numerous design revisions, the following design decision was made:

  - Union AMIS and ABS Invoice Numbers and Flight Dates (gives distinct set) to populate INVOICE\_VW view.
  - Process AMIS data. Join AMIS\_INVOICE to INVOICE\_VW (on both invoice number and flight date) and where AMIS flight date is <= 2007. Truncate/insert into a temporary staging table (with no primary key).
  - Process ABS data (using original mapping logic). Join FS\_AVDB\_INVOICE to INVOICE\_VW (on both invoice number and flight date). Update/Insert into temporary staging table using invoice number and flight date as update criteria (again no primary key).
  - Load data from temporary staging table into final Invoice table. In final Invoice table, change INV\_NUM from NUMBER to VARCHAR2 (60). On load, for all rows in the temporary staging table where source = 'AMIS', append '(AMIS)'. Primary key on final Invoice table remains INV\_NUM.

- INV\_NUM column in all child tables to FS\_AVDB\_INVOICE must be changed from NUMBER to VARCHAR2(60).
- 10 Include a SOURCE column in FS\_AVDB\_INVOICE and FS\_AVDB\_FLIGHT\_LEG tables to differentiate between AMIS and ABS source data.
- 11 The ETL will be mapped and scheduled to refresh changes daily using Change Data Capture (CDC) functionality. However at time zero, all data will be populated in STAGING and ODS.
- Due to connectivity issues, the refresh in the short term will require a complete export/import of the ABS schema. The warehouse refresh will be TRUNCATE/INSERT each time. The refresh will be on a weekly basis.
- 12 Decode ABS Contract Types as follows:
- C = Call When Needed
  - E = Exclusive Use
  - L = Lease
- 13 FS\_AVDB\_FLIGHT\_LEG.NUM\_PASSENGERS equals AMIS\_FLIGHT\_DETAIL.NUM\_PASSENGERS. If MISSION\_CODE = 10 or 20, then FS\_AVDB\_FLIGHT\_LEG.NUM\_PASSENGERS = 0.
- 14 Join FS\_AVDB\_INVOICE to AVA\_CONTRACT\_DATES where CONTR\_NUM = CONTRACT\_RAW AND AIRCRAFT\_REG\_NUM = TAILNO\_RAW.to populate FS\_AVDB\_INVOICE CONTRACT\_BEGIN\_DATE, CONTRACT\_END\_DATE, AC\_MAKE, and AC\_MODEL. All contract information should come from AVA\_CONTRACT\_DATES. If there is a contract in AMIS that does not exist in AVA\_CONTRACT\_DATES, then load it.
- Update from September 2008 meeting in Boise – populate the above information using a view from EaV. In addition, populate Vendor, Vendor Email, Aircraft Type, and Contract Type from this view. This view will also be used for ARS.
  - If the data is not in EaV, then pull contract information from AMIS.
- 15 If either CONTRACT\_BEGIN\_DATE or CONTRACT\_END\_DATE are NULL from ABS, AMIS, or AVA\_CONTRACT\_DATES, the record will not be loaded into the warehouse.
- 16 The ETL will maintain a calculated column in FS\_AVDB\_FLIGHT\_LEG called FLIGHT\_HOURS. The value is set to Flight Leg Elapsed Time if the Pay Code = 'FT'; otherwise it is set to NULL.
- 17 Add CONTRACT\_NUM to FS\_AVDB\_PKG for reporting purposes.
- 18 Add TOTAL\_ALL\_CHARGES to FS\_AVDB\_INVOICE to represent the sum of SUBTOTAL and TOTAL\_CHARGE.
- 19 Per JAD session in September 2008, combine FS\_AVDB\_FLIGHT\_LEG, FS\_AVDB\_CHARGES, and FS\_AVDB\_ACCT\_SUMMARY tables into one INVOICE\_DETAILS object so that querying (e.g., by pay code) will be made easier. Remove the FS\_AVDB\_FLIGHT\_LEG, FS\_AVDB\_CHARGES, and FS\_AVDB\_ACCT\_SUMMARY objects from Cognos. The INVOICE\_DETAILS\_ID (primary key) will be derived as follows: TO\_NUMBER(to\_number(replace(INGRP1.INV\_NUM , '(AMIS)', '113919'))||0||INGRP1.UNIQUE\_ID ||0|| INGRP1.PAY\_CODE\_NO||0|| INGRP1.TABLE\_NAME). The UNIQUE\_ID is either INV\_NUM, CHARGE\_ID, LEG\_NUM, or ACCT\_ID based on the source table. The PAY\_CODE\_NO is the numeric representation of each pay code (as denoted in the PAY\_CODE\_REF table). The TABLE\_NAME is a numeric representation of each source table.

- Per JAD session in February 2009, the INVOICE\_DETAILS object is to be modified as follows to eliminate issue of duplicate line amounts by pay code:
    - Exclude FS\_AVDB\_ACCT\_SUMMARY table information
    - For Excise Tax and Segment Fee data, pull out as separate rows with a pay code of ‘TX’ and pay code description of ‘TX – Excise Tax’ and ‘TX – Segment Fee Tax’ respectively.
    - Change description of the original ‘TX’ pay code to ‘TX – Taxes’.
    - Since AMIS does not contain excise tax and segment fee tax, load Flight Leg rows from AMIS where pay code equals ‘TX’. Do not load (if present) any Flight Leg rows from ABS where pay code equals ‘TX’.
- 20 For ABS Flight Leg rows where EXCISE\_TAX\_AMOUNT or SEGMENT\_TAX\_AMOUNT are not null, add a new row in the INVOICE\_DETAILS table. Pay Code should be ‘TX’. Sum both amounts to give the PAY\_CODE\_AMOUNT.
- a. Until otherwise notified, set TABLE\_SOURCE as ‘Flight Leg’ and populate remaining columns based on the FS\_AVDB\_FLIGHT\_LEG where INV\_NUM and LEG\_NUM match. The only exception is to leave RATE blank.
- 21 Update all tail numbers that are loaded into the warehouse as follows:
- a. Remove all spaces and dashes.
  - b. If the tail number starts with a number, then add a ‘N’ to the beginning of the tail number.
  - c. If the tail number starts with a letter other than C or N, then add a ‘C’ to the beginning of the tail number.

### Issues and Mitigations

- 1 The Equipment and Training Inventory System (EaTIS) data (e.g., contracts) is not maintained in ABS. It comes directly from EaTIS via web services. EaTIS uses SQL Server (not Oracle). The data is “synchronized” with the ABS database as a “disconnected client.” There are no foreign key relationships to the EaTIS related tables from the ABS tables.
 

Per JAD session on 03/15/07, EaTIS data will not be loaded into the data warehouse.
- 2 We were previously told to ignore the FS\_AVDB\_PAY\_CODES (it would come directly from EaTIS). Now we need EaTIS data in an ABS table. Should we use the FS\_AVDB\_PAY\_CODES table or will another EaTIS table be provided?
 

Per JAD session on 03/15/07, do not load as this table will be deleted in ABS because the pay code information will come directly from EaTIS.

Per JAD session on 11/14/07, use pay codes received from Peggy Toya as follows (maintain in a new PAY\_CODE\_REF table):

AV	Availability
CH	Other Charges
CN	Cancel Dispatch
CR	Other Credit
DO	Mandatory Day Off
ES	Extended Standby

FT	Flight Time
GU	Guarantee
JC	Job Contract
NA	Non-Availability
NF	Other Non-Flight
ON	Overnight
SB	Standby
SP	Special Passengers
ST	Service Truck
TX	Taxes

- 3 We have combined FS\_AVDB\_ACRL\_HDR, FS\_AVDB\_ACRL\_LINES, and FS\_AVDB\_ACRL\_LINE\_DETAILS into a single table (FS\_AVDB\_ACRL) with the assumption that there has to be a valid Contract Item and Invoice joined to LINE\_DETAILS. If this is not the case, then these objects do not join to the main business objects and really shouldn't be included in the warehouse.

Per JAD session on 03/15/07, do not load these tables into the warehouse.

Per JAD session on 11/14/07, MaryLea Lockard took an action to determine if these tables are still needed.

- 4 EATIS\_CONTRACT versus AMIS\_CONTRACT:  
 AMIS\_CONTRACT.CONTRACT\_NO does not match up with EATIS\_CONTRACT.CONTR\_NUM, but it looks like AMIS\_CONTRACT.CONTRACT\_AS\_KEYED does match up with EATIS\_CONTRACT.CONTR\_NUM. EATIS\_CONTRACT.CONTR\_NUM (the primary key) is a formatted number with hyphens (e.g., 53-0356-05-0006). Is it OK to match these two columns for merging the data?

Per JAD session on 03/15/07, EATIS data will no longer be loaded. However, for denormalizing into FS\_AVDB\_INVOICE, AMIS\_CONTRACT.CONTRACT\_AS\_KEYED will be used.

- 5 FS\_AVDB\_FLIGHT\_LEG versus AMIS\_FLIGHT\_DETAIL date/time fields:

- Start and Stop Times in FS\_AVDB\_FLIGHT\_LEG is a date field. It is a Number field in AMIS\_FLIGHT\_DETAIL. Is the time component in FS\_AVDB\_FLIGHT\_LEG entered as military time? For now, we will convert ABS time component to a NUMBER (as military time).

Per JAD session on 03/15/07, the time component in FLIGHT\_LEG is military time. Decision was made to maintain the ABS and AMIS Start and Stop Times separately in the warehouse.

Per JAD session on 11/14/07, do not load FLIGHT\_LEG time and meter components into the warehouse.

- Does the date portion of the FS\_AVDB\_FLIGHT\_LEG correspond to the FS\_AVDB\_INVOICE Flight\_Date? If so, this is not always the case.

Per JAD session on 03/15/07, this is not the case. They only maintain the time component.

Per JAD session on 11/14/07, do not load FLIGHT\_LEG time and meter components into the warehouse.

