EOD Scheduler modification:

This modification will allow running of EOD through the JOB Scheduler. The ability to run Jobs on demand or restart a job from a specific TASK line has been added to the system to aid in restarting EOD processing in case the processing stops or the system goes down in the middle of the process.

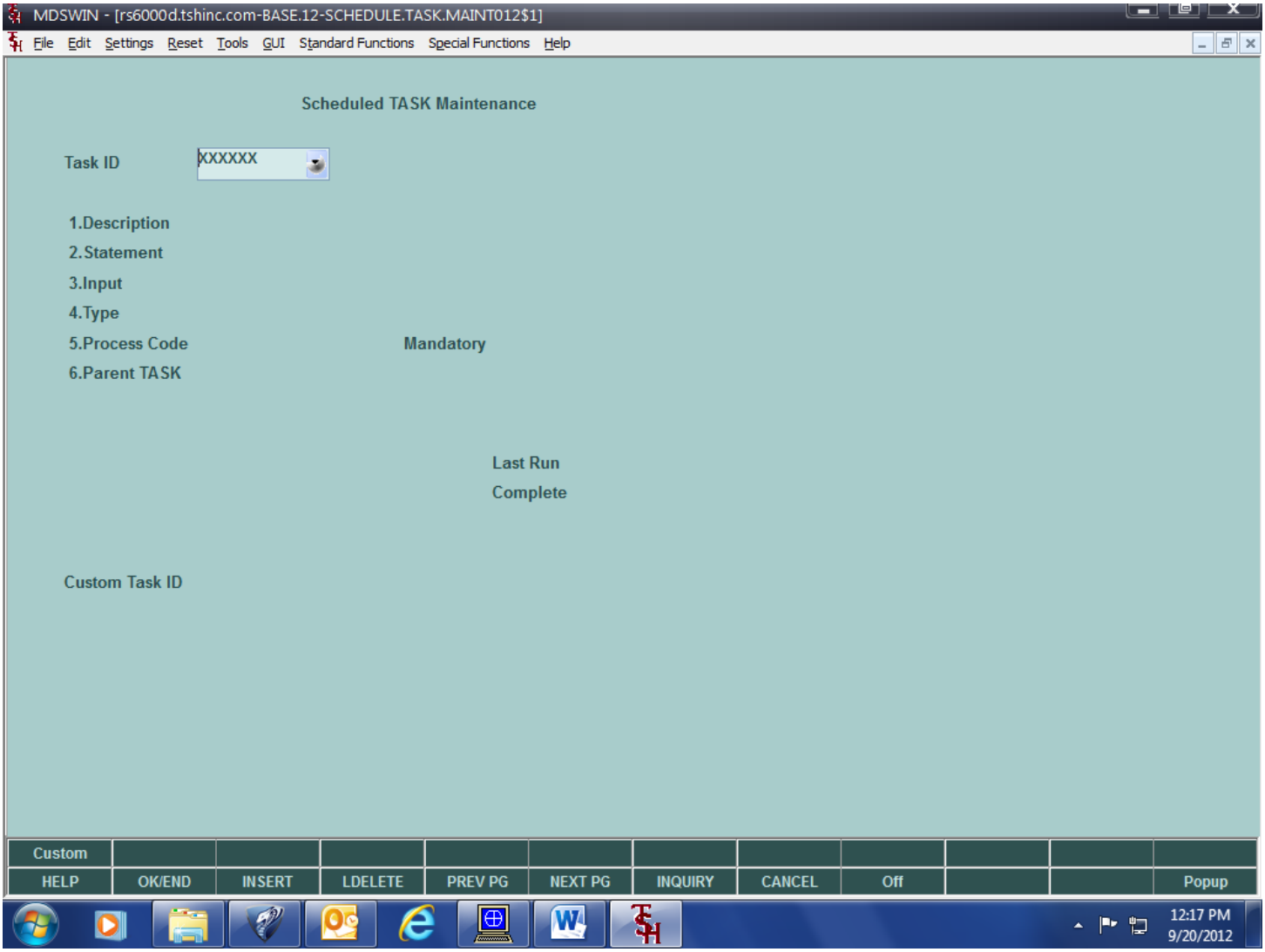
Rather than having one EOD PROK that runs all the processing, the programs have been divided into individual PROKs that are setup as TASKS in the JOB Scheduler in an EOD Job. Each TASK is setup in a new TASK maintenance program with a process code of EOD. Each task is coded with a requirement flag that will be used in Job maintenance to ensure that required BASE tasks are not left out of the Job. Optional tasks may be added or removed for a custom EOD job, but required tasks will automatically be added and cannot be deleted from a Job with the process code EOD.

Job scheduler creates COMO's for each task and updates the JOB record with the status of each task run as it completes. This can be viewed in the JOB maintenance. NOTE: if you are in Scheduler Job Maintenance, you have the record LOCKED! This will hold up the Scheduler if you just sit in the record. The Scheduler runs its job and task drivers as phantoms so &PH& records are also created.

Run Now and Restart functions have been added to the Scheduler. These functions create a copy of the JOB in EXEC.MAST as Non-active Jobs so the scheduler will not try to execute them in its normal functioning. When checking the status of a restart or immediate Job, use the lookup and find the one with _IMMED or _RESTART appended to your Job name to view the status of the Job.

Note that the scheduler menu has been moved. It is under Utilities, MDS Settings and Options, MDS Job Scheduler menu.

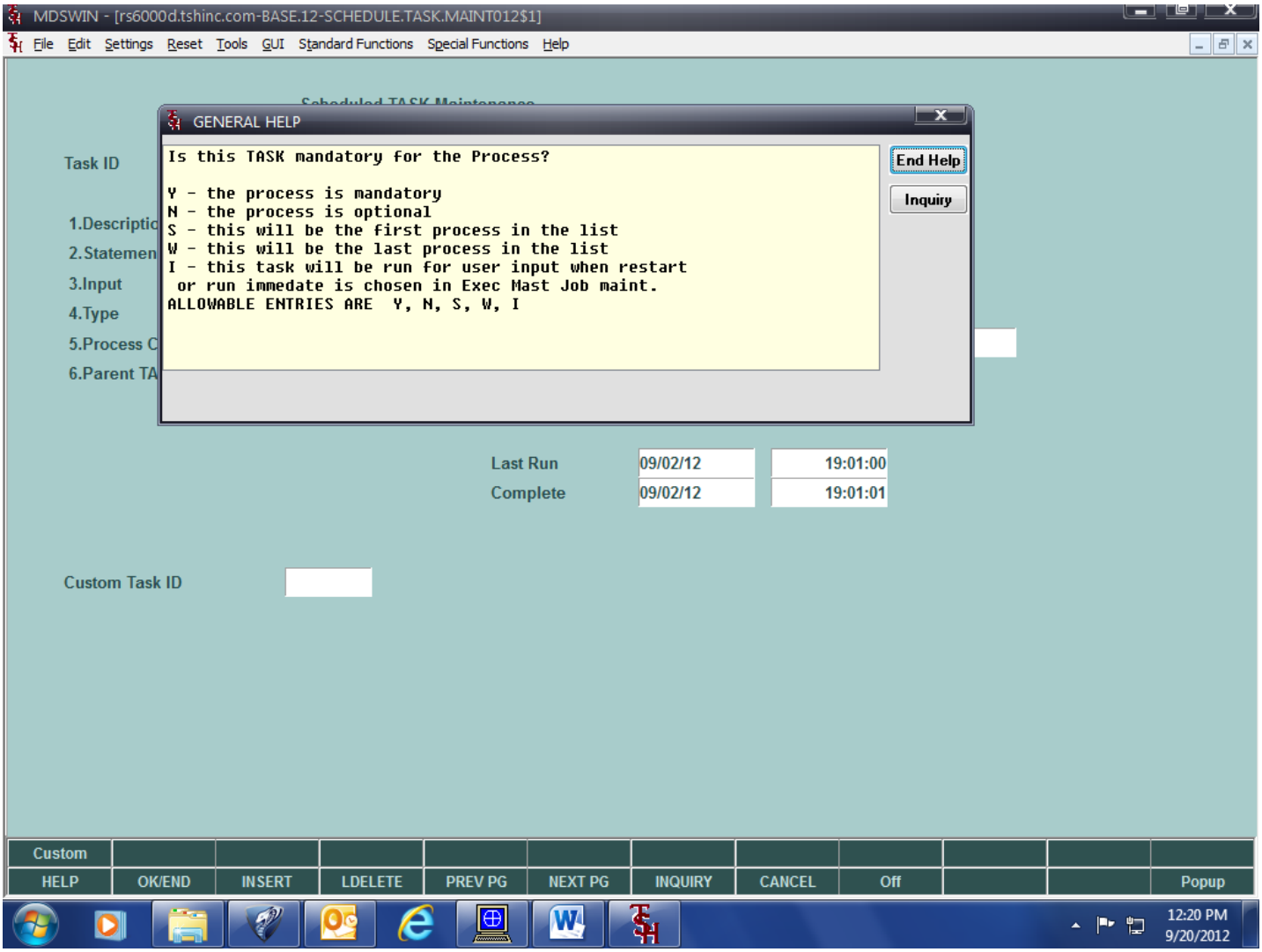
TASK MAINTENANCE:



Task numbers are assigned, enter NEXT for next available number.

1. Enter task description. Displayed in Lookups.
2. Enter statement or PROK name (eg: RUN MDS.BP FIX.ORDER or PDAILY.CALLS.LIST)
3. Enter Data input to program if any.
4. Enter E for execute or P for PROK.
5. Enter Process code. This will group tasks together for Job maintenance. Mandatory code (described below).
6. Parent TASK. This is a task that MUST run first. For example, Invoice update MUST run before the Invoice Print, as it creates the list used for the Print selection.

