



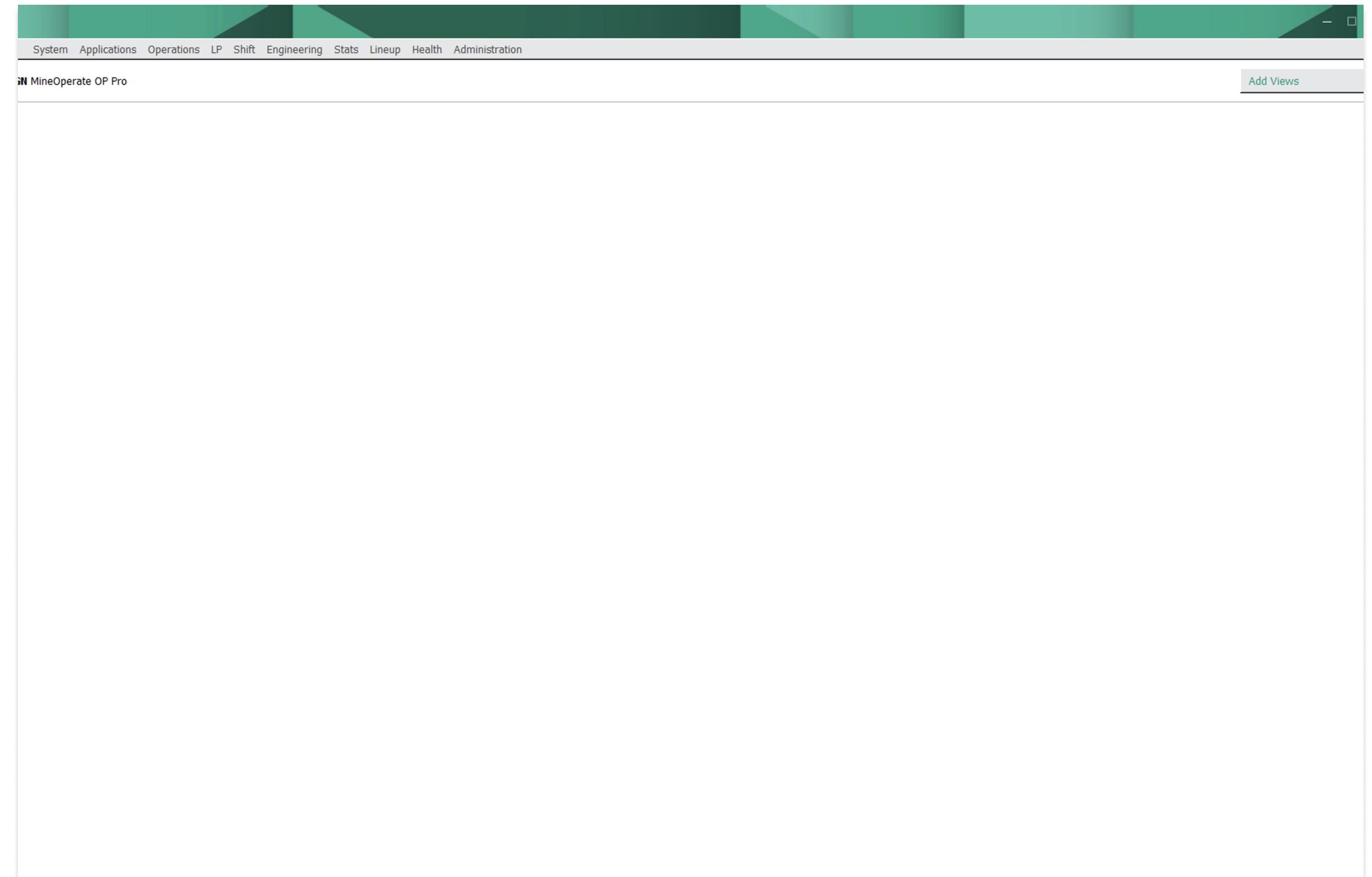
MINEOPERATE OP PRO MANAGER

MANAGER