- Some of the start\_time values now in AMIS\_FLIGHT\_DETAIL are invalid (e.g., 4164.1, 2870.9, 3695.6, 7.43). This appears to be old data (prior to the web data entry application).  
Per JAD session on 11/14/07, do not load FLIGHT\_LEG time and meter components into the warehouse.
  - What about the start and stop time zone component of FS\_AVDB\_FLIGHT\_LEG? There is no equivalent in AMIS\_FLIGHT\_DETAIL. Do we assume the same time zone for the merge?  
Per JAD session on 03/15/07, time zones do not apply to AMIS start and stop times.  
Per JAD session on 11/14/07, do not load FLIGHT\_LEG time and meter components into the warehouse.  
Per JAD session on 02/04/09, add back AMIS and ABS start/stop times. They are needed in the FS-6500-122 report (meter blocks). Keep AMIS and ABS times in separate columns.
- 6 FS\_AVDB\_EATIS\_VENDOR versus AMIS\_VENDOR:
- VENDOR\_CODES do not line up. In AMIS, they include a period in the middle (e.g., for Beck Properties, Inc the code is '810479394' in ABS and '180805.60813' in AMIS). How should we merge the data?  
Per JAD session on 03/15/07, EaTIS data will not be loaded in the data warehouse.
  - EATIS\_VENDOR has PHONE\_ONE, PHONE\_TWO, and PHONE\_THREE. AMIS\_VENDOR has a single PHONE column. Should we map AMIS PHONE to PHONE\_ONE?  
Per JAD session on 03/15/07, EaTIS data will not be loaded in the data warehouse.
- 7 Look up tables (e.g., Mission\_Code) between AMIS and ABS may be different. Codes may not line up between the two systems. As it stands now, ABS data will replace AMIS data where codes match (yet meaning/descriptions might have changed).
- Brad and Ram reviewed lookups forwarded from developers. Confirmation was received via email on 3/19/2007.
- 8 Will there be valid latitude/longitude data in the FS\_AVDB\_AIRPORTS table? Right now, those columns are null.  
Per JAD session on 03/15/07, this could be a future enhancement.
- 9 AMIS\_PAY\_RATE maps to FS\_AVDB\_EATIS\_CONTR\_RATES. However, RATE\_TYPE (part of primary key of FS\_AVDB\_EATIS\_CONTR\_RATES) does not match directly with anything in AMIS.  
Per JAD session on 03/15/07, AMIS\_PAY\_RATE will not be loaded in the data warehouse.
- 10 What, if anything, does AMIS\_CONTRACT\_EQUIP map to in ABS?  
Per JAD session on 03/15/07, AMIS\_CONTRACT\_EQUIP will not be loaded in the data warehouse.
- 11 FS\_AVDB\_INVOICE has ALOT of AIRCRAFT\_REG\_NUMs that are NOT in FS\_AVDB\_EATIS\_AIRCRAFT. Enforcing this relationship results in very few rows being loaded into the warehouse.

Per JAD session on 03/15/07, EaTIS data will not be loaded in the data warehouse.

- 12 FS\_AVDB\_EATIS\_VENDOR has no rows where STATE is populated. Should we not enforce the STATE lookup on this table?

Per JAD session on 03/15/07, EaTIS data will not be loaded in the data warehouse.

- 13 Federal Aviation Interactive Reporting System (FAIRS) and ABS issues:

- The warehouse is not loading Contract Begin and End dates for ABS. These are required fields in FAIRS.  
Per follow-up email from Brad on 09/05/2007, join to the new AVA\_CONTRACT\_DATES table for this information.
- Contract Types in ABS (i.e., D, C, and E) do not match AMIS types (i.e., BPA, CWN, EU, JC, L, NA, POA, UNK). The FAIRS program decodes values based on AMIS types.  
Per follow-up conference call with customer on 03/28/07, decode D to “Rental”, C to “Rental” and E to “Full Service Contract”.  
Per JAD on 11/14/07, remove D contract type decode. Decode L to “Lease”.
- The warehouse is not loading aircraft make and model information for ABS.  
Per follow-up email from Brad on 09/05/2007, join to the new AVA\_CONTRACT\_DATES table for this information.
- Per JAD on 11/14/07, the warehouse also needs aircraft type for reporting purposes. This is not in AVA\_CONTRACT\_DATES. Decision was made to use ARS source to obtain aircraft type and aircraft type description for both ABS and AMIS data (join on aircraft registration number).  
Per CCB on 01/09/08, the decision was made to use aircraft types from ABS (FS\_AVDB\_INVOICE.AC\_TYPE) instead of ARS, since ABS has the most current list. Use the following aircraft type descriptions:  
F = Fixed Wing  
H = Helicopter  
L = Leased  
T = Airtanker  
S = Single Engine Airtanker
- Use new import\_CAS\_Template.xls workbook available on the FAIRS website to produce CAS\_Records and Cost\_and\_Hours spreadsheet reports. This is done using ETL to populate the FAIRS\_CAS\_RECORDS and FAIRS\_COST\_HOURS tables.
- Use the missions listed in the import\_CAS\_Template.xls workbook for the FAIRS reporting. Created a FAIRS\_MISSION\_REF table which matches AMIS and ABS missions against the FAIRS missions. This table is used just for FAIRS and will not be used for any other reporting.
- Use the aircraft make and models listed in the import\_CAS\_Template.xls workbook for the FAIRS reporting. Sheila Valentine created the match up between this listing and the AMIS and ABS make and models. Created a FAIRS\_MAKE\_MODEL\_REF table based on that match-up.

## ARS

### Business Rules

- 1 Populate (insert/update) contract information based on EaV. This includes the following ARS tables: AIRCRAFT, AIRCRAFTINSPECTION, CONTRACTITEM, LU\_CONTRACT\_TYPE, LU\_MAKEMODEL, PERFORMANCE, and VENDOR. Data to be updated from EaV include: contract number, contract type, vendor name, vendor email, registration number, aircraft make, aircraft model, aircraft type, contract begin date, contract end date, co\_signer name, and co\_signer email.
- 2 CO\_SIGNER\_FIRST, CO\_SIGNER\_LAST, and CO\_SIGNER\_EMAIL columns from EaV will update OFFICER (concatenated last, first) and EMAIL\_ADDRESS columns in CONTRACT.
- 3 Insert new CONTRACT rows based on EaV. There is no way to update an existing row as there is no logical key.
- 4 For data that is mixed case (e.g., Vendor Name/Company), the source and target data will be converted to all upper case before the comparison/update. For a new VENDOR, convert the target COMPANY to initial caps. For a new LU\_MAKEMODEL, convert MAKE to initial caps.
- 5 For Contract\_Type, decode EaV 'EXU' and 'EU' types to the existing 'Exclusive' type in the target table.

## WIMS

### Business Rules

- 1 All Stations in STATION\_INFORMATION must have an Agency.
  - The observing\_agency field in STATION\_INFORMATION is optional. Rows where observing\_agency is NULL will not be loaded.
- 2 All Stations in STATION\_INFORMATION must have a valid state and county:
  - The state and county must be valid as determined by the FIPS.
  - GIS point-in-poly analysis will be used to assign missing state and missing county information to weather station records (uses the lat/long values on the record).
    - Remaining records with valid state and missing/NULL County information will be assigned a County FIPS value of '000' and a County Name of 'Missing Data' prior to loading into the FAMWEB Data Warehouse.
  - Records with missing/NULL state **and** county information will be assigned a State FIPS value of '00' and a County FIPS value of '000' prior to loading into the FAMWEB Data Warehouse. In this case, both State and County Names will be assigned a value of 'Missing Data'. If possible, county will be derived from spatial data (i.e., Latitude/Longitude). State Abbreviation will be set to 'ZZ'.
- 3 All Observations in the OBSERVATION table must have a Station in the STATION\_INFORMATION table.
- 4 The following decisions were made during the WIMS meeting with the Forest Service on 9/6/2005:
  - Every Observation must have an hour component.
    - The WX\_DAILY\_OBSERVATIONS historical table does not include an observation time. During the CCB on 3/2/2006, it was decided to populate time for these rows by joining to the STATION\_INFORMATION table (on STATION\_ID) and set the OBSERVATION\_TIME to the

STATION\_INFORMATION.REG\_SCHEDULED\_OBSERVATION\_TIME. If the REG\_SCHEDULED\_OBSERVATION\_TIME column is NULL, then set the time to 13. Trim the leading zero(s) from WX\_DAILY\_OBSERVATIONS.STATION\_ID to ensure match up with STATION\_INFORMATION.STATION\_ID (which excludes leading zeroes).

- The WX\_DAILY\_OBSERVATIONS historical table does not include a regular\_special\_obs\_flag. All records will be modified to set this column to 'O'.
- Observation regular\_special\_obs\_flag must be one of the following: 'R', 'S', 'F', or 'O'.

During the JAD session on 02/16/2006, the decision was made to split Observations into three tables: Daily, Hourly, and Special. Daily Observations' regular\_special\_obs\_flag = 'O'. Hourly Observations' regular\_special\_obs\_flag = 'O' or 'R'. Special Observations' regular\_special\_obs\_flag = 'S'. Forecasted observations (regular\_special\_obs\_flag = 'F') are not being loaded in the ODS.

- Do not load "temporary" stations (where STATION\_ID ends between '90' and '99'). It was decided at the 06/17/2009 JAD session to load all temporary stations.
- Observation state\_of\_weather column must be populated where regular\_special\_obs\_flag = 'O'.

5 Stations in the STATION\_INFORMATION table with no observations will not be loaded. (This was agreed to by the Forest Service during the WIMS meeting on 5/4/2005).

This business rule was taken out during the JAD session on 02/16/2006.

6 The ODS will maintain current and historical data. No delete checks required on WIMS ODS data (use update/insert). WIMS historical (WX) tables will be updated over time (NOT a one-time load).

7 Include public Special Interest Groups (SIG) (identified by a number). Do not include user-defined SIGs (begins with an alpha character). All public SIGs will consist only of Stations in the STATION\_INFORMATION table.

8 TREND\_FORECASTS table is used for public SIGs only.

9 Include columns for Month and Day Names and Week Number in DAILY\_OBSERVATIONS, HOURLY\_OBSERVATIONS, and SPECIAL\_OBSERVATIONS based on OBSERVATION\_DATE.

10 Include a column for use in determining the number of Stations in STATION\_INFORMATION.

Per JAD session on 09/18/2006, add this same number of Stations column in SIG Catalog.