Last Run and Complete are the time and date the task was last started and completed successfully from any Job. The EOD PROKs run a program that updates the tasks. To use this feature in other Jobs, setup each task as a PROK and run the program at the start of the PROK and end of the PROK. (See any of the EOD PROKs for examples.)
Custom Task ID will display Custom task number (if any) created from this TASK.



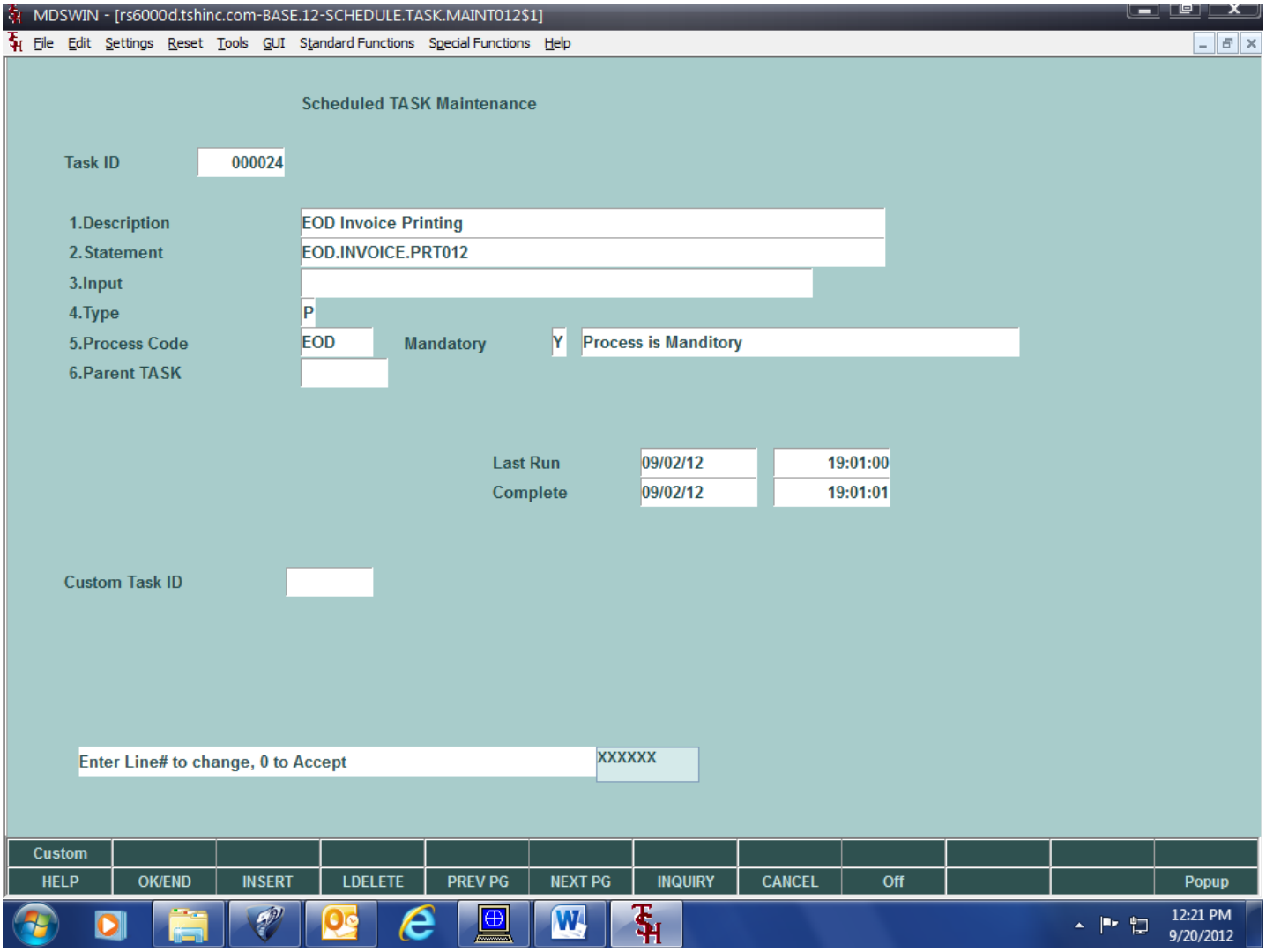
Mandatory processes are required in any Job setup using the Process code entered and will be loaded automatically into the Job.

Startup processes are mandatory and are run at the beginning of the task list.

Wrapup processes are mandatory and are run at the end of the task list.

Immeditate process(es) are run only when RESTART or IMMEDIATE processing is run. In EOD this allows you to setup the run parameters manually rather than take the default settings. For instance, a daily backup flag is set for the standard run, you may want to shut it off for a restart or immediate run. Also you can set a few optional parameters and the invoice date.

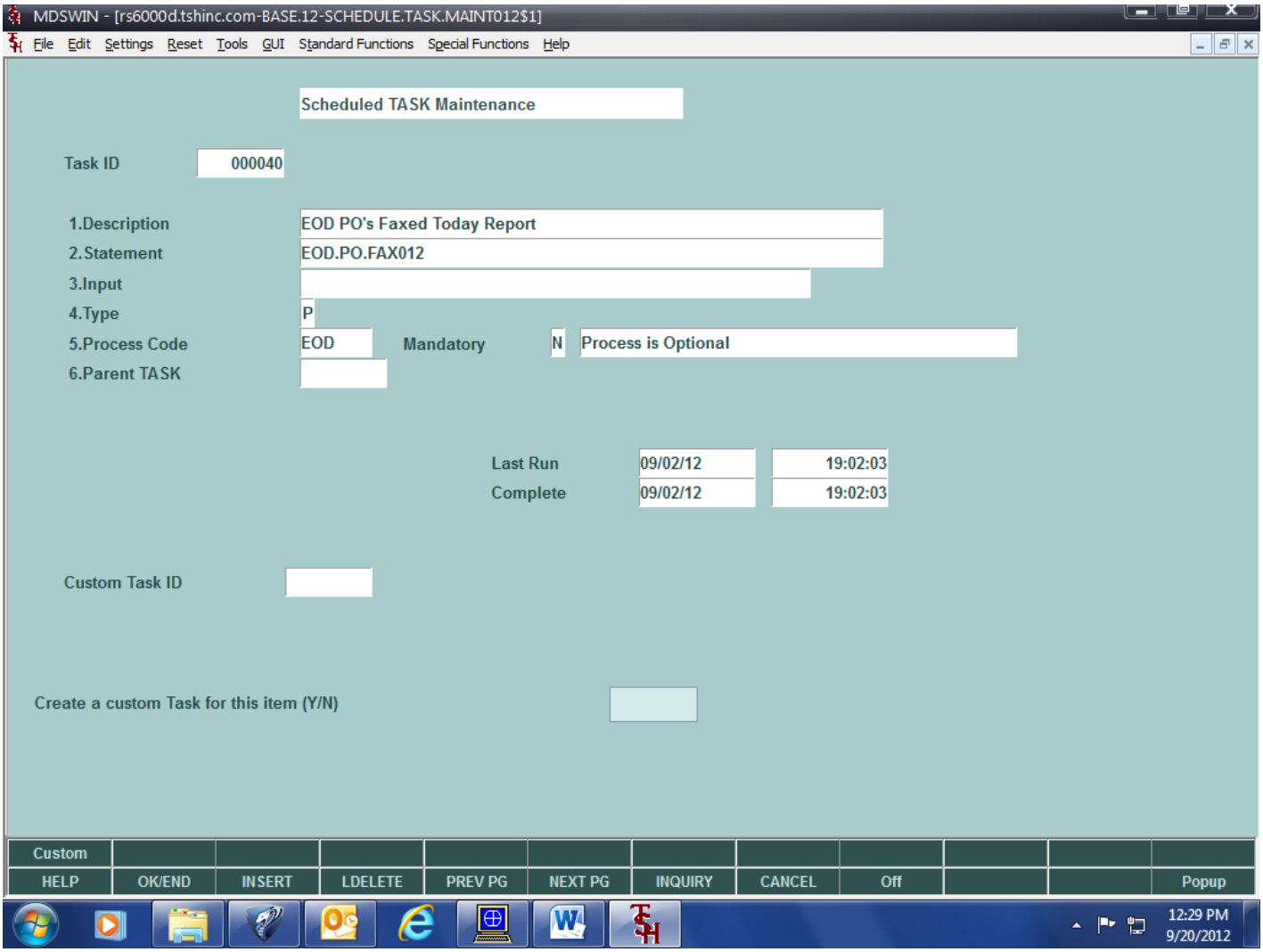
Optional processes will only be loaded on a Job if desired and may be deleted.



