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## 1. INTRODUCTION

With the Launch of NOAA-17 (NOAA-M) on June 24, 2002, the Information Processing Division of the Office of Satellite Data Processing and Distribution in NESDIS began processing the data from the new satellite as soon as the first instrument was turned on. The NOAA 17 system began to be set up and tested months earlier and the testing will continue until all instruments are turned on and the system is declared operational.

This poster indicates the steps required to bring up an additional satellite processing system when a new satellite in a series is launched. Although based on the writer's experience in bringing up a system for ATOVS (Advanced TIROS-N Operational Vertical Sounder), these steps were generalized so that the poster itself could serve as a template for others who are attempting to set up a satellite processing system.

## 2. PRE-LAUNCH

### 2.1 Requirements:

When setting up a system, one of the most important considerations is what is available for computer resources such as disk space. If you are setting up another satellite in a series, you can use the first system as a baseline for computing what resources are required for the new system.

Considerations when determining space and resource requirements include: Do you need a separate partition for the new system? Do you need all new software for the new system or can the new satellite processing use existing software which feed in satellite-specific information? How do you keep files shared between systems from being stepped on by a second or third system during processing? When sharing information how do you keep the systems unique so that the right files are used with the specified system?

### 2.2 Naming Conventions:

Keep in mind that files need to be consistently named over the total number of satellites. That means that if satellite one has a file named PRD.ATOV.NK.whatever; then the new system should have comparably named files such as PRD.ATOV.NM.whatever. Remember that the people who monitor and support the software are often not the same people who wrote it. Make sure that

your naming conventions cover several satellites and make finding related files from various systems easy.

### 2.3 Code Setup:

Once you have found your space and the computer(s) that the system(s) will be set up on, you need to begin getting the code ready for the new satellite data. In our system, we have jobs that run on each orbit, others that run once a day, once a week, or once a month.

Also, make sure that any code that sends products to the customer is deactivated.

#### 2.3.1 Orbital Jobs

First identify all software and data files necessary to process orbitally. Next determine whether any of the datafiles needed for orbital processing are unique to the new satellite or can work for all satellites of this series. Once you have identified all the software, edit all necessary scripts and programs and set up for testing.

#### 2.3.2 Daily Jobs

Follow the procedures you developed for the Orbital jobs and use them to identify and begin testing of the Daily jobs.

#### 2.3.3 Weekly Jobs

Follow your established procedures to identify and begin testing of the Weekly jobs.

#### 2.3.4 Monthly Jobs

Follow your established procedures to identify and begin testing of the Monthly jobs.

### 2.4 Test Data Sets:

Obviously, Pre-Launch has no orbitally produced datasets available for testing the code. (There were some thermal vac data sets but these could not fully test the parameters of the code.) In our case, we used the three data sets from the NOAA 15 satellite to test all code. The data sets had to be run through some code to change all satellite-specific references to N15 or NK to N17 and NM. Once the software was in place to transform the NK data sets for use as NM datasets, the system could be tested end to end.

### 2.5 Monitoring Software

At this point, monitoring software was turned on. This software allows us to check whether retrievals were being made and whether any abends or problems with

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the software were reported.

Below is an example of one of the reports generated by our monitoring software. This report lists the satellite, orbit number, time of the orbit (local) and how many retrievals were produced for each type of product from that orbit.

sat	orbnum	local time	SP	ncep	SATEM/SARAD	wmo_bufnr	archive
NM	B0131516	9/25 07:05	3698	1174	461	3672	13661
NM	B0131315	9/25 06:21	3641	1177	467	3615	13857
NM	B0131617	9/25 05:49	2958	952	377	2935	11810
NM	B0131214	9/25 00:41	3122	1044	412	3098	12539
NM	B0131213	9/24 23:26	2774	940	375	2754	10659
NM	B0131112	9/24 22:55	3186	1043	408	3165	10751

### 3. LAUNCH

Once the satellite launches various instruments and channels are turned on as the satellite is checked out.

#### 3.1 *Testing with Satellite Data:*

Not all our instruments were turned on immediately. Some instruments were turned on with some channels while the spacecraft was being tested. Once we had a near complete data set for one of the instruments being ingested, the reconfigured data set from the existing satellite was turned off, and the new 'official' data set was used in end-to-end testing. This continued as each of our three data sets (HIRS, GHRR, and AMSU-B) were checked out.

Once all three data sets were available only the actual satellite data was used to continue testing the software set up and product production.

At this point all monitoring software was enabled and the new system was monitored as if it were in production. This allowed the science team to be able to closely check the input data files and the output product files for quality.

### 4. POST-LAUNCH

#### 4.1 *Science Testing:*

Now that the satellite data was being processed, the science team was able to check various parts of the processing for quality.

#### 4.2 *Fine-Tuning the Input Data Sets:*

The science team worked closely with the setup team to fine-tune coefficients and other satellite-specific information needed to produce products.

### 5. GOING PRODUCTION

#### 5.1 *Renaming Files for Production:*

The files; which up until now had been identified as development files and were thus on a lower processing status than production, were all renamed as production files. The script or job names were also changed at the same time to flag them for operations monitoring.

#### 5.2 *Send Products to the Customers:*

While testing, the products were being made, but all code that sent products to the customers had been disabled. The code to send the products to customers was turned on when the system became operational.

#### 5.3 *Monitoring*

Monitoring continues to ensure that no unintended side affects occurred when the files were renamed or the transfer data code enabled.

### 6. CONCLUSIONS

No two launches are the same. Even though the software may be the same as used for other satellites in the series and therefore has been fully tested prior to the bring-up of the current satellite, there are always going to be problems and glitches that require changes in software or procedures. Always give yourself plenty of time to work out these problems prior to the launch and definitely between launch and going operational for the customers.