11 The following decisions were made during the JAD session on 02/16/2006:

- Split the National Fire Danger Rating System (NFDR) data into three tables: Observed, Special, and Forecasts. Observed NFDR's nfd\_r\_type = 'O'. Special NFDR's nfd\_r\_type = 'S'. Forecast NFDR's nfd\_r\_type = 'F'.
  - Add fuel Model, Slope, Grass type, Climate class (MSGC) column to NFDR tables to concatenate FUEL\_MODEL, SLOPECLASS, GRASSTYPE, and CLIMATE\_CLASS (no spaces between).
  - Decode NFDR.HERB\_VEG\_CONDITION using values from the NFDRS\_VEG\_STAGES table.
- Create a new table called POINT\_FORECAST\_VERIFICATION to compare POINT\_FORECASTS against DAILY\_OBSERVATIONS data. Match criteria is

STATION\_ID, FORECAST\_DATE = OBSERVATION\_DATE, and OBSERVATION\_TIME = VALID\_TIME (i.e., 13). It was determined this was not needed for Trend Forecast data, since trend forecasts are derived from point forecasts.

The following changes were made during the JAD session on 09/18/2006:

- Add Observation Date to table.
- Add Day, Month, and Year columns for Observation Date and Forecasted Date.

The following changes were made during the JAD session on 11/14/2006:

- Include the following columns from NFDR to POINT\_FORECAST\_VERIFICATION: BURNING\_INDEX, KBDI, IGNITION\_COMPONENT, ADJECTIVE\_RATING, TAFFING\_CLASS, SPREAD\_COMPONENT, and ENERGY\_RELEASE\_COMPONENT. This includes both forecasted and observed values of each from NFDR (based on NFDR\_TYPE (F, O)).
- Add \_DIFF columns (e.g., PRECIPITATION\_DUR\_DIFF) for all numeric Actual/Forecast columns to represent Actual minus Forecast.
- Per an email received from Larry Bradshaw on 11/20/2006, original match criteria altered on the date columns to be where FORECAST\_DATE = OBSERVATION\_DATE.
- Include RAW\_SENSORS and RAW\_SENSOR\_DATA tables in the ODS, but do not expose them in the Cognos BI tool.
- Update HOURLY\_OBSERVATIONS records using data from RAW\_SENSORS and RAW\_SENSOR\_DATA where RAW\_SENSORS.short\_desc = 'MX', 'MM', 'UP', or 'UX' as follows:
- If RAW\_SENSORS.short\_desc = 'MM' or 'MX', load associated RAW\_SENSOR\_DATA.sensor\_value into HOURLY\_OBSERVATIONS.**ten\_hr\_tl\_fuel\_moisture** WHERE RAW\_SENSOR\_DATA.observation\_date = HOURLY\_OBSERVATIONS.observation\_date and RAW\_SENSOR\_DATA.observation\_time = HOURLY\_OBSERVATIONS.observation\_time and HOURLY\_OBSERVATIONS.regular\_special\_obs\_flag = 'R' and RAW\_SENSORS.nesdis\_id = STATION\_INFORMATION.nesdis\_id and HOURLY\_OBSERVATIONS.station\_id = STATION\_INFORMATION.station\_id and RAW\_SENSOR\_DATA.sensor\_value is NOT NULL.
- If RAW\_SENSORS.short\_desc = 'UP', load associated RAW\_SENSOR\_DATA.sensor\_value into HOURLY\_OBSERVATIONS.**peak\_gust\_speed** WHERE RAW\_SENSOR\_DATA.observation\_date = HOURLY\_OBSERVATIONS.observation\_date and RAW\_SENSOR\_DATA.observation\_time = HOURLY\_OBSERVATIONS.observation\_time and HOURLY\_OBSERVATIONS.regular\_special\_obs\_flag = 'R' and RAW\_SENSORS.nesdis\_id = STATION\_INFORMATION.nesdis\_id and HOURLY\_OBSERVATIONS.station\_id = STATION\_INFORMATION.station\_id and RAW\_SENSOR\_DATA.sensor\_value is NOT NULL.

- If RAW\_SENSORS.short\_desc = 'UX', load associated RAW\_SENSOR\_DATA.sensor\_value into HOURLY\_OBSERVATIONS.peak\_gust\_dir WHERE RAW\_SENSOR\_DATA.observation\_date = HOURLY\_OBSERVATIONS.observation\_date and RAW\_SENSOR\_DATA.observation\_time = HOURLY\_OBSERVATIONS.observation\_time and HOURLY\_OBSERVATIONS.regular\_special\_obs\_flag = 'R' and RAW\_SENSORS.nesdis\_id = STATION\_INFORMATION.nesdis\_id and HOURLY\_OBSERVATIONS.station\_id = STATION\_INFORMATION.station\_id and RAW\_SENSOR\_DATA.sensor\_value is NOT NULL.
  - If STATION\_INFORMATION.station\_id is less than 6 digits, include the leading zero for display purposes. Since this column is NUMERIC, a new VARCHAR2 column STATION\_ID\_DISPLAY needs to be created to do this. This new column will be included in all tables where station\_id is included. This new column will be used in all KCFast output per email by customer on 01/16/2007.
    - At the JAD session on 06/17/2009, the decision was made to rename KCFast to Fire and Weather Extracts.
  - Sum PRECIPITATION\_DURATION1 and PRECIPITATION\_DURATION2 call the result PRECIPITATION\_DURATION in POINT\_FORECASTS, TREND\_FORECASTS, and POINT\_FORECAST\_VERIFICATION.
- 12 During the WIMS meeting with the Forest Service on 5/4/2005 it was established that the content of the Observations table in the ODS will be the union of the Observations table in WIMS and the WX\_DAILY\_OBSERVATIONS table in the FIRE schema.
- For the fields grass\_green\_factor and shrub\_green\_factor, the values will be pulled from the NFDR table. Based on the diagram received during the CCB on 8/10/2005, it was determined that OBSERVATIONS and NFDR are not related.
  - Type O records in the WIMS Observations table are equivalent to the daily observations in the WX\_DAILY\_OBSERVATIONS table and, where duplicate data is encountered, the Type O records from the WIMS Observations table will be used.
    - At the JAD session on 02/16/2006, it was decided that if there are duplicate Observations found between historical and current, always keep the historical record.
- 13 During the WIMS meeting with the Forest Service on 5/4/2005 it was established that the content of the point forecasts table in the ODS will be the union of the Point\_Forecasts table in WIMS and the WX\_DAILY\_FORECASTS table in the FIRE Schema.
- 14 Per Forest Service direction received via email on 4/19/2006, use synonyms to point to the FIRE schema for the following WIMS lookup tables:
- TIME\_ZONES
  - SLOPE\_CLASSES
  - WX\_AGENCY\_CODES
  - WX\_ASPECT\_CLASSES
  - WX\_DAILY\_FORECASTS
  - WX\_DAILY\_FUELS
  - WX\_DAILY\_OBSERVATIONS
  - WX\_SEASON\_CODES
  - WX\_SITE\_CODES
  - WX\_STATION\_TYPES
  - HUMIDITY\_DEFINITIONS

- NFDRS\_CLIMATE\_CLASSES
- NFDRS\_LAL\_CODES
- NFDRS\_VEG\_STAGES
- NFDRS\_SOW\_CODES

Update: Use new FAMWEB\_ETL schema that has synonyms to point to all source system tables.

15 During the WIMS meeting with the Forest Service on 5/4/2005 it was established that the content of the NFDR table in the ODS will be the union of the NFDR table in WIMS and the WX\_DAILY\_FUELS table in the FIRE Schema.

- The WX\_DAILY\_FUELS table is joined with the FUEL\_MODEL\_REF lookup table. This was required to prevent duplicates resulting from revision in NFDR primary key in the most recent WIMS export on 04/13/2006. The FUEL\_MODEL\_REF table, which provides a complete list of valid fuel models, is shown below:

FUEL_MODEL_CODE	FUEL_MODEL_DESCRIPTION
7A	1978 NFDRS fuel model - Annual Grasses
7B	1978 NFDRS fuel model - Mature brush
7C	1978 NFDRS fuel model - Open pine with grass
7D	1978 NFDRS fuel model - Southern rough
7E	1978 NFDRS fuel model - Hardwood litter (fall)
7F	1978 NFDRS fuel model - Intermountain west brush
7G	1978 NFDRS fuel model - West coast conifers
7H	1978 NFDRS fuel model - Short needle conifers
7I	1978 NFDRS fuel model - Heavy slash
7J	1978 NFDRS fuel model - Medium slash
7K	1978 NFDRS fuel model - Light slash
7L	1978 NFDRS fuel model - Perennial grasses
7N	1978 NFDRS fuel model - Saw/marsh grasses
7O	1978 NFDRS fuel model - High pocosin
7P	1978 NFDRS fuel model - Southern long-needle pine
7Q	1978 NFDRS fuel model - Alaska black spruce
7R	1978 NFDRS fuel model - Hardwood litter (summer)
7S	1978 NFDRS fuel model – Tundra
7T	1978 NFDRS fuel model - Sagebrush with grass
7U	1978 NFDRS fuel model - Western long-leaf pine
8A	1988 NFDRS fuel model - Annual Grasses
8B	1988 NFDRS fuel model - Mature brush
8C	1988 NFDRS fuel model - Open pine with grass

FUEL_MODEL_CODE	FUEL_MODEL_DESCRIPTION
8D	1988 NFDRS fuel model - Southern rough
8E	1988 NFDRS fuel model - Hardwood litter (fall)
8F	1988 NFDRS fuel model - Intermountain west brush
8G	1988 NFDRS fuel model - West coast conifers
8H	1988 NFDRS fuel model - Short needle conifers
8I	1988 NFDRS fuel model - Heavy slash
8J	1988 NFDRS fuel model - Medium slash
8K	1988 NFDRS fuel model - Light slash
8L	1988 NFDRS fuel model - Perennial grasses
8N	1988 NFDRS fuel model - Saw/marsh grasses
8O	1988 NFDRS fuel model - High pocosin
8P	1988 NFDRS fuel model - Southern long-needle pine
8Q	1988 NFDRS fuel model - Alaska black spruce
8R	1988 NFDRS fuel model - Hardwood litter (summer)
8S	1988 NFDRS fuel model – Tundra
8T	1988 NFDRS fuel model - Sagebrush with grass
8U	1988 NFDRS fuel model - Western long-leaf pine