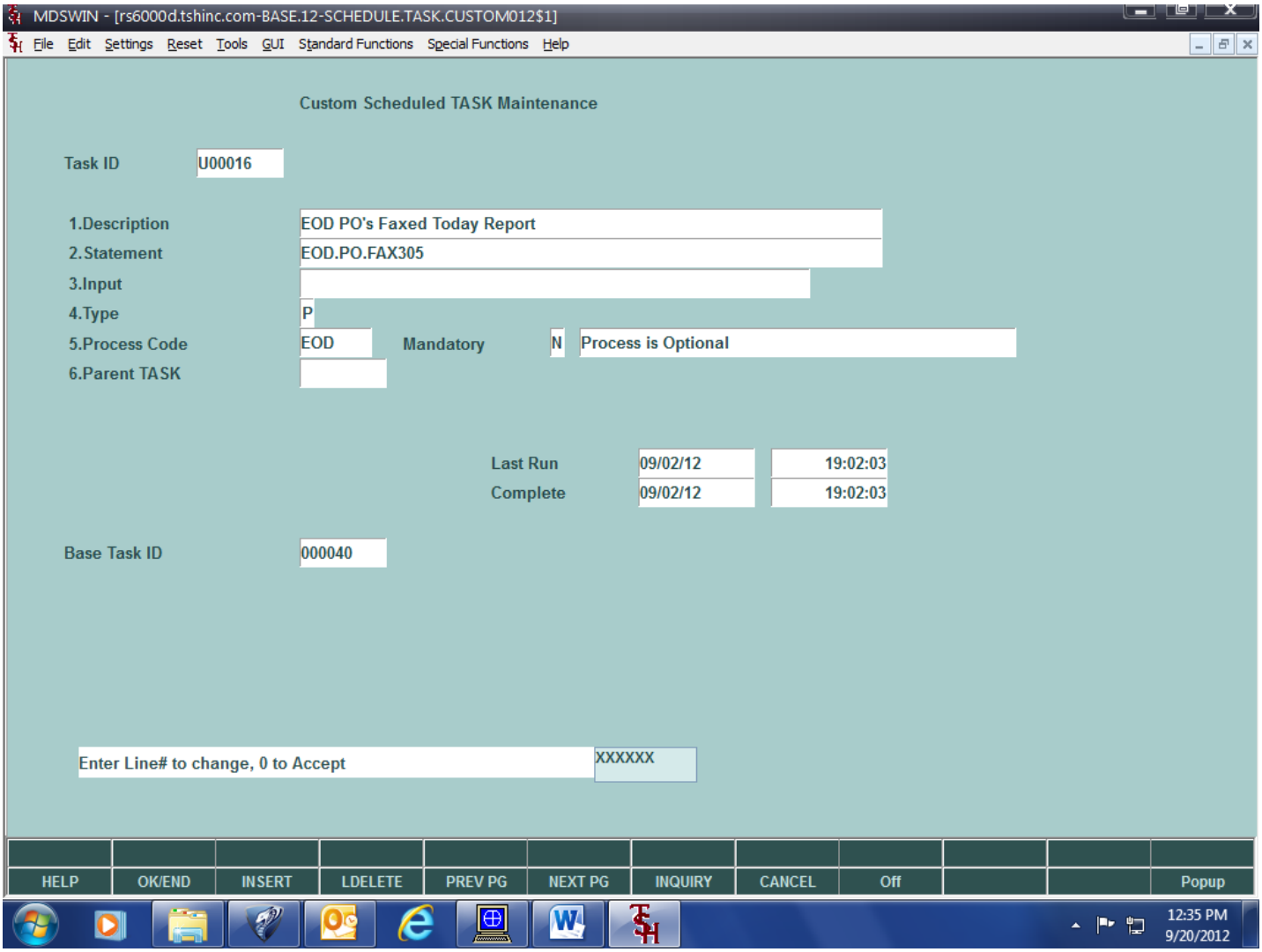
In this example, the task is for Process EOD, it runs BASE.PROK EOD.INVOICE.PRT012, it is a mandatory task, and task 000007 must run first (Invoice update).

The process last started on 08/03/12 at 5:09:09 pm and completed at 05:09:18 pm

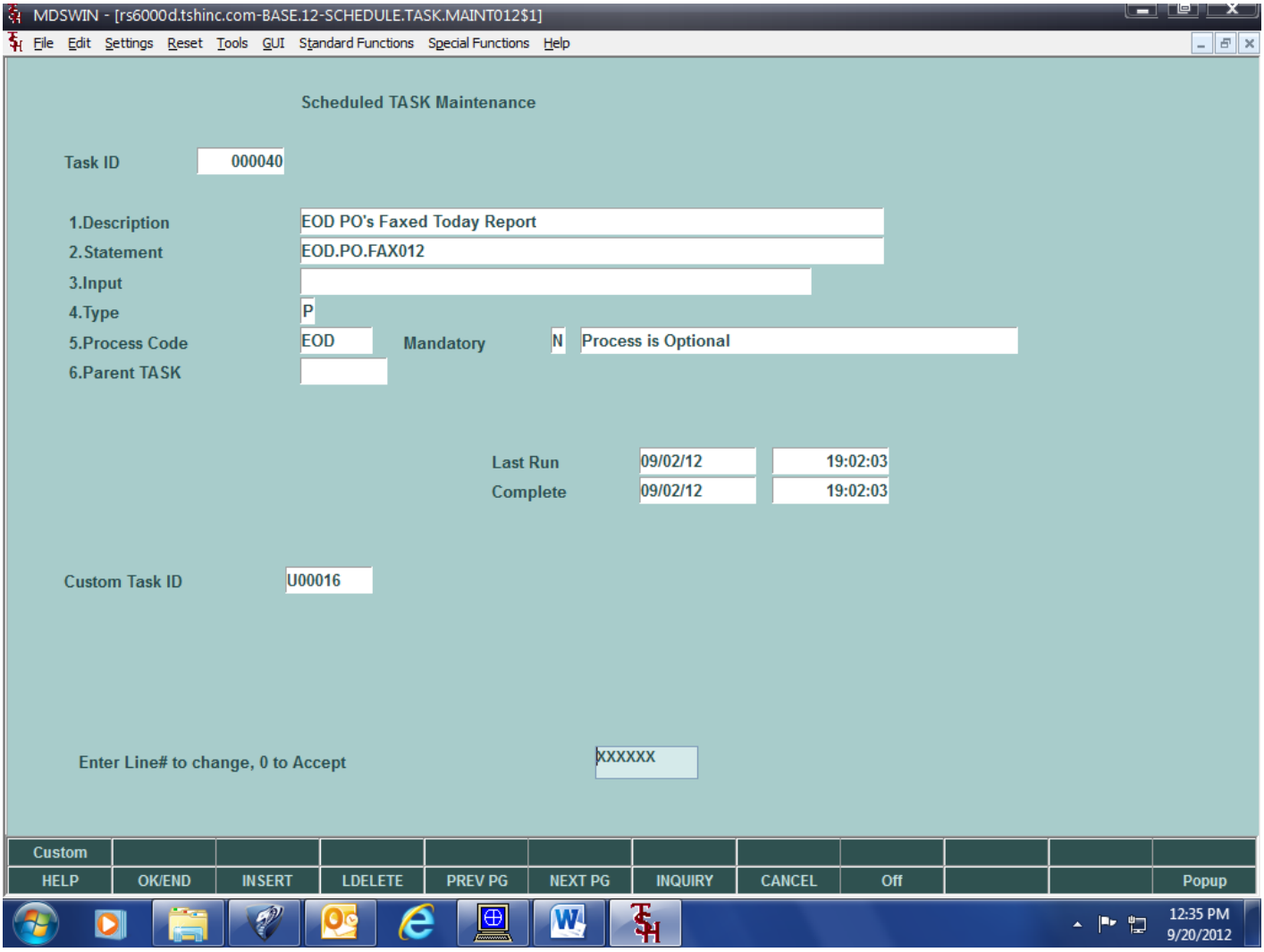
There is no custom TASK setup for this TASK.



To create a custom TASK from an existing BASE Task, use the CUSTOM function key and answer Y to the prompt.
A custom task ID starting with “U” will be generated and the information from the BASE Task will be loaded into the custom Task.

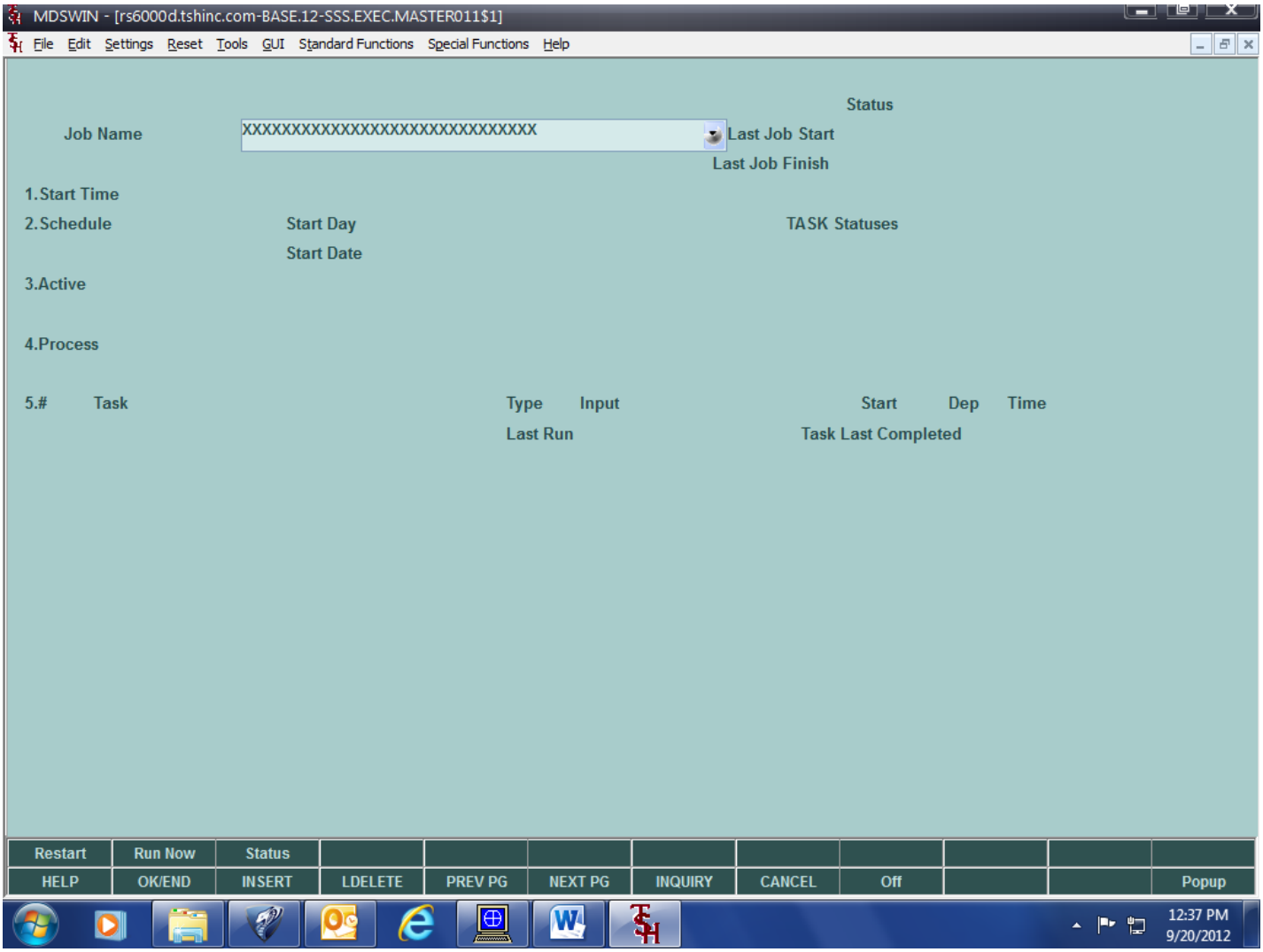


The source BASE Task ID will be saved to the custom TASK, and the Custom TASK ID will be saved to the BASE task. Change the custom TASK for the customization required and save it. The existing Jobs that reference the BASE task will be updated with the custom TASK information.