NEW USER INTERFACE

OFFICE MANAGER





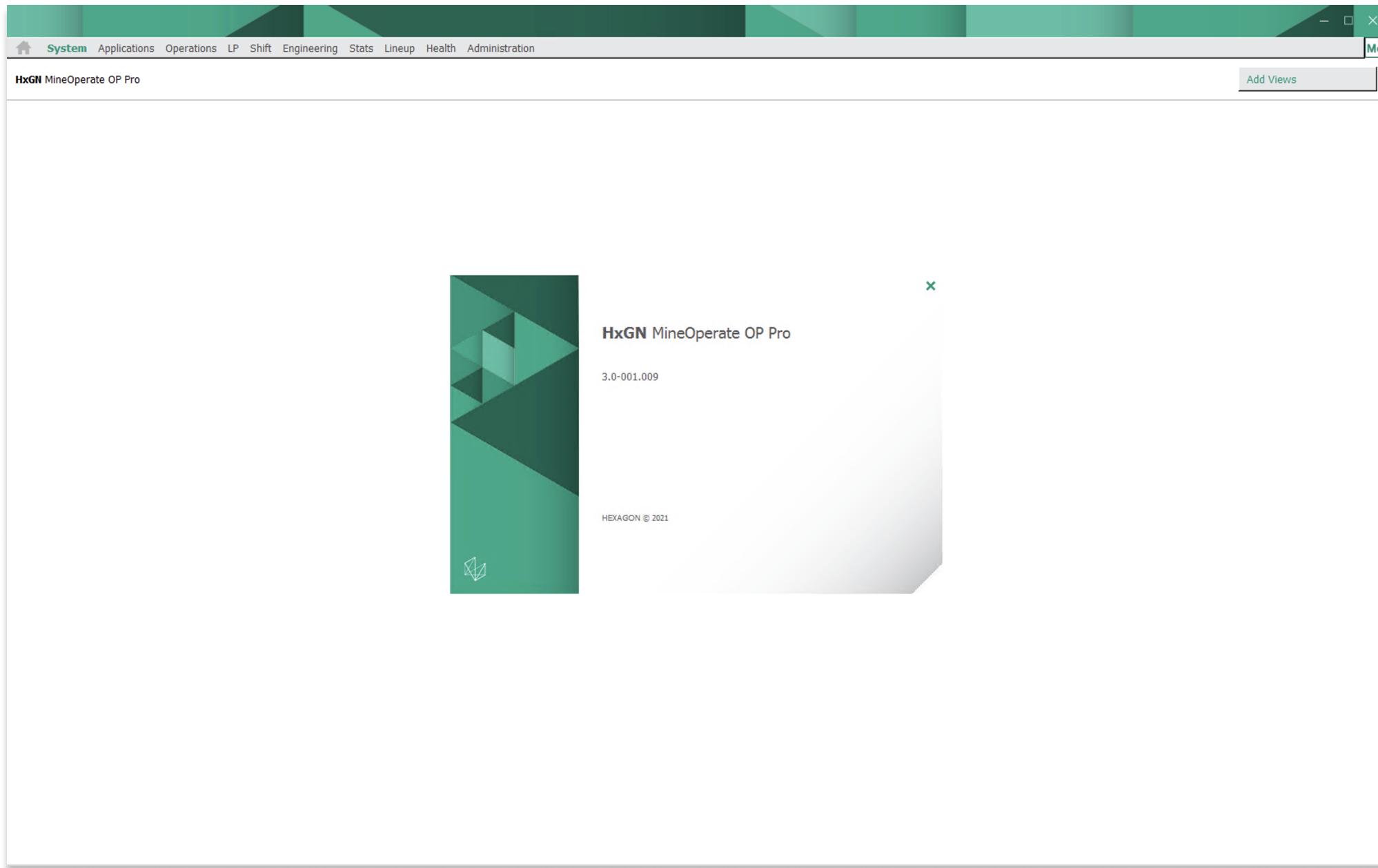
NEW BRANDING

LOGIN