- 16 NWS\_PROD\_OFFICE\_ZONE table will be used as the definitive source for Forecast Zone information. Records in the STATION\_INFORMATION table (fcst\_zone) will be validated against this table (Column fire\_weather\_zone\_sta is the forecast zone, and product\_code is the description in NWS\_PROD\_OFFICE\_ZONE). Any STATION\_INFORMATION table with either a NULL value or a value that does not match the information in the NWS\_PROD\_OFFICE\_ZONE table will be assigned a value of 'Unknown' prior to loading in the FAMWEB DW.
- As of 6/8/2005, there are 24 values of fire\_weather\_zone\_sta that are duplicated in the NWS\_PROD\_OFFICE\_ZONE. Within this set of 24, sometimes the nws\_office\_code and corresponding product\_code values are distinct and sometimes they are not. Options are:
    - Ignore duplicates or
    - Arbitrarily choose a single row or
    - Not worry about decoding the fcst\_zone field in the STATION\_INFORMATION (i.e., not do the join to the NWS\_PROD\_OFFICE\_ZONE table when loading the data into the ODS and, therefore the dimensional structures).
  - Decision was made during a WIMS conference call with the Forest Service on 9/6/2005 to go with Option 3; do not decode fcst\_zone.
- 17 Need to standardize/conform Aspect Class information with FIRESTAT. The two domain sets for aspect classes are presented in the table below:

FIRESTAT.ASPECT_CLASSES			FIRE.WX_ASPECT_CLASSES		
Aspect_Code	Aspect_Abbr	Aspect_Descr	Aspect_Code	Aspect_Abbr	Aspect_Descr
1	N	North	1	NE	Northeast
2	NE	Northeast	2	E	East
3	E	East	3	SE	Southeast
4	SE	Southeast	4	S	South
5	S	South	5	SW	Southwest
6	SW	Southwest	6	W	West
7	W	West	7	NW	Northwest
8	NW	Northwest	8	N	North
0	FL	Flat	0	FL	Flat/None
9	RG	Ridgetop			

- Decision was made during a WIMS conference call with the Forest Service on 9/6/2005 to use FIRESTAT Aspect Classes as the driver.
- 18 Include a PERIOD\_OF\_RECORD column to calculate the minimum and maximum daily observation record dates for the station.
- 19 The WIMS ODS design is based on Richard's revised model (diagram received during the CCB on 8/10/2005). The model was revised further in the most recent WIMS export on 04/13/2006. The following assumptions are being made since all ODS tables need to be related:
- Fuel\_Models is a child of Station\_Information.
  - Raws\_Sensors is a child of Station\_Information.
  - SIG\_Catalog table contains only "Public" SIGs (i.e., where SIG\_NAME is numeric).
  - Trend\_Forecasts is a child of SIG\_Catalog.
  - The NESDIS table (relates Station\_Information and Raws\_Sensors) does not yet exist.
  - Cannot create the primary key for NFDR as modeled (STATION\_ID, NFDR\_DATE, and MODEL\_PRIORITY). Since a primary key is required, the primary key modeled is used in the ETL. This results in a loss of records in the ODS.
    - The WIMS 04/13/2006 export has a valid NFDR primary key (i.e., STATION\_ID, NFDR\_DATE, NFDR\_TIME, NFDR\_TYPE, and MODEL\_PRIORITY). This is currently what is being used; records are no longer lost.
  - RAW\_SENSOR is related to RAW\_SENSOR\_DATA using the key modeled (NESDIS\_ID, SENSOR\_ID). This results in a loss of records in RAW\_SENSOR\_DATA in the ODS.
    - Per Forest Service direction received via email on 5/3/2006, there is no foreign key relationship between RAW\_SENSOR and RAW\_SENSOR\_DATA; the relationship shown in Richard's model will be ignored.
  - Cannot create valid relationship between PUBLIC\_SIG and TREND\_FORECASTS.

## Issues and Mitigations

- 1 Weather information in the STATION\_INFORMATION table:  
Current (4/6/2005) indication from FS is that the fields define units of measure for the observation data.
  - This was verified during the WIMS meeting with the Forest Service on 5/4/2005. Moreover, the fields in the station information table named *xx\_code* are application specific and do not relate to the values stored in the observations table. All observation values in WIMS are normalized with respect to unit measures; the imperial system is used in all cases.
  - The decision was made to copy and paste the descriptions for the coded values from the WIMS user guide for loading into the warehouse structures. The universe of values to be copied will be constrained to the distinct set of codes in each coded field present in the union of the Observations and WX\_DAILY\_OBSERVATIONS tables (e.g., Grasstype\_Ref, Shrub\_Type\_Ref).
- 2 The STATION\_INFORMATION table in the FIRE Schema has no records. The ETL processes will ignore this historical table (i.e., there will be no union between this table in the FIRE Schema and the STATION\_INFORMATION table in WIMS).
- 3 WX\_AGENCY\_CODES Agency\_Abbr is a VARCHAR2 (10) column that has trailing spaces in the data (i.e., all rows are length (10)).
- 4 WX\_Daily\_Forecasts FK to NFDRS\_LAL\_CODES (FCST\_LAL\_FK) is disabled. There are LAL\_CODES that do not line up (i.e., 0), so lining up the LAL\_Ref table with the union with Point\_Forecasts will not work (currently not in mapping).

## **FIRESTAT**

### Business Rules

- 1 All Fire records in the FIRE\_OCCURRENCES table must have an Agency. The Agency values will be taken from the Admin\_Agency field in the FIRE\_OCCURRENCES table; the Report\_Agency values in the FIRE\_OCCURRENCES table will not be used.
- 2 All Fire records in the FIRE\_OCCURRENCES table must have a Unit. The Unit values will be taken from the Admin\_Unit field in the FIRE\_OCCURRENCES table; the Report\_Unit values in the FIRE\_OCCURRENCES table will not be used.
- 3 All Fire records in the FIRE\_OCCURRENCES table must have a valid state and county.
  - The state and county must be valid as determined by the FIPS.
  - GIS point-in-poly analysis will be used to assign missing state and missing county information to fire records (uses the lat/long values on the record).
  - Remaining records with valid state and missing/NULL County information will be assigned a County FIPS value of '000' and a County Name of 'Missing Data' prior to loading into the FAMWEB Data Warehouse.
  - Records with missing/NULL state **and** county information will be assigned a State FIPS value of '00' and a County FIPS value of '000' prior to loading into the FAMWEB Data Warehouse. In this case, both State and County Names will be assigned a value of 'Missing Data'. State Abbreviation will be set to 'ZZ'.
- 4 There is no business relationship between Fuel Model and Fire Intensity Level – implement as two separate dimensions.

- 5 Load the absolute value for the following fields: `fff_cost`, `fire_size_max_acres`;  
`fire_size_min_acres`, `total_acres_burned`, `agency_acres`, `other_acres_inside`,  
`other_acres_outside`, and `prescribed_acres`. **NOTE:** values in the `fire_net_value_change`  
field can be negative.
- 6 Load NULL values where they occur in the `escaped_fire` and `prescribed_fire` fields; do no  
data correction on these measures prior to loading the cube. Translate 'N' to 0 and 'Y' to  
1 for aggregation purposes in cube.
- 7 Include a 'Missing Data' value for the following dimensions: `COVER_CLASS`,  
`FUEL_MODEL`, `FIRE_INTENSITY`, `GENERAL_FIRE_CAUSE`,  
`PEOPLE_FIRE_CAUSE`, `STATISTICAL_FIRE_CAUSE`, and  
`SPECIFIC_FIRE_CAUSE`.
- 8 Journal tables will be maintained in the ODS for the following tables:  
`FIRE_OCCURRENCES`, `FIRE_DAMAGE_ACRES`, `FIRE_RESOURCES_USED`, and  
`FIRE_SPECIAL_CODES`.
- 9 Units are not common between FIRESTAT and Situation Report (SIT)/209. In the ODS,  
rename FIRESTAT UNIT table to `REGION_FOREST`. Add new column  
(Region\_Forest) as concatenation of Unit and Unit Name, separated by ' - '.
- 10 For each ODS and Fire cube update, check for deleted records in the source  
`FIRE_OCCURRENCES` table and remove them, (and their associated child records) if  
found.
- 11 Include a column for use in determining the number of fires in both the ODS and the fire  
cube.
- 12 Include columns for the Month and Day Names in `FIRE_OCCURRENCES` based on  
`DISCOVERY`.
- 13 Include only "Completed" `FIRE_OCCURRENCES` in the ODS.  
Per email received from Brad on 01/22/2008, the decision was made to load all  
`FIRE_OCCURRENCES` regardless of status in the ODS.
- 14 Add an `FS_REGION` table. Set `FIRE_OCCURRENCES.FS_REGION_NUM` to first  
two characters of the `FIRE_OCCURRENCES.ADMIN_UNIT`.
- 15 The decision was made during the 11/1/2005 call with the FS that the *# of fire days* will  
be calculated as ignition or discovery date (whichever is not NULL) minus fire out,  
strategy met, attack or discovery dates (the first not NULL field in this list). If all fields  
(other than discovery) are NULL, the number of fire days will be 1.  
It was decided at the June 30, 2009 JAD to remove this column.
- 16 `Weather_Station` in the FIRE schema is considered obsolete. The `WIMS`  
`STATION_INFORMATION` table is used instead. There are instances in  
`FIRE_OCCURRENCES` where `REP_WX_STATION` does not exist in  
`STATION_INFORMATION`. These records will not be excluded from the ODS.
- 17 Null values in `FIRE_OCCURRENCES.FIRE_NAME` column will be replaced with  
"Missing Data" in the FIRES dimension. In addition, leading spaces in non-null  
`FIRE_NAME` values will be removed.
- 18 If `REP_WX_STATION` is less than 6 digits, include the leading zero for display  
purposes. Since this column is NUMERIC, a new VARCHAR2 column  
`STATION_ID_DISPLAY` needs to be created to do this. This new column will be used  
in all KCFAST output per email by customer on 01/16/2007.  
At the JAD session on 06/17/2009, the decision was made to rename KCFAST to  
Fire and Weather Extracts.
- 19 Ensure all yes/no columns are translated to "Yes" and "No" in the  
`FIRE_OCCURRENCES` table. Maintain a separate `FIRE_OCCURRENCES_COUNTS`  
table to translate all yes/no columns to 1/0.