Notice the BASE Task now has the custom Task ID referenced.

SCHEDULER JOB MAINTENANCE:



Job name is assigned by user. For the Base EOD job FULL.EOD is setup with all the tasks created for this modification, REQ.EOD is setup with the required tasks only.

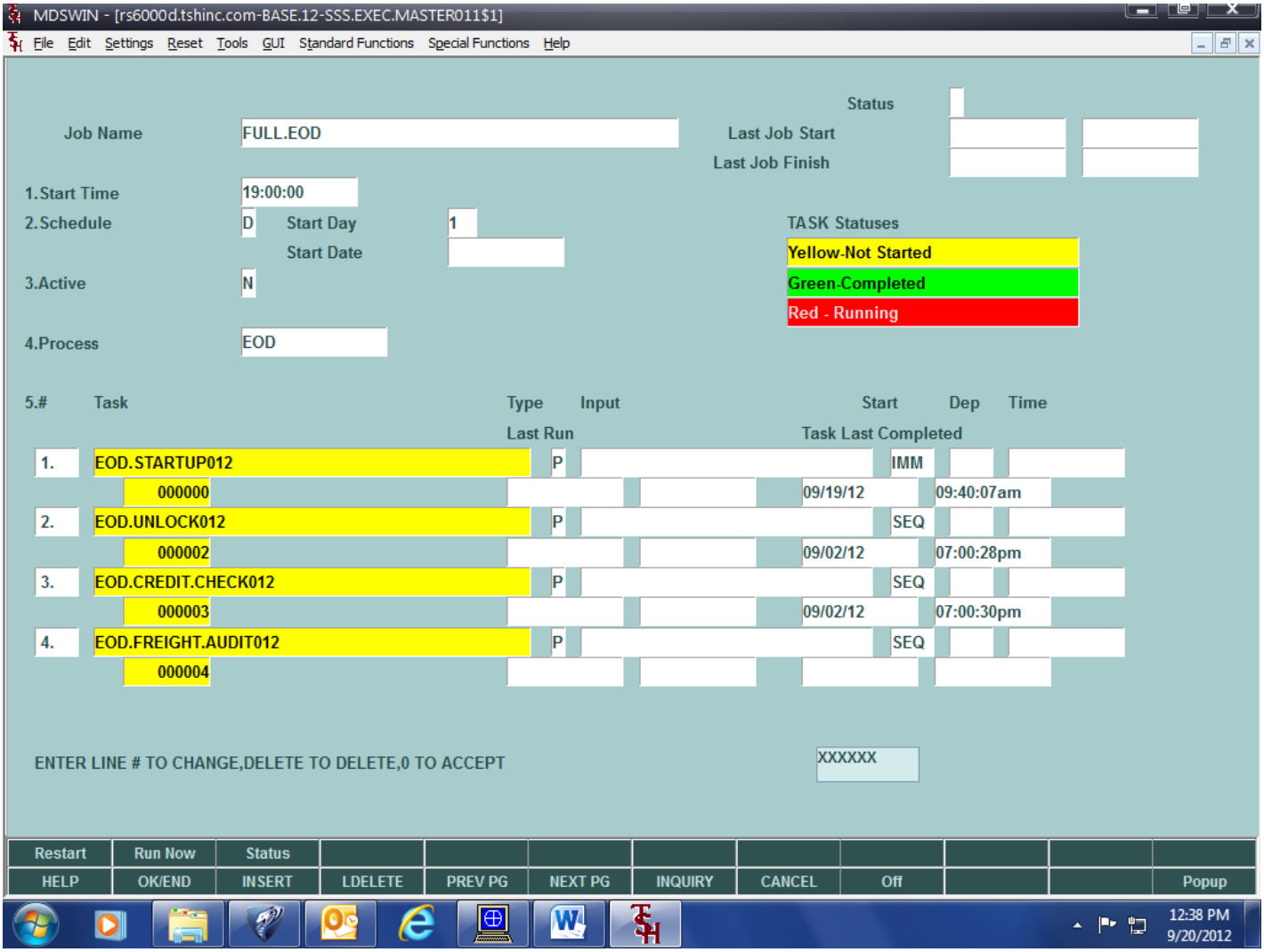
1. START TIME when should the scheduler start the Job.
2. SCHEDULE: Once, Hourly, Daily, Weekly, Monthly.
3. ACTIVE: is job active (set to N for RESTART and IMMEDIATE jobs)
4. PROCESS: process code is used to load tasks into the Job. The required (startup, required, and wrapup) tasks will be loaded automatically, and you will be prompted to load Optional tasks.
5. TASKS: use lookup to use the TASK file to load the information from the TASK file record. For jobs not tied to a process, you may use TASK file items or enter the execution information manually into the fields.

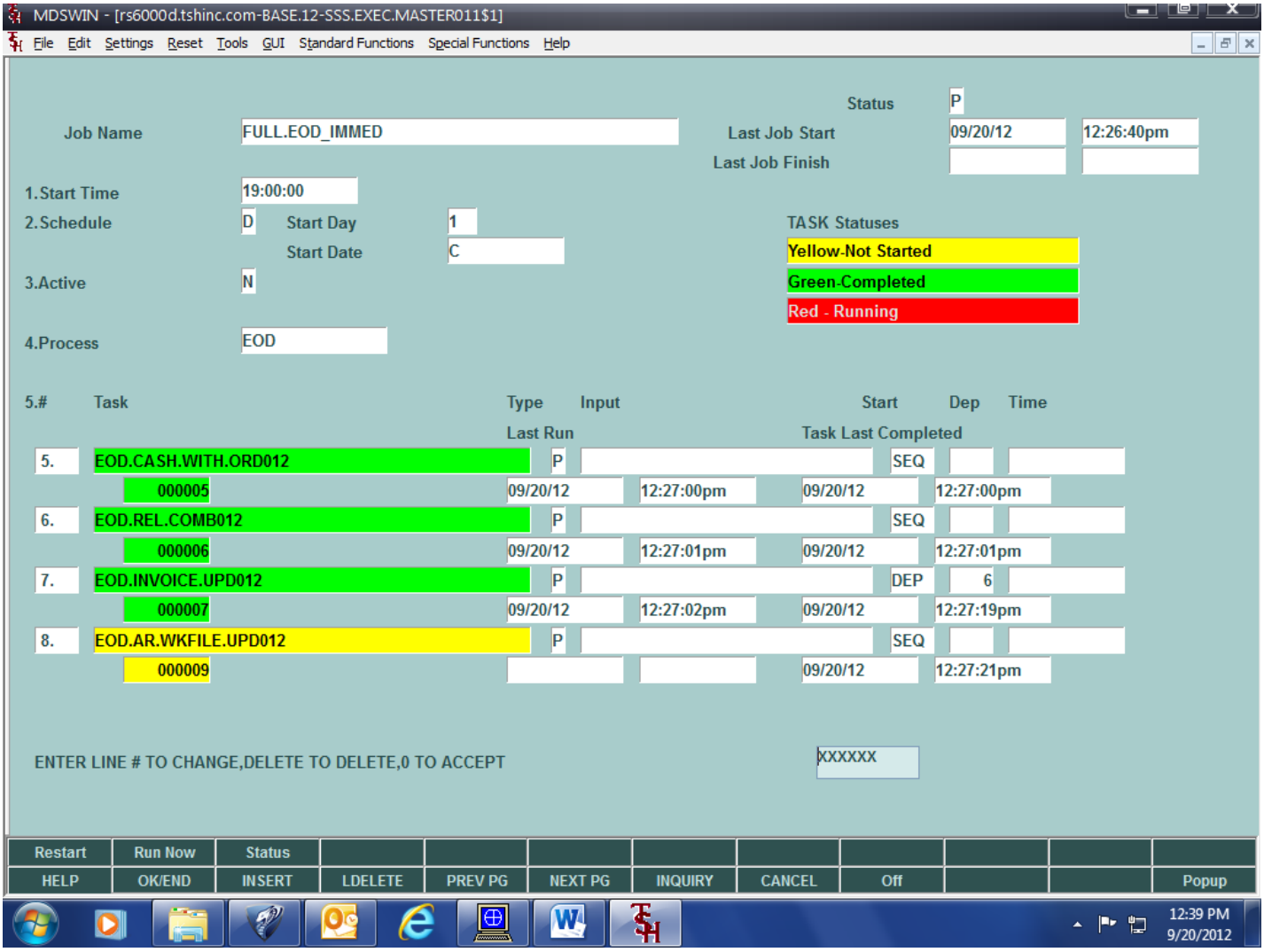
Once the Job is setup, if it is marked as Active, and the Job Scheduler is running in the background, the Job will be run according to the schedule information entered. (testing note: this is existing logic and does not need to be tested for this case). For the rest of the examples I used the Run Now (immediate) option.