- As of 9/1/2009, this object is TBD and has been hidden from the Query Tool.
- 20 Per the Planning Meeting held in September 2009, include Fire Occurrences records in the new INTERAGENCY\_FIRE\_OCCURRENCES object.
  - 21 Per the Planning Meeting held in June 2010:
    - a. Exclude all FIRESTAT source records where PRESCRIBED\_FIRE = Y and ESCAPED\_FIRE = N.
    - b. Add a VALIDATION\_ERROR column to Fire Occurrences and Fire Occurrences Journal to store output of the validate\_fo procedure.
    - c. Decode Statistical Human Caused as follows: ‘N’ to ‘Lightning’ and ‘Y’ to ‘Human Caused’.
    - d. Decode description column corresponding to Ownership Origin (i.e., Protection Descr) as follows: 1 to ‘1 – National Forest’; 2 to ‘2 – State and Private inside NF body’; 3 to ‘3 – Outside National Forest’; 4 to ‘4 – Other Federal Land inside NF body’.
    - e. Decode description column corresponding to Init Suppr Strategy (i.e., Init Suppr Strategy Desc) and DISCOVER\_YEAR range as follows:

DISCOVER_YEAR	INIT_SUPPR_STRATEGY	INIT_SUPPR_STRATEGY_DESC
Prior to 1970	All	‘Assumed Suppression (1911-1969)’
1970 to 1982	All	‘Unknown (1970-1982)’
1983 to 1998	Blank	‘Unknown (1983 – present)’
	1	‘1 – Confine (1983-1998)’
	2	‘2 – Contain (1983-1998)’
	3	‘3 – Control (1983-1998)’
1999 to Present	Blank	‘Unknown (1983 – present)’
	1	‘Suppression’
	2	‘Wildfire Fire Use’
	3	‘Escaped Prescribed Fire’

Issues and Mitigations

- 1 What status dates (e.g., last\_change\_date, submitted\_date, record\_entry\_date from the fire\_occurrence table) need to be included in the dimensional (Online Analytical Processing (OLAP)) analyses and how?
- 2 Viewing data in the cube at the individual fire level causes many empty fields to display because of the sparsity of the data across all dimensions. Therefore, while the cube data will be loaded at the individual fire level, drill down to this level may be disabled in all Multidimensional OLAP (MOLAP) reports.
- 3 FIRE\_OCCURRENCES.TOPO\_LANDFORM\_ORIGIN values do not match up with the lookup table TOPOGRAPHIC\_LANDFORMS, so this lookup table is not used in the ODS.

**NASF**

Business Rules

- 1 The STATE\_FIRE\_OCCURRENCES table is based on NASF State Fire Occurrences Comma Separated Values (CSV) data and is loaded using SQL\*Loader. The CSV data represents a subset of the full NASF database.
- 2 The state fire occurrences data in the warehouse will be refreshed quarterly on the dates of Jan 1, April 1, July 1 and October 1 at 10:00 PM EST.

- 3 The CSV file must have the following columns: FIRE\_ID, FIRE\_DATE, FIRE\_YEAR, NASF\_REGION, STATE, STATE\_FIPS, COUNTY, COUNTY\_FIPS, DISTRICT, LATITUDE, LONGITUDE, DATUM, CAUSE\_CODE, CAUSE\_CODE\_DESCRIPTION, SIZE\_CLASS\_CODE, SIZE\_CLASS\_DESCRIPTION, OWNERSHIPCODE, OWNERSHIP\_DESCRIPTION, HOMES\_THREATENED, HOMES\_LOST, OTHER\_STRUCTURES\_THREATENED, OTHER\_STRUCTURES\_LOST, NUMBER\_OF\_INJURIES, NUMBER\_OF\_FATALITIES, TOTAL\_ACRES\_BURNED, NUMBER\_OF\_FIRES.
  - For Fire Program Analysis (FPA) processing requirements, add the following columns to the data load: FIRE\_NAME, DISCOVERYDATE, DISCOVERYTIME, CONTAINEDDATE, CONTAINEDTIME, REPORTAGENCY, and REPORTEDTIME.
- 4 Include columns for the Month of Year, Day of Month, Week of Year, Month Name, and Day Name in STATE\_FIRE\_OCCURRENCES based on FIRE\_DATE.
- 5 Include ST\_CNTY\_FIPS\_CODE as concatenation of STATE\_FIPS and COUNTY\_FIPS columns.
- 6 CAUSE CODE does not match up with FIRESTAT. Do not validate against FIRESTAT.
- 7 The ODS will only maintain the most recent file data load. Delete checks are not required.
- 8 Include a column for use in determining the number of Fires in STATE\_FIRE\_OCCURRENCES.
- 9 Per the Planning Meeting held in September 2009, include State Fire Occurrences records in the new INTERAGENCY\_FIRE\_OCCURRENCES object.

## NFIRS

### Business Rules

- 1 The WILDLANDS\_NFIRS table is based on NFIRS CSV data and is loaded using SQL\*Loader. The CSV data represents a subset of the NFIRS data pertaining specifically to the Wildlands dataset.
- 2 The Wildlands NFIRS data in the warehouse will be refreshed annually.
- 3 Include columns for the Month of Year, Day of Month, Week of Year, Month Name, and Day Name in NFIRS based on INC\_DATE.
- 4 Include a column for use in determining the number of Fires in WILDLANDS\_NFIRS.

## BIA

### Business Rules

- 1 The BIA\_FIRE\_OCCURRENCES table is based on the BIA Excel “Big File” provided via CD for Wildland Fire Management Information (WFMI) data. This file is converted to a CSV file and loaded using SQL\*Loader.
- 2 Load lookup data as .REF tables into STAGING and denormalize into BIA\_FIRE\_OCCURRENCES.
- 3 Per the Planning Meeting held in September 2009, include the BIA WFMI records in the new INTERAGENCY\_FIRE\_OCCURRENCES object.
- 4 The BIA WFMI data in the warehouse will be refreshed annually.

## BLM

- 1 The BLM\_FIRE\_OCCURRENCES table is based on the BLM Excel “Big File” provided via CD for Wildland Fire Management Information (WFMI) data. This file is converted to a CSV file and loaded using SQL\*Loader.
- 2 Load lookup data as .REF tables into STAGING and denormalize into BLM\_FIRE\_OCCURRENCES.
- 3 Per the Planning Meeting held in September 2009, include the BLM WFMI records in the new INTERAGENCY\_FIRE\_OCCURRENCES object.
- 4 The BLM WFMI data in the warehouse will be refreshed annually.

## BOR

- 1 The BOR\_FIRE\_OCCURRENCES table is based on the BOR Excel “Big File” provided via CD for Wildland Fire Management Information (WFMI) data. This file is converted to a CSV file and loaded using SQL\*Loader.
- 2 Load lookup data as .REF tables into STAGING and denormalize into BOR\_FIRE\_OCCURRENCES.
- 3 Per the Planning Meeting held in September 2009, include the BOR WFMI records in the new INTERAGENCY\_FIRE\_OCCURRENCES object.
- 4 The BOR WFMI data in the warehouse will be refreshed annually.

## FWS

- 1 The FWS\_FIRE\_OCCURRENCES table is based on the FWS PCHA file provided by the Forest Service. This file is converted to a CSV file and loaded using SQL\*Loader.
- 2 Per the Planning Meeting held in September 2009, include the FWS WFMI records in the new INTERAGENCY\_FIRE\_OCCURRENCES object.
- 3 The FWS WFMI data in the warehouse will be refreshed annually.

## NPS

- 1 The NPS\_FIRE\_OCCURRENCES table is based on the NPS Excel “Big File” provided via CD for Wildland Fire Management Information (WFMI) data. This file is converted to a CSV file and loaded using SQL\*Loader.
- 2 Load lookup data as .REF tables into STAGING and denormalize into NPS\_FIRE\_OCCURRENCES.
- 3 Per the Planning Meeting held in September 2009, include the NPS WFMI records in the new INTERAGENCY\_FIRE\_OCCURRENCES object.
- 4 The NPS WFMI data in the warehouse will be refreshed annually.

## Interagency Fire Occurrences

- 1 The INTERAGENCY\_FIRE\_OCCURRENCES table is a collection of all data from the following tables: BIA\_FIRE\_OCCURRENCES, BLM\_FIRE\_OCCURRENCES, BOR\_FIRE\_OCCURRENCES, FWS\_FIRE\_OCCURRENCES, FIRE\_OCCURRENCES, NPS\_FIRE\_OCCURRENCES, and STATE\_FIRE\_OCCURRENCES.
- 2 The columns used in the INTERAGENCY\_FIRE\_OCCURRENCES are based on a subset of the approved elements in the NWCG standard.
- 3 Duplicates are allowed in the data. Add a new IFO\_ID as the new primary key as the combination of the source system and the FIRE\_ID. For example, for BIA\_FIRE\_OCCURRENCES it would be formatted as 'BIA-||FIRE\_ID.

- 4 Include a SOURCE\_SYSTEM column to include the source system of the given row (e.g., BIA).
- 5 The Interagency fire occurrences data in the warehouse will be refreshed based on the refresh schedule of the underlying tables (i.e., daily for fire occurrences data, quarterly for state fire occurrences data, and annually for the WFMI data).

## FPA

### Business Rules

- 1 The FIRE\_PROGRAM\_ANALYSIS table is the collection of submitted records from the following source systems: FIRESTAT, NASF, NFIRS, Fish and Wildlife Service (FWS), and Wildland Fire Management Information (WFMI).
- 2 The Fire Program Analysis data in the warehouse will be refreshed annually.

## Fire/Weather

### Business Rules

- 1 Include appropriate FIRE/WEATHER objects to combine FIRE\_OCCURRENCES and DAILY\_OBSERVATIONS data creating the following objects:
  - Daily Observations at Fire Discovery.  
This object was deemed unnecessary during the meeting in Boise on 11/15/2006.
  - Daily Observations for Fire Duration.  
This object was deemed unnecessary during the conference call with Brad on 04/02/2008.
- 2 Include appropriate FIRE/WEATHER objects to combine FIRE\_OCCURRENCES and HOURLY\_OBSERVATIONS data creating the following objects:
  - Hourly Observations at Fire Discovery.  
This object was deemed unnecessary during the meeting in Boise on 11/15/2006.
  - Hourly Observations for Fire Duration.  
This object was deemed unnecessary during the conference call with Brad on 04/02/2008.

## SIT/209

### Business Rules

- 1 Only incidents and associated child records from the source system where the APPROVED\_BY field is not NULL will be loaded in the FAMWEB Data Warehouse.  
Decision made at the JAD session on 01/24/2006 to only load approved IMSR\_209\_INCIDENTS where the year component of REPORT\_DATE is greater than or equal to '1999'.
- 2 No delete checks required on SIT 209 ODS data (use update/insert).
- 3 For all tables where there is a year component, only load data where the year is greater than or equal to '1999'.
- 4 SPECIAL\_INTEREST\_UNITS and IMSR\_SELECTED\_INCIDENTS tables **will not** be included in the ODS.
- 5 Decision was made at the JAD session on 01/24/2006 to not include IMSR\_NFM\_INCIDENTS table in the ODS.
- 6 Units are not common between FIRESTAT and SIT/209. In the ODS, rename SIT/209 UNITS table to SIT\_209\_UNITS.
- 7 Denormalize SPECIAL\_INTEREST\_AREAS into DISPATCHES and SIT\_209\_UNITS based on the Office\_Level.

- 8 Add new column (UState\_UnitID) to SIT\_209\_UNITS as concatenation of Unit\_State and Unit\_ID, separated by ' - '. Add new column to all SIT\_209\_UNITS child tables.
- 9 Include a "most recent" flag for a given IMSR\_209\_Incident based on latest Report\_Date and Hour. Add this flag to all IMSR\_209\_Incident child tables.
- 10 Include a "most recent" flag for UNIT\_RESOURCES, UNIT\_FIRE\_STATS, and UNIT\_FIRE\_STATS\_YTD based on latest RDATE, UDATE, and YDATE respectively.
- 11 Include a "most recent" flag for PLANNED\_IGNITIONS based on latest RDATE.
- 12 Include a Suppression\_Costs column in IMSR\_209\_Incidents. The contents of the new column should be the value of EST\_FINAL\_COSTS if that column is not NULL. Otherwise, the contents of the new column should be the value of COSTS\_TO\_DATE.
- 13 Include a column for use in determining the number of IMSR\_209\_Incidents in the ODS.
- 14 Merge Dispatches and Daily Dispatches into one object called Dispatch Office Information. Only load rows where DISPATCHES.GA\_SEQ <> 0 (i.e., National Interagency Fire Center).
- 15 All state fields in all tables must be valid as determined by the FIPS. County will not be validated.
- 16 Since IMSR\_209\_INCIDENTS.OWNERSHIP\_STATE is an optional column, do not exclude rows where this is null. But where it is populated, validate against FIPS.
- 17 PLANNED\_IGNITIONS.VOR column have some values with ^ and #.  
 Received email clarification from Dan Erwin on 11/08/2005. VOR is a combination of bearing, distance, and base values. The caret character "" separates bearing and distance and the pound sign character "" separates the distance from the base. The decision was made to divide the VOR column into its three individual component columns (i.e., BEARING, DISTANCE, and BASE).
- 18 Use the LOOKUPS table to denormalize the following reference codes in the ODS:
- IMSR\_209\_INCIDENTS.AREA\_MEASUREMENT (LOOKUPS.LUCODE = 'AR')
  - IMSR\_209\_INCIDENTS.CAUSE (LOOKUPS.LUCODE = 'CA')
  - IMSR\_209\_INCIDENTS.TYPE\_INC (LOOKUPS.LUCODE = 'ET')
  - IMSR\_209\_INCIDENTS.PRIMARY\_FUEL\_MODEL (LOOKUPS.LUCODE = 'FM')
  - IMSR\_209\_INCIDENTS.LINE\_MEASUREMENT (LOOKUPS.LUCODE = 'LM')
  - IMSR\_209\_INCIDENT\_STRUCTURES.STRUCTURE\_TYPE (LOOKUPS.LUCODE = 'ST')
- 19 Include columns for the Year, Month and Day Names in:
- IMSR\_209\_INCIDENT\_STRUCTURES based on IM\_REPORT\_DATE
  - IMSR\_209\_INCIDENTS based on REPORT\_DATE
  - IMSR\_209\_INCIDENT\_RESOURCES based on IM\_REPORT\_DATE
  - IMSR\_209\_INCIDENT\_SUB\_AREA based on IM\_REPORT\_DATE
- 20 Include standard Geographic Area Coordination Center (GACC) codes and names in DISPATCHES and DISPATCH\_OFFICE\_INFO from NWCG (<http://www.nwcg.gov/teams/pmo/products/standards.htm>), dated 02/16/2006 as shown below.

Geographic Area		Geographic Coordinating Area		Geographic Area Coordination Center	
Code	Name	Code	Name	Code	Name
NA	National	NCA	National Coordinating Area	NICC	National Interagency Coordination Center
FO	Foreign	FOA	Foreign Coordinating Area	CIFC	Canadian Interagency Forest Fire Centre
AK	Alaska	AKA	Alaska Coordinating Area	AKCC	Alaska Interagency Coordination Center
EA	Eastern Area	EAA	Eastern Coordinating Area	EACC	Eastern Area Coordination Center
GB	Great Basin	EBA	Eastern Great Basin Coordinating Area	EBCC	Eastern Great Basin Coordination Center
		WBA	Western Great Basin Coordinating Area	WBCC	Western Great Basin Coordination Center
CA	California	ONA	California Northern Operations Coordinating Area	ONCC	Northern California Area Coordination Center
		OSA	California Southern Operations Coordinating Area	OSCC	Southern California Area Coordination Center
NR	Northern Rockies	NRA	Northern Rockies Coordinating Area	NRCC	Northern Rockies Coordination Center
NW	Northwest	NWA	Northwest Coordinating Area	NWCC	Northwest Area Coordination Center
RM	Rocky Mountain	RMA	Rocky Mountain Coordinating Area	RMCC	Rocky Mountain Area Coordination Center
SA	Southern Area	SAA	Southern Coordinating Area	SACC	Southern Area Coordination Center
SW	Southwest	SWA	Southwest Coordinating Area	SWCC	Southwest Area Coordination Center

21 Decode UNIT\_FIRE\_STATS.FDANGER values as follows:

H = High

M = Medium

L = Low

Ex = Extreme

VH = Very High

22 Decode IMSR\_209\_INCIDENT.STATUS values as follows:

I = Initial

U = Update

F = Final

23 IMSR\_209\_INCIDENT\_RESOURCES – Per JAD session on 01/24/2006, it was determined that a given resource and incident type combination (e.g., SR\_CREW1 and Mass Casualty) are storing counts for other resource types (e.g., SQUAD) that currently don't have columns. The missing columns will be added to the ODS and the counts realigned according to the crosswalk provided by the Forest Service as shown below:

imsr_209_incident_resources	Earthquake	Hazardous Material	Mass Casualty	Search & Rescue	Structure Fire	Urban S&R	Wildland Fire	
IM_REPORT_DATE								
IM_HOUR								
IM_INCIDENT_NUMBER								
AG_AID								
SR_CREW_1	sr_crew_1		quint	search_dog	quint		sr_crew_1	
ST_CREW_1			medic_squad	ground_team	medic_squad		st_crew_1	
SR_CREW_2	sr_crew_2		squad	tech_team	squad		sr_crew_2	
ST_CREW_2			als_ambulance	24void2424n_team	als_ambulance		st_crew_2	
SR_HELICOPTER_1				24void24_team	salavage		sr_helicopter_1	
SR_HELICOPTER_2				mounted_team	hose_support		sr_helicopter_2	
SR_HELICOPTER_3				cave_team			sr_helicopter_3	
SR_ENGINES	sr_engines	sr_engines	sr_engines	mine_team	sr_engines	sr_engines	sr_engines	
ST_ENGINES	st_engines	st_engines	st_engines	underwater_team	st_engines	st_engines	st_engines	
SR_OVERHEAD	sr_overhead	sr_overhead	sr_overhead	sr_overhead	sr_overhead	sr_overhead	sr_overhead	
SR_DOZER				4x4_team			sr_dozer	
ST_DOZER							st_dozer	
SR_WATER_TENDER	water_tender				water_tender		sr_water_tender	
CAMP_CREW							camp_crew	
TOTAL_PERSONNEL	total_personnel	total_personnel	total_personnel	total_personnel	total_personnel		total_personnel	
FIXED_WING				fixed_wing			fixed_wing	California Resources
TRUCK_COMPANIES	truck_companies	truck_companies	truck_companies		truck_companies	truck_companies	truck_companies	
RESCUE_MEDICAL	rescue_medical	rescue_medical				rescue_medical	rescue_medical	
C215							c215	Eastern/Southern Area Resources

imsr_209_incident_resources	Earthquake	Hazardous Material	Mass Casualty	Search & Rescue	Structure Fire	Urban S&R	Wildland Fire
C415							c415
BOMBARDIER							bombardier
TRACTOR_PLOW_1							tractor_plow_1
TRACTOR_PLOW_2							tractor_plow_2
TRACTOR_PLOW_3							tractor_plow_3
TRACTOR_PLOW_4							tractor_plow_4
VANS							
HELICOPTER_TANKER							helicopter_tanker
LIGHT_AIR	light_air	light_air	light_air		light_air	light_air	light_air
HAZARD_MATERIALS		hazard_materials					
DECONTAMINATION		decontamination					
HEAVY_RESCUE	heavy_rescue		heavy_rescue		heavy_rescue	heavy_rescue	
USAR_HELICOPTER	usar_helicopter		helicopter	Helicopter	helicopter	usar_helicopter	
USAR_COMPANY	usar_company					usar_company	
USAR_CREW	usar_crew					usar_crew	
USAR_TASK_FORCE	usar_task_force					usar_task_force	
EARTHQUAKE_CREWS							

**Note:** Renamed “4x4\_Team” column referenced in table above to “Four\_by\_Four\_Team” to comply with Oracle naming conventions.

- 24 Per JAD session in 01/24/2006, add the following new calculated columns:
- IMSR\_209\_INCIDENTS:
    - SIZE\_IN\_ACRES
    - SIZE\_IN\_SQ\_MILES
    - SIZE\_IN\_HECTARES
    - REPORT\_FISCAL\_YEAR
    - COST\_PER\_ACRE
    - COST\_PER\_SQ\_MILE
    - COST\_PER\_HECTARE
    - MAXIMUM\_MGMT\_AREA
    - LINE\_TO\_BUILD\_IN\_METERS
    - LINE\_TO\_BUILD\_IN\_FEET
    - LINE\_TO\_BUILD\_IN\_MILES
    - LINE\_TO\_BUILD\_IN\_CHAINS
  - IMSR\_209\_INCIDENT\_RESOURCES:
    - REPORT\_FISCAL\_YEAR
  - IMSR\_209\_INCIDENT\_STRUCTURES:
    - REPORT\_FISCAL\_YEAR
  - IMSR\_209\_INCIDENT\_SUB\_AREA:
    - REPORT\_FISCAL\_YEAR
- 25 Decode IMSR.AGENCIES ALEVEL values as follows:
- FED = Federal
- STO = State and Other
- 26 To ensure proper hand off between the GIS Tool and Cognos reports, the business rule is to use '\*' and '[' as reserved parsing delimiters on all primary key columns. The PLANNED\_IGNITIONS.INAME column is part of the primary key, yet it is a free text field. As such, all instances of either of the above characters are being replaced with a single space.