After the Scheduler begins a Job, the status of the Job and Tasks can be checked using the maintenance screens. (see examples below).

Checking JOB status:

When a job is first setup, all the tasks will show yellow:





This job has run and completed tasks 1 thru 7, they show green on the screen. The tasks not yet run show yellow on the screen. Jobs that show red have not completed (see next example).

For each task in a JOB a COMO file is generated by the job scheduler, there is no need to put COMO on and off in PROK's run by the JOB scheduler. All COMO's are created with JOB: taskline# jobname * date * time. The EOD Tasks have been setup to display the PROK name at the top of the process (because the job line may change for immediate and restart jobs) to make it easier to identify the processing each COMO captures.
COMO for jobs that complete the last 2 lines will have the Task line# and Job name:

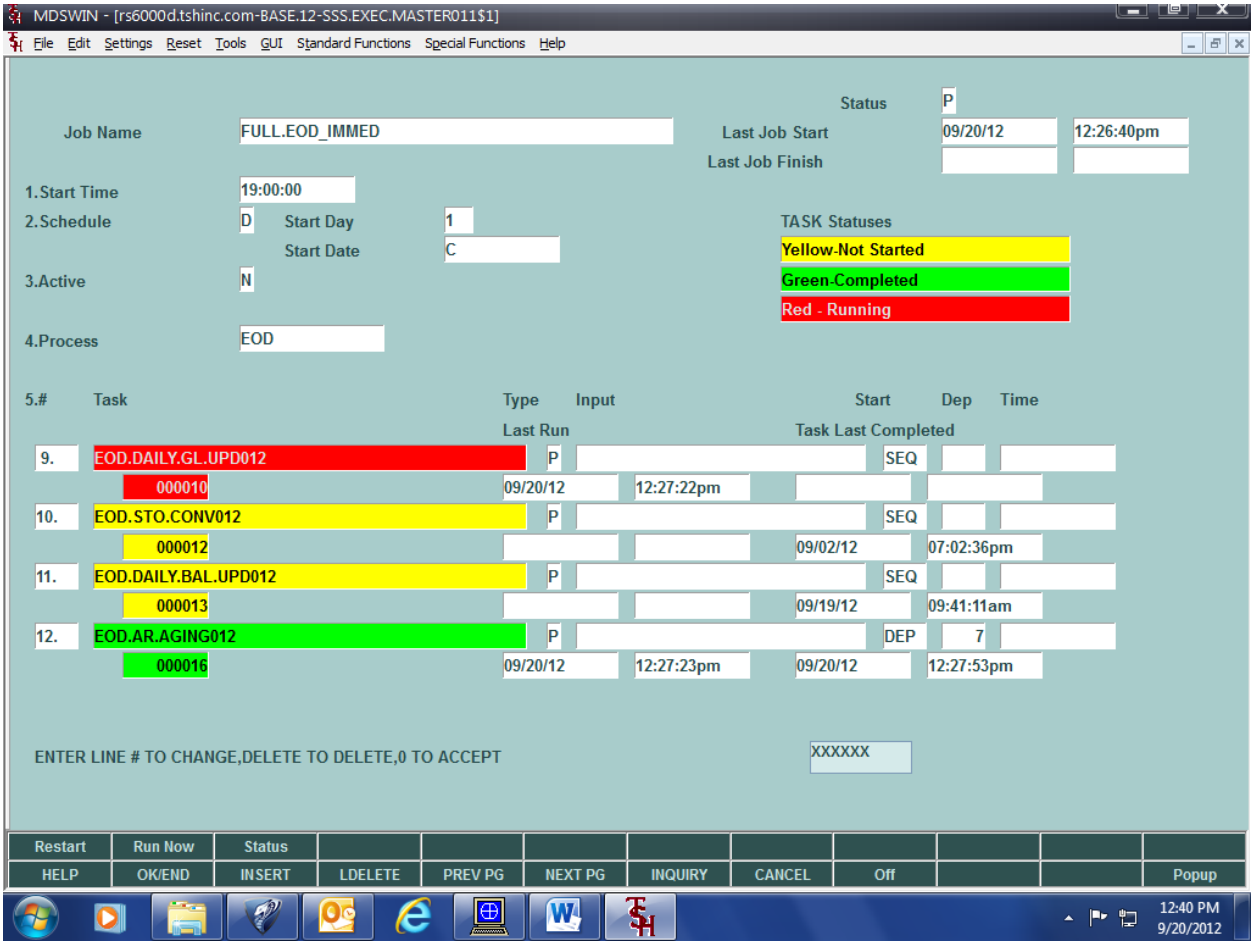
0001: COMO JOB:1FULL.EOD_IMMED*16284*56665.3293 established 15:44:25 31 JUL 2012
0002: (EOD.STARTUP012)
0003:
…
0057: 1
0058: FULL.EOD_IMMED

0001: COMO JOB:2FULL.EOD_IMMED*16284*56669.945 established 15:44:30 31 JUL 2012
0002: (EOD.UNLOCK012)
0003:

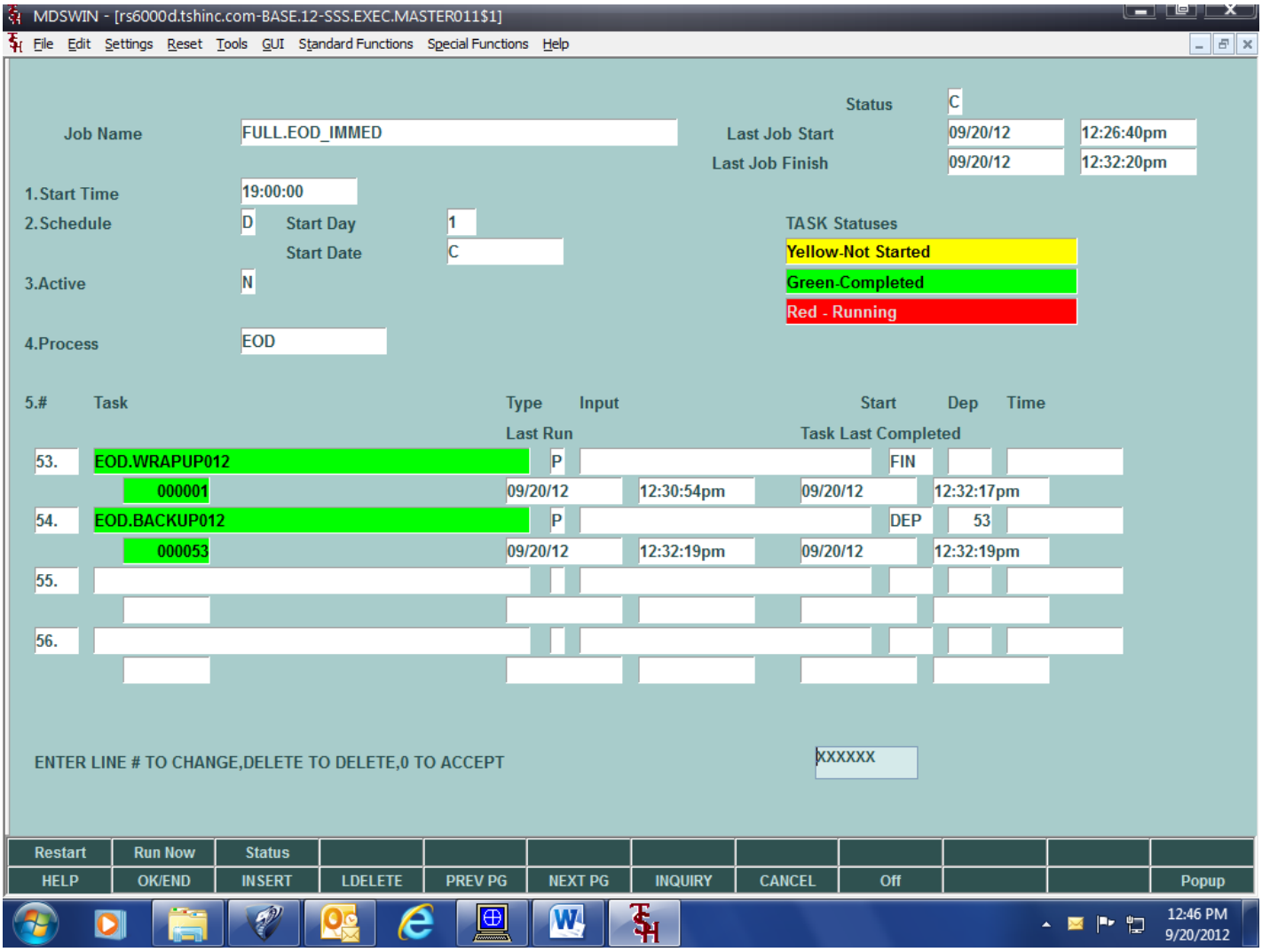
…
0029: 2
0030: FULL.EOD_IMMED

BUT if it ABORTS it will not have the task line and job name:
0001: COMO JOB:5FULL.EOD_IMMED_RESTART*16284*56826.9727 established 15:47:06 31 JUL 2012
0002: (EOD.DAILY.BAL.UPD012)
0003:
…
0021: ^027='*^027TACCOUNTS RECEIVABLE NOW AGING^027='*^027TNOW SELECTING MONTH
LY CASH RECEIPTS FILE^027='*^027TNOW UPDATING DAILY TOTAL CASH RECEIPTS
FIGURES^027='*^027TNOW SELECTING OPEN ACCOUNTS PAYABLE FILE^027='*^027TN
OW UPDATING DAILY TOTAL OPEN PAYABLES^027='*^027TNOW SELECTING PURCHASE
ORDERS^027='*^027TNOW UPDATING DAILY PURCHASE ORDER TOTALS^027='*^027TNO
W UPDATING DAILY ORDER TOTALS
Bottom at line 21.

Tasks that abort show RED on the Job maintenance screen:

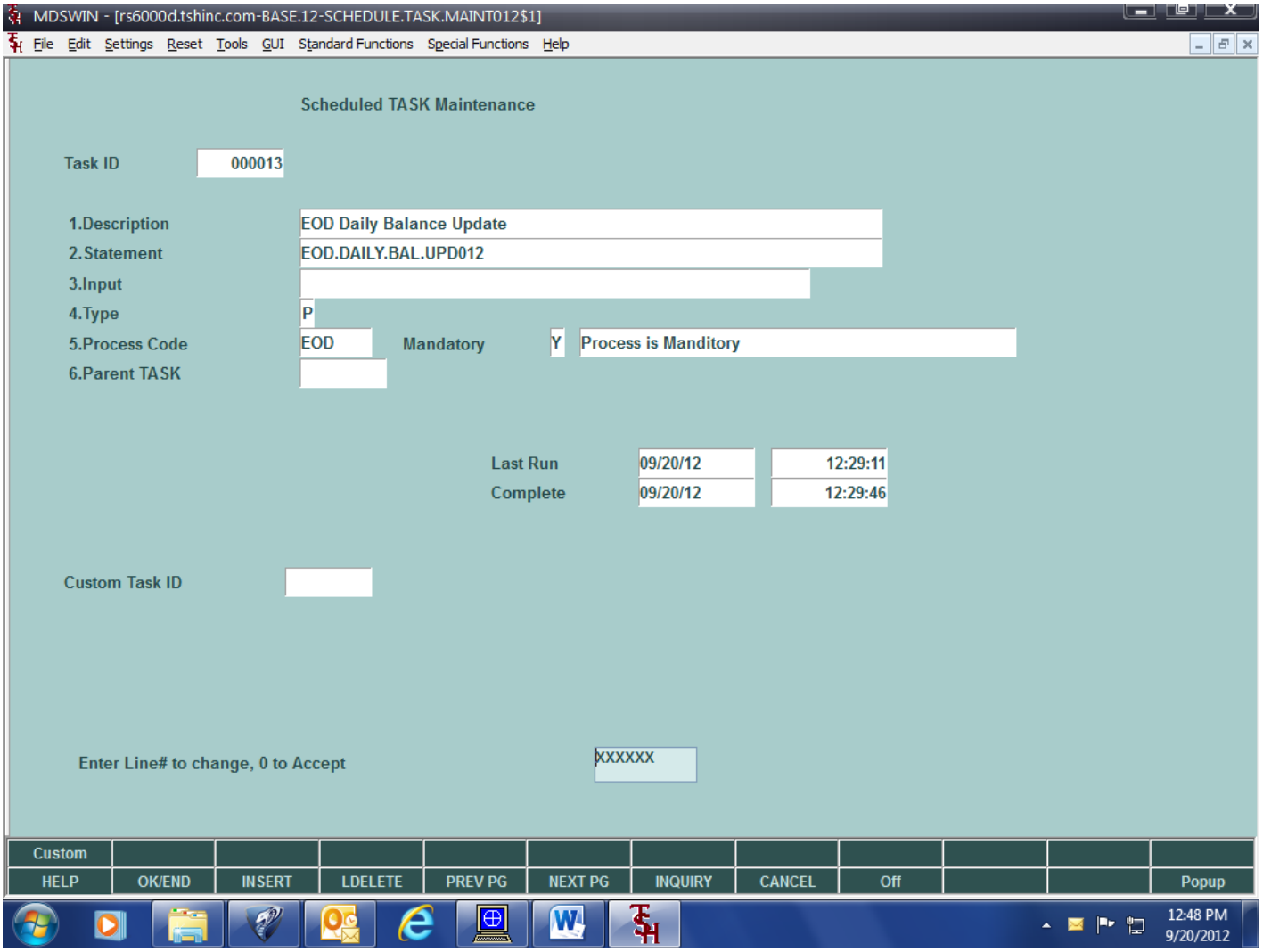


When a job has been run and completed the tasks will show green, and the date and time run will appear on the JOB screen:



For EOD the processing has been added to also update the TASK file with the start and complete date and time regardless of which JOB runs it. (The time and date on the JOB screen come from the job scheduler only for the JOB being run).
Task file complete Date and Time if set by programming (EOD Should set them) will also display on screen. This is the Date and Time the Task was completed from any JOB where it is run.
The Job status (top of screen) shows the overall status of the JOB from the Scheduler and last start and finish time and date.

The last run date and time of a specific TASK file task that is updated in by programming can also be checked in TASK Maintenance:



Task that did not complete.

If you see that a task has not completed or seems to be hung, before restarting, check to see if the scheduler is still running:

[lkrause@rs6000d]:[/u1/accts/BASE.12]$ ps -ef |grep phant
lkrause 24636 83386 0 16:21:34 - 0:00 phantom EXEC.MAST.JOB012 FULL.EOD_IMMED_RESTART
lkrause 84392 24636 0 16:38:01 - 0:05 phantom EXEC.MAST.TASK012 FULL.EOD_IMMED_RESTART 6

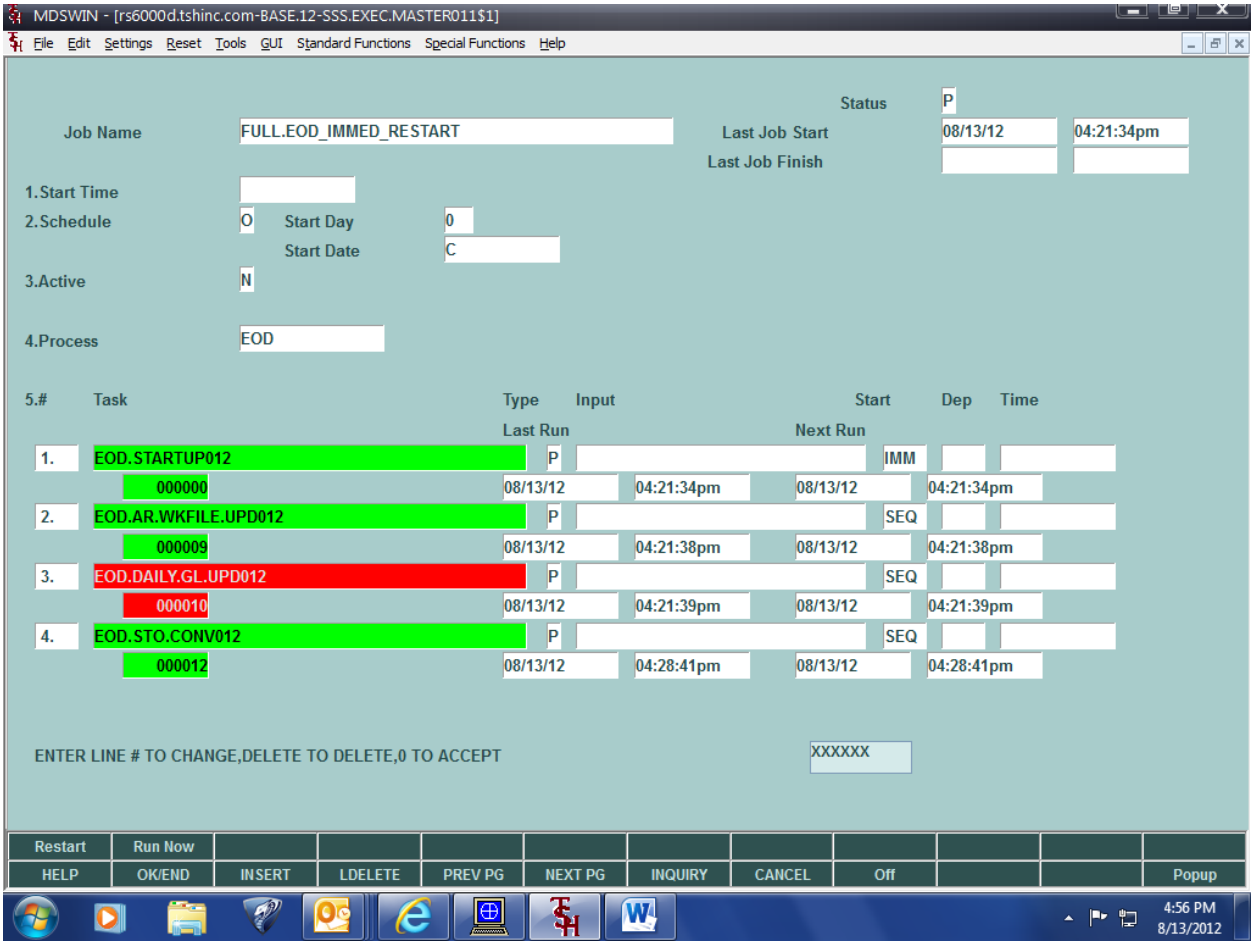
The Job scheduler is the first line, you'll see the job name next to it. The Task scheduler is the second line, you'll see the Job name and task line number next to it. If these are not running, the scheduler has aborted and a restart will be necessary. Otherwise consider that it is still running, check the COMO's and see if there are any error messages there. Check LOCKs as well as they may be holding up processing.

Also note the each job will contain the last PID (Process ID) from the scheduler.
Tasks also will contain the last PID they were run from the scheduler.
These should help if multiple accounts (such as timeshares) are running the same Jobs/Tasks to determine which process belongs to which account.