### Issues and Mitigations

- 1 There are, at present, no measures in either the SIT or 209 data that numerically aggregate. Therefore, these data will only be in the ODS component of the warehouse. There will be no MOLAP cubes.
- 2 There are leading and trailing spaces in the source data (e.g., Incident\_Number, County, Line-to-Build). Need to 'TRIM' all CHAR/VARCHAR2 fields across all tables.

## **FEPMIS**

### Business Rules

- 1 No ODS or Warehouse implementation is required. The Cognos reports will reference denormalized views created in the source system.

## GIS

### Business Rules

- 1 GIS point-in-poly analysis will be used to assign Congressional District information to fire occurrences, weather stations, ICS-209 incidents, planned ignitions, state fire occurrences, and fire program analysis records. The Congressional District field (STCD) will not be populated in cases where the assigned state (A\_STATE) does not equal the value for the State in the source system.
- 2 GIS point-in-poly analysis will be used to assign state/county information to fire occurrences, weather stations, ICS-209 incidents, planned ignitions, state fire occurrences, and fire program analysis records.
- 3 GIS point-in-poly analysis will be used to assign the Forest Name to fire occurrences, state fire occurrences, and fire program analysis.
- 4 GIS point-in-poly analysis will be used to assign the GACC to state fire occurrences.
- 5 Geographic location for FAMWEB spatial points will be assigned from the latitude and longitude field except where latitude or longitude is NULL. NULL latitude and longitude values will be assigned latitude/longitudes through the point coordinate improvement process.

### Issues and Mitigations

- 1 Connecting to other map services from, for example: <http://fsgeodata.fs.fed.us> requires that the service output GIF files.

## General

### Business Rules

- 1 Government organization names and acronyms will be standardized using [http://www.ulib.iupui.edu/subjectareas/gov/docs\\_abbrev.html](http://www.ulib.iupui.edu/subjectareas/gov/docs_abbrev.html) as the reference source.
- 2 Include parent agency columns in the common Agency table.
- 3 Include AFFIRMS State in common States table.
- 4 Include AFFIRMS County in common Counties table.
- 5 Latitude/Longitude will be available to users in two formats: degrees, minutes, seconds, and decimal degrees. Where one does not exist in the source data, it will be calculated from the other. Longitude will be expressed as negative in the western hemisphere.
- 6 Yes/No flag fields will be translated from 'Y' to 'Yes' and 'N' to 'No'.
- 7 For code values (e.g., Cause\_Code), always show long name (e.g., Cause\_Name) in Cognos.

## Special Processing for the National IMSR Historical Tables

Special processing steps are required for the IMSR historical tables (MS-ACCESS files). This processing results in a single "one time" load of the ODS. Years processed and stored are 1999 through 2005 inclusive.

The following tables were processed:

- AGENCY\_HIST
- DAILY\_DISPATCHES\_HIST
- DISPATCHES\_HIST
- IMSR\_209\_INCIDENTS\_HIST
- IMSR\_209\_INCIDENT\_RES\_HIST

- IMSR\_209\_INCIDENT\_STRUCT\_HIST
  - IMSR\_NFM\_INCIDENTS\_HIST
  - PLANNED\_IGNITIONS\_HIST
  - SIT\_209\_UNITS\_HIST
  - UNITS\_FIRE\_STATS\_HIST
  - UNITS\_FIRE\_STATS\_YTD\_HIST
  - UNIT\_RESOURCES\_HIST
  - IMSR\_209\_INC\_SUB\_AREA\_HIST
- 1) Historical data was downloaded in ACCESS DB format from the Forest Service FTP site.
  - 2) Access tables were exported in Oracle via Open Database Connectivity (ODBC). The driver for the ODBC was an Oracle 9i driver.
  - 3) The initial tables by year were named AND STRUCTURED after the corresponding present-year tables in the famweb\_ods schema with an attachment of ‘\_<year>’ for the name.
- For Example:  
DISPATCHES DISPATCHES\_05, DISPATCHES\_04, DISPATCHES\_03. . . .

### All History Tables

RTRIM and LTRIM functions were executed against all tables (‘\_HIST’) for all columns of VARCHAR2 OR CHAR.

*Reason:* Leading and trailing blanks were discovered in the data.

### DISPATCHES\_HIST

The column DYEAR was added to this table. The year of the source of the record populates this column. After inserting data from all the yearly historical dispatches tables, there were multiple duplicates on the primary keys (unitid, dispatched, dyear). Only one unique record for these primary keys was kept in the final table. The other matching records were discarded and stored in a table containing discarded tables.

### IMSR\_209\_INCIDENTS\_HIST

For year data without hour populated (99-01), the hour field in the \_HIST TABLE was populated with ‘0000’.

1999 DATA contained primary key values (reptime, incident\_numer) that matched primary key values from 2000 data. These duplicate values were removed from the 1999 data before inserting into the master historical table. The primary key values were saved to an ASCII file. The following query was used to remove these duplicate records.

```
Delete from IMSR_INCIDENT_INFORMATIONS_99 B, where b.reptime||b.event_id =
(SELECT B.REPTIME||B.EVENT_ID FROM IMSR_209_INCIDENTS_HIST A WHERE
A.REPORT_DATE = B.REPTIME AND A.INCIDENT_NUMBER = B.EVENT_ID).
```

\*\*Hour is not included as a primary key in this instance because there is no hour indicator in the 99-01 history tables.

### COLUMN VALUE MODIFICATIONS

The values for column name APPROVED\_BY were modified for years 1999-2001. The values for this column were set to ‘Incident Informations’ at the direction of U.S. Forest Service clients.

Reason: This column does not exist in historical tables for these years. The business rules for the warehouse exclude data that does not have an "Approved\_by" value. This resulted in all data from 1999-2001 being dropped from the warehouse repository.

The following query was executed on the IMSR\_209\_INCIDENTS\_HIST TABLE TO POPULATE THE 'APPROVED\_BY' column:

```
UPDATE IMSR_209_INCIDENTS_HIST SET APPROVED_BY = 'Incident Informations'  
WHERE TO_CHAR (TO_DATE (REPORT_DATE, 'DD-MON-RR') , 'YYYY') IN  
( '1999', '2000', '2001')
```

Note: There were no '2001' year values in the '2002' data that would conflict with this statement.

Cross-walk between IMSR Historical Incidents Tables and Current IMSR Incident Table structure.

Note: IMSR\_209\_INCIDENT 2005 is identical to the source so it is not shown.

IMSR_209_INCIDENT: SOURCE	IMSR_209_INCIDENT 2004	IMSR_209_INCIDENT 2003	IMSR_209_INCIDENT 2002	IMSR_INCIDENT_INFORMATIONS 1999,2000,2001
REPORT_DATE	REPORT_DATE	REPORT_DATE	REPORT_DATE	REPCDATE
HOUR	HOUR	HOUR	HOUR	'0000'
INCIDENT_NUMBER	INCIDENT_NUMBER	INCIDENT_NUMBER	INCIDENT_NUMBER	EVENT_ID
INCIDENT_NAME	INCIDENT_NAME	INCIDENT_NAME	INCIDENT_NAME	ENAME
START_DATE	START_DATE	START_DATE	START_DATE	STARTDATE
STATUS	STATUS	STATUS	STATUS	
CAUSE	CAUSE	CAUSE	CAUSE	CAUSE
TYPE_INC	TYPE_INC	TYPE_INC	TYPE_INC	ITYPE
IC_NAME	IC_NAME	IC_NAME	IC_NAME	TEAMNAME
IMT_TYPE	IMT_TYPE	IMT_TYPE	IMT_TYPE	TEAMTYPE
INJURIES	INJURIES	INJURIES	INJURIES	
FATALITIES	FATALITIES	FATALITIES	FATALITIES	
COUNTY	COUNTY	COUNTY	COUNTY	
LATITUDE	LATITUDE	LATITUDE	LATITUDE	LATDEG +(LATMIN/60)
LONGITUDE	LONGITUDE	LONGITUDE	LONGITUDE	LONGDEG + (LONGMIN/60)
LOCATION	LOCATION	LOCATION	LOCATION	LOCATE
AREA	AREA	AREA	AREA	ACRES
AREA_MEASUREMENT	AREA_MEASUREMENT	AREA_MEASUREMENT	AREA_MEASUREMENT	'Acres'
P_CONTAIN	P_CONTAIN	P_CONTAIN	P_CONTAIN	DECODE(ITYPE,'WF',FCONTAIN,NULL)
PERCENT_MMA	PERCENT_MMA	PERCENT_MMA	PERCENT_MMA	DECODE(ITYPE, 'WF', 'P', NULL)
EXP_CONTAIN	EXP_CONTAIN	EXP_CONTAIN	EXP_CONTAIN	CDATE
LINE_TO_BUILD	LINE_TO_BUILD	LINE_TO_BUILD	LINE_TO_BUILD	