In addition, if the system went down or multiple phantoms are running and you need to check that the job scheduler is running on a specific account, go to that account and find the process id (PID) that the job scheduler was started with and match it to a process in unix:

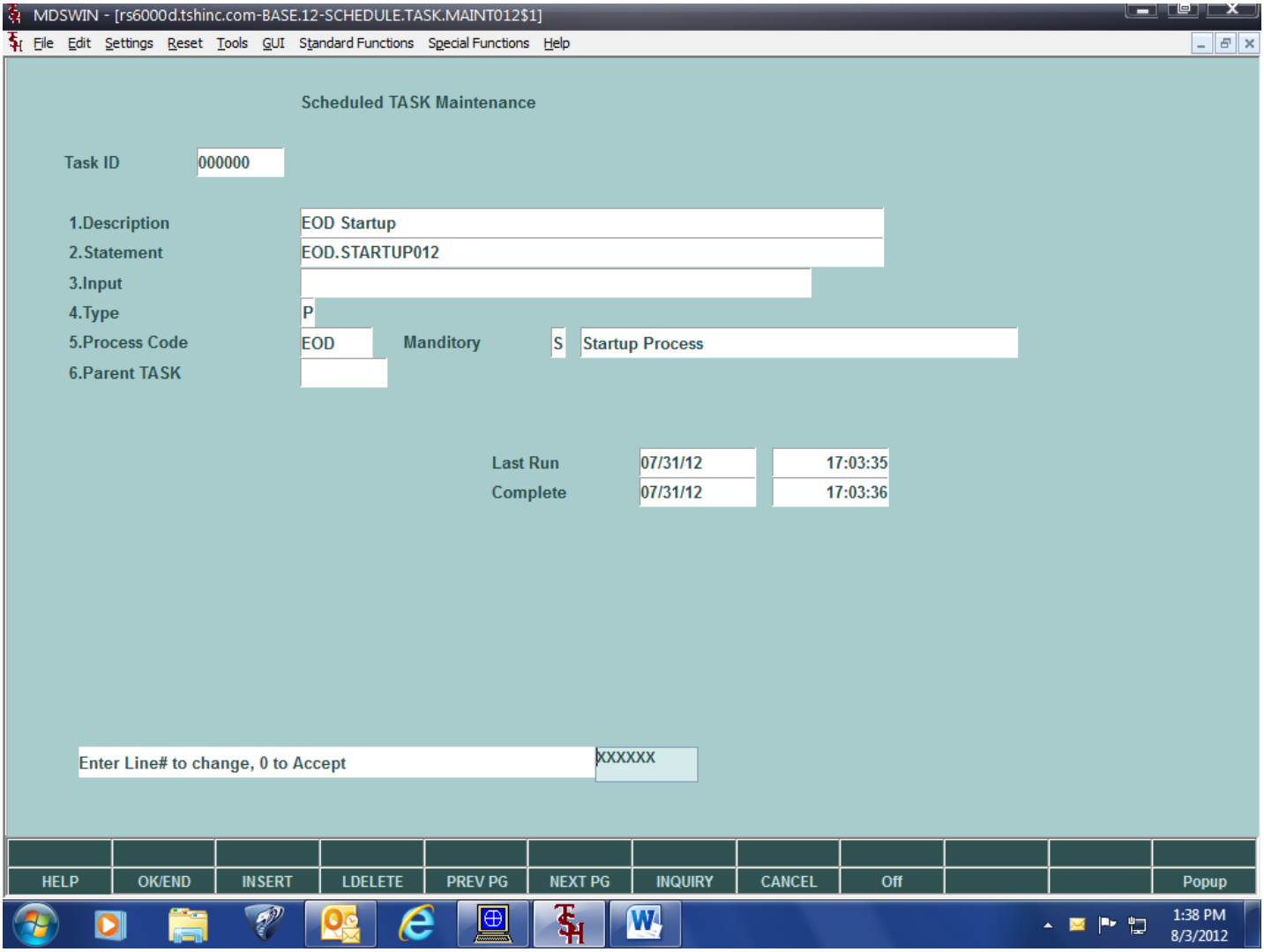
01 ED DICT EXEC.MAST SCHEDULER.PID
Would you like to check this program out (Y/N) ?
The file "DICT EXEC.MAST" is read-only and cannot be updated.
1 lines long.
----:
0001: 39120
Bottom at line 1.
----: EX
>SH
[root@timeshare]:[/u1/accts/CSC]$ ps -ef |grep phant
  root 24900 61562 0 10:41:41 pts/49 0:00 grep phant
  root 39120 84064 0 10:30:55 - 0:00 phantom EXEC.MAST.SCHEDULER012
  root 42042 1 0 Jan 04 - 0:18 phantom MDS.ALERT.SERVER012
  mc 95084 136720 0 10:41:36 - 0:00 phantom MENU.EMAIL012
[root@timeshare]:[/u1/accts/CSC]$

I did a test and the daily GL update stopped for input on an error message. This will drop a phantom process so I changed the status in EXEC.MAST on line 17 from P to C and it continued with the next task, note the aborted task still shows red:



In the COMO:

0258: FOR HANDCHECK DISBURSEMENTS
0259:
0260: 1 record(s) selected to SELECT list #0.
0261: ^012^027+^027=**COMPANY NUMBER: XX MISSING!! - PRESS <RTN> TO END: ^007

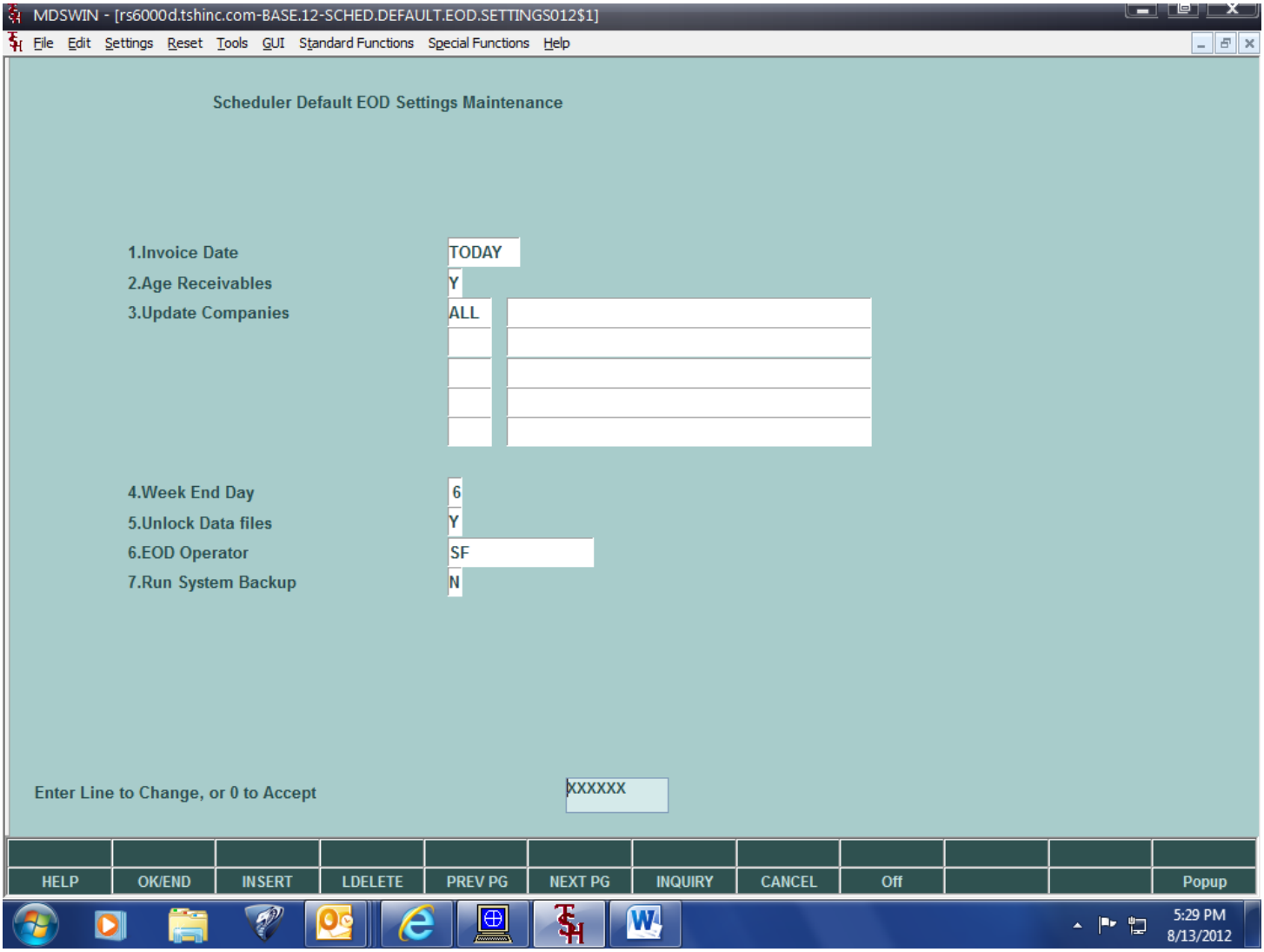


Task that completed.

Testing notes:
1. Test FULL.EOD, REQ.EOD (use Run Now function).
2. To test Restart mode, kill the phantom(s) at unix and then restart the process.
3. When you restart or Run now, it will bring up a screen with the EOD Settings. The regularly scheduled EOD sets them up from a default Settings record (see following screen shots)
4. Check out the COMO's, I usually get the internal date (RUN AP DAT) and select &COMO& = [internal date] to get them all.
5. While you are running the EOD, check the status (remember to check the correct EXEC.MAST record: FULL.EOD_IMMED or FULL.EOD_IMMED_RESTART etc.) Remember to exit the program so it can continue.
6. You can also test setting up a custom EOD, answer N to load Optional tasks, then insert a few of them to make a custom run. Then run it!

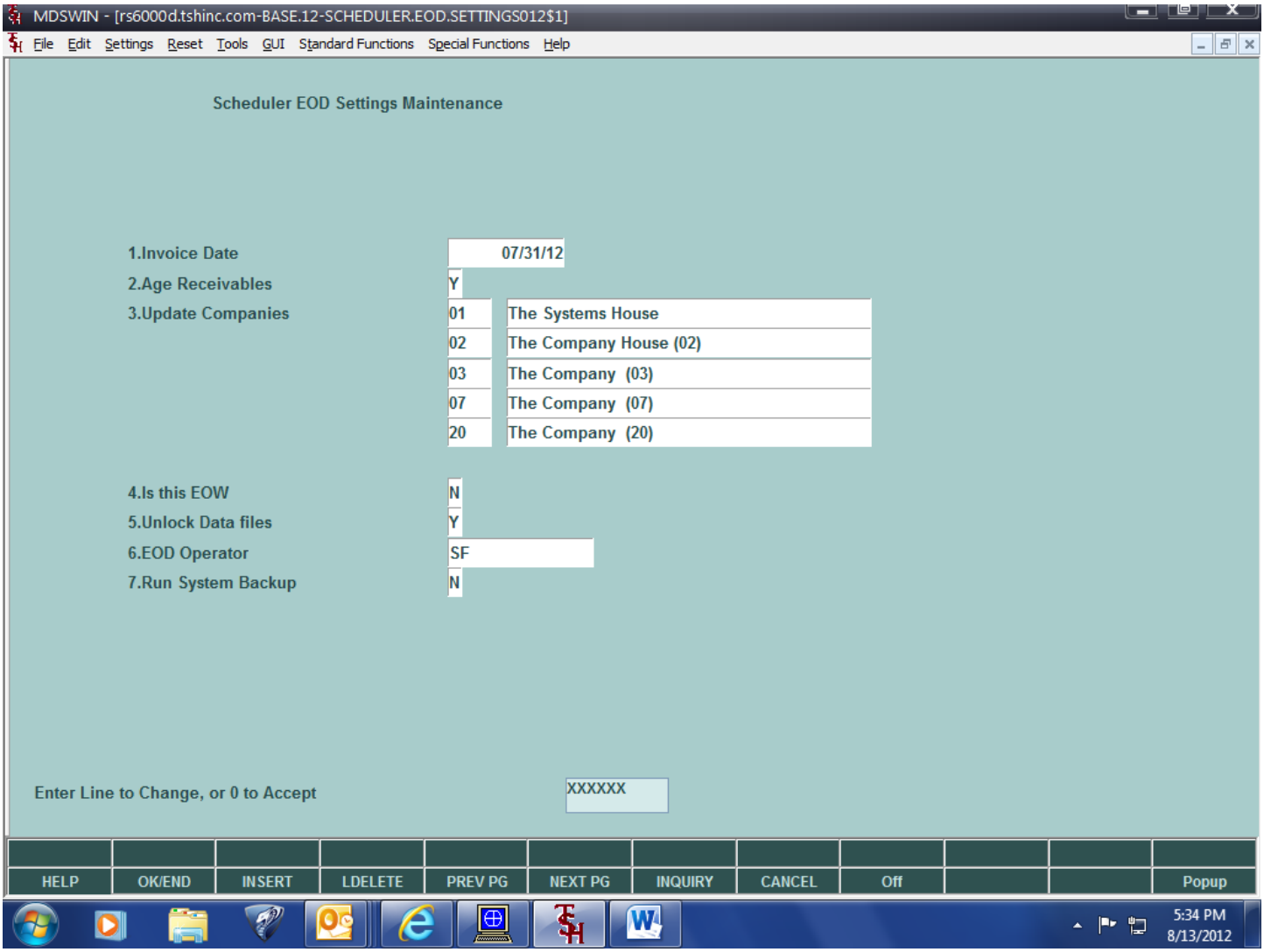
7. Make sure all EOD reports are in EOD Capture, they should still go there.
8. The new EOD still updates the EOD Start and Finish status for the report on the EOD Menu.

Default settings maintenance:



1. Invoice date, TODAY, PREV or NEXT (should probably be TODAY unless setting up EOD to run after midnight)
2. Age Receivables Y/N
3. Update Companies, ALL – Will select company file, or enter list of companies
4. Week End Day – will automatically set EOW flag for GL update check.
5. Unlock data files Y/N
6. Operator for EOD processes. (audit trails etc)
7. Run system Backup Y/N

When Run Now or Restarted, it will prompt for this run's values specifically instead of getting them from the default. It will bring up the values from the last time it was run. This was setup as an "I" type task to run immediately on Restart or Run Now:



EOD Task Programming notes:

Some standards have been put in all the new BASE.PROK items setup for EOD process tasks. During programming and testing they were either helpful or necessary to make the processing work properly and more easily debug any problems in EOD or identify Errors.

1. Since the Job scheduler creates a COMO for each TASK in the job, but there is nothing to specify what is being run, the PROK name is displayed at the top of each BASE.PROK item.
2. A program MDS.BP SET.TASK.STATUS012 with input of "START" or "FINISH", the PROK name, and Process code will set the time and date started or finished on the TASK file. This will show the last time that actual process was run and if it finished normally, regardless of which Scheduler JOB (FULL.EOD, custom EOD, Restart or Immediate run) performed it. At this time you run it with input of "START". The MDS.BP SET.TASK.STATUS012 program also reads the EOD.SETTINGS012 record and sets the common variables and PROK Buffer values used by some End of Day programming.
3. Next is a display of the PROK Buffer settings (may help debug any issues of what is running).
4. Next it checks for flag in Buffer to not run EOD. Since the Scheduler doesn't know if EOD validation passed it's checks, this keeps EOD processes from running if they failed.
5. For any EOD Task that has a print that should go to capture you need to run MDS.BP SET.CAPTURE.ON010 with input "EOD" TWICE. This is because phantomed programs do not run the LOGIN process the same way as a User login and the printer settings don't set to CAPTURE output if you run it only once. (FYI this also happens with the Handhelds!)
6. At this point you run the programs/PROKs/selects etc.
7. Run MDS.BP SET.TASK.STATUS012 with input of "FINISH", PROK name, and Process code.

The simplest way to setup an EOD PROK task is to copy an existing one and replace the PROK name with the new one and the programs/PROKs and selects with the process you want to run in EOD.

After the BASE.PROK item is setup, you enter it as a TASK in the maintenance and then insert it into the appropriate Scheduler JOB. The maintenance will do some checking for Parent TASK, and correct order of the TASKs.

BASE.PROK example:

BASE.PROK EOD.NON.STK.PRICE.HOLD012
Initialize the PROK:
0001: PQ
0002: RI
0003: RO
1.Display the PROK name for the COMO:
0004: O (EOD.NON.STK.PRICE.HOLD012)
2.Set the TASK Status, EOD Common variables and PROK Buffer:
0005: HRUN MDS.BP SET.TASK.STATUS012
0006: STON
0007: HSTART<
0008: HEOD.NON.STK.PRICE.HOLD012<
0009: HEOD<
0010: P

3.Display Buffer settings:
0011: C if process aborted, stop!
0012: O EOD SETTINGS:
0013: D0
4.Check for EOD run Status:
0014: IF A1 = BAD X
5.Set printer to Capture:
0015: HRUN MDS.BP SET.CAPTURE.ON010
0016: STON
0017: HEOD<
0018: P
0019: C* Run twice, because commons not set
0020: HRUN MDS.BP SET.CAPTURE.ON010
0021: STON
0022: HEOD<
0023: P
6.EOD Processing for this report:
0024: HRUN MDS.BP SET.CAPTURE.FROM.PROK
0025: STON
0026: HEOD010<
0027: HNon-stock Price Hold Report<
0028: P
0029: [REP.PROK PNS.PRICE.HOLD-RPT] 25
7.Set TASK completed time and date:
0030: HRUN MDS.BP SET.TASK.STATUS012
0031: STON
0032: HFINISH<
0033: HEOD.NON.STK.PRICE.HOLD012<
0034: HEOD<
0035: P
0036: X

For the settings and Common variables to be setup correctly and the standard status updates to occur, any EOD Scheduler Job must contain the EOD Startup Task and the EOD Wrap up Task.

The default settings for EOD must be setup for Scheduled EOD to run properly, there is a maintenance program to maintain these defaults. The record looks like this:

DICT INVOICE DEFLT.EOD.SETTINGS
0001: TODAY
0002: 6
0003: ALL
0004: Y
0005: SF
0006: N
0007: Y

0008:
0009:
0010:
0011: *** 1 = invoice date default TODAY, NEXT, PREV
0012: *** 2 = week end day 1=sun,2=mon,3=tue,4=wed,5=thr,6=fri,7=sat
0013: *** 3 = companies to update mv or ALL
0014: *** 4 = Unlock records at start Y/N
0015: *** 5 = EOD Default operator code
0016: *** 6 = RUN EOD System Backup Y/N
0017: *** 7 = AGE Receivables Y/N
Bottom at line 17.

The program MDS.BP SCHEDULER.EOD.START012 is run in the EOD.STARTUP012 PROK. It sets up the item DICT INVOICE EOD.SETTINGS012 which is used for all EOD TASKs:

1 – INVOICE DATE
2 – AGE RECV (Y/N)
3 – CO LIST (ALL or m/v LIST)
4 – EOW FLAG (Y/N)
5 – UNLOCK (Y/N)
6 – START NOW (Y/S/ERR – Yes, Schedule, Error)
7 – OPERATOR CODE
8 – RUN BACKUP (Y/N)

The EOD.BACKUP012 PROK is run after the EOD.WRAPUP012 .