<b>IMSR_209_INCIDENT: SOURCE</b>	<b>IMSR_209_INCIDENT 2004</b>	<b>IMSR_209_INCIDENT 2003</b>	<b>IMSR_209_INCIDENT 2002</b>	<b>IMSR_INCIDENT_INFORMATIONS 1999,2000,2001</b>
COSTS_TO_DATE	COSTS_TO_DATE	COSTS_TO_DATE	COSTS_TO_DATE	ECOSTS
CONTROLLED_DATE	CONTROLLED_DATE	CONTROLLED_DATE	CONTROLLED_DATE	
EVACUATION_IN_PROGRESS	EVACUATION_IN_PROGRESS	EVACUATION_IN_PROGRESS	EVACUATION_IN_PROGRESS	
NO_EVACUATION	NO_EVACUATION	NO_EVACUATION	NO_EVACUATION	
POTENTIAL	POTENTIAL	POTENTIAL	POTENTIAL	
NO_LIKELY	NO_LIKELY	NO_LIKELY	NO_LIKELY	
FUELS	FUELS	FUELS	FUELS	
RES_THREAT	RES_THREAT	RES_THREAT	RES_THREAT	
C_WIND_SPEED	C_WIND_SPEED	C_WIND_SPEED	C_WIND_SPEED	
C_WIND_DIRECTION	C_WIND_DIRECTION	C_WIND_DIRECTION	C_WIND_DIRECTION	
C_TEMP	C_TEMP	C_TEMP	C_TEMP	
C_RH	C_RH	C_RH	C_RH	
RES_BENEFITS	RES_BENEFITS	RES_BENEFITS	RES_BENEFITS	
OBS_FIRE_BEHAVE	OBS_FIRE_BEHAVE	OBS_FIRE_BEHAVE	OBS_FIRE_BEHAVE	
SIG_EVENT	SIG_EVENT	SIG_EVENT	SIG_EVENT	
COOP_AGENCIES	COOP_AGENCIES	COOP_AGENCIES	COOP_AGENCIES	
PREPARED_BY	PREPARED_BY	PREPARED_BY	PREPARED_BY	
APPROVED_BY	APPROVED_BY	APPROVED_BY	APPROVED_BY	"Incident Informations"
SENT_TO	SENT_TO	SENT_TO	SENT_TO	
SENT_FROM	SENT_FROM	SENT_FROM	SENT_FROM	
SENT_DATE	SENT_DATE	SENT_DATE	SENT_DATE	
EST_CONTROL	EST_CONTROL	EST_CONTROL	EST_CONTROL	
EST_FINAL_AREA	EST_FINAL_AREA	EST_FINAL_AREA	EST_FINAL_AREA	
EST_FINAL_COSTS	EST_FINAL_COSTS	EST_FINAL_COSTS	EST_FINAL_COSTS	
F_WIND_SPEED	F_WIND_SPEED	F_WIND_SPEED	F_WIND_SPEED	

<b>IMSR_209_INCIDENT: SOURCE</b>	<b>IMSR_209_INCIDENT 2004</b>	<b>IMSR_209_INCIDENT 2003</b>	<b>IMSR_209_INCIDENT 2002</b>	<b>IMSR_INCIDENT_INFORMATIONS 1999,2000,2001</b>
F_WIND_DIRECTION	F_WIND_DIRECTION	F_WIND_DIRECTION	F_WIND_DIRECTION	
F_TEMP	F_TEMP	F_TEMP	F_TEMP	
F_RH	F_RH	F_RH	F_RH	
CRITICAL_RES	CRITICAL_RES	CRITICAL_RES	CRITICAL_RES	
PLANNED_ACTIONS	PLANNED_ACTIONS	PLANNED_ACTIONS	PLANNED_ACTIONS	
PROJECTED_MOVEMENT	PROJECTED_MOVEMENT	PROJECTED_MOVEMENT	PROJECTED_MOVEMENT	
MAJOR_PROBLEMS	MAJOR_PROBLEMS	MAJOR_PROBLEMS	MAJOR_PROBLEMS	
GROWTH_POTENTIAL	GROWTH_POTENTIAL	GROWTH_POTENTIAL	GROWTH_POTENTIAL	
TERRAIN	TERRAIN	TERRAIN	TERRAIN	
TARGETS_MET	TARGETS_MET	TARGETS_MET	TARGETS_MET	
DEMOBE_START	DEMOBE_START	DEMOBE_START	DEMOBE_START	
REMARKS	REMARKS	REMARKS	REMARKS	NARRATIVE
UN_USTATE	UN_USTATE	UN_USTATE	UN_USTATE	UN_USTATE
UN_UNITID	UN_UNITID	UN_UNITID	UN_UNITID	UN_UNITID
LINE_MEASUREMENT	LINE_MEASUREMENT	LINE_MEASUREMENT	LINE_MEASUREMENT	
GACC_SIG_EVENT	GACC_SIG_EVENT	GACC_SIG_EVENT	GACC_SIG_EVENT	
GACC_REMARKS	GACC_REMARKS	GACC_REMARKS	GACC_REMARKS	
GACC_OBS_FIRE_BEHAVE	GACC_OBS_FIRE_BEHAVE	GACC_OBS_FIRE_BEHAVE	GACC_OBS_FIRE_BEHAVE	
GACC_PLANNED_ACTIONS	GACC_PLANNED_ACTIONS	GACC_PLANNED_ACTIONS	GACC_PLANNED_ACTIONS	
GACC_PRIORITY	GACC_PRIORITY	GACC_PRIORITY	GACC_PRIORITY	GPRIORITY
DISPATCH_PRIORITY	DISPATCH_PRIORITY	DISPATCH_PRIORITY	DISPATCH_PRIORITY	DPRIORITY
ACTIVE	ACTIVE	ACTIVE	ACTIVE	ACTIVE
INJURIES_TO_DATE	INJURIES_TO_DATE	INJURIES_TO_DATE		
COMMUNITIES_THREATENED_12	COMMUNITIES_THREATENED_12	COMMUNITIES_THREATENED_12		
COMMUNITIES_THREATENED_24	COMMUNITIES_THREATENED_24	COMMUNITIES_THREATENED_24		

<b>IMSR_209_INCIDENT: SOURCE</b>	<b>IMSR_209_INCIDENT 2004</b>	<b>IMSR_209_INCIDENT 2003</b>	<b>IMSR_209_INCIDENT 2002</b>	<b>IMSR_INCIDENT_INFORMATIONS 1999,2000,2001</b>
COMMUNITIES_THREATENED_48	COMMUNITIES_THREATENED_48	COMMUNITIES_THREATENED_48		
COMMUNITIES_THREATENED_72	COMMUNITIES_THREATENED_72	COMMUNITIES_THREATENED_72		
PRIMARY_FUEL_MODEL	PRIMARY_FUEL_MODEL	PRIMARY_FUEL_MODEL		
LAST_EDIT				
APPROVED_DATE				
OWNERSHIP_STATE	OWNERSHIP_STATE			
OWNERSHIP_UNITID	OWNERSHIP_UNITID			
				PERSONNEL
				EDAMAGE
				NEWACRES

**This worksheet includes:**

- 1.) Fields in a source tables that are not included in the corresponding historical table by year
- 2.) Historical lookup tables that do not exist by year (*Denoted in Bold Italic*).
- 3.) Historical tables that contain a different structure or mismatched columns and cross-walked with the corresponding source table (*Denoted in Bold Italic*).

<b>Source Lookup Tables</b>	<b>Missing Columns/Issues</b>					
	<b>2004</b>	<b>2003</b>	<b>2002</b>	<b>2001</b>	<b>2000</b>	<b>1999</b>
<b>IMSR_DISPATCHES</b>		GA_SEQ GNAME	GA_SEQ GNAME	GA_SEQ GNAME	GA_SEQ GNAME	GA_SEQ GNAME

<b>IMSR_INCIDENT_RESOURCES</b>				LIGHT_AIR HAZARD_MATERIALS DECONTAMINATION HEAVY_RESCUE USAR_HELICOPTER USAR_COMPANY USAR_CREW USAR_TASK_FORCE EARTHQUAKE_CREWS	<i>SEE WORKSHEET "LOOKUP-CROSSWALK" FOR TABLE CROSSWALK</i>	<i>SEE WORKSHEET "LOOKUP-CROSSWALK" FOR TABLE CROSSWALK</i>
<b>IMSR_INCIDENT_STRUCTURES</b>			Damaged	Damaged	<i>SEE WORKSHEET "LOOKUP-CROSSWALK" FOR TABLE CROSSWALK</i>	<i>SEE WORKSHEET "LOOKUP-CROSSWALK" FOR TABLE CROSSWALK</i>
<b>IMSR_PLANNED_IGNITIONS</b>			LATSEC LONGSEC	LATSEC LONGSEC	LATSEC LONGSEC	LATSEC LONGSEC
<b>IMSR_UNITS</b>						DAILY_STATS
<b>IMSR_NFM_INCIDENTS -04</b>	GNAME GA_SEQ	GNAME GA_SEQ	GNAME GA_SEQ	<i>TABLE DOES NOT EXIST</i>	<i>TABLE DOES NOT EXIST</i>	<i>TABLE DOES NOT EXIST</i>
<b>IMSR_SELECT_INCIDENTS -04</b>	GNAME GA_SEQ	GNAME GA_SEQ	GNAME GA_SEQ	<i>TABLE DOES NOT EXIST</i>	<i>TABLE DOES NOT EXIST</i>	<i>TABLE DOES NOT EXIST</i>

**Proposed table cross-walk for columns in the historical lookup table that do not match columns in the corresponding source table.**

<b>Cross-Walk INCIDENT_RESOURCES</b>	
<b>Source</b>	<b>1999/2000</b>
IM_REPORT_DATE	II_REPDATE
IM_HOUR	0000'
IM_INCIDENT_NUMBER	II_EVENT_ID
AG_AID	AG_AID
SR_CREW_1	CRW1
ST_CREW_1	CRW1
SR_CREW_2	CRW2
ST_CREW_2	
SR_HELICOPTER_1	HEL1
SR_HELICOPTER_2	HEL2
SR_HELICOPTER_3	HEL3
SR_ENGINES	ENGS
ST_ENGINES	
SR_OVERHEAD	OVHD
SR_DOZER	
ST_DOZER	
SR_WATER_TENDER	

<b>Cross-Walk INCIDENT_STRUCTURES</b>	
IM_REPORT_DATE	II_REPDATE
THREATENED	TCOUNT
IM_HOUR	0000'
IM_INCIDENT_NUMBER	II_EVENT_ID
STRUCTURE_TYPE	STYPE
STRUCTURE_TYPE_FULL_NAME	
DESTROYED	DCOUNT
DAMAGED	

<b>Cross-Walk INCIDENT_RESOURCES</b>	
CAMP_CREW	
TOTAL_PERSONNEL	
FIXED_WING	
TRUCK_COMPANIES	
RESCUE_MEDICAL	
C215	
C415	
BOMBARDIER	
TRACTOR_PLOW_1	
TRACTOR_PLOW_2	
TRACTOR_PLOW_3	
TRACTOR_PLOW_4	
VANS	
HELICOPTER_TANKER	
LIGHT_AIR	
HAZARD_MATERIALS	
DECONTAMINATION	
HEAVY_RESCUE	
USAR_HELICOPTER	
USAR_COMPANY	
USAR_CREW	

<b>Cross-Walk INCIDENT_STRUCTURES</b>
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<b>Cross-Walk INCIDENT_RESOURCES</b>	
USAR_TASK_FORCE	
EARTHQUAKE_CREWS	

<b>Cross-Walk INCIDENT_STRUCTURES</b>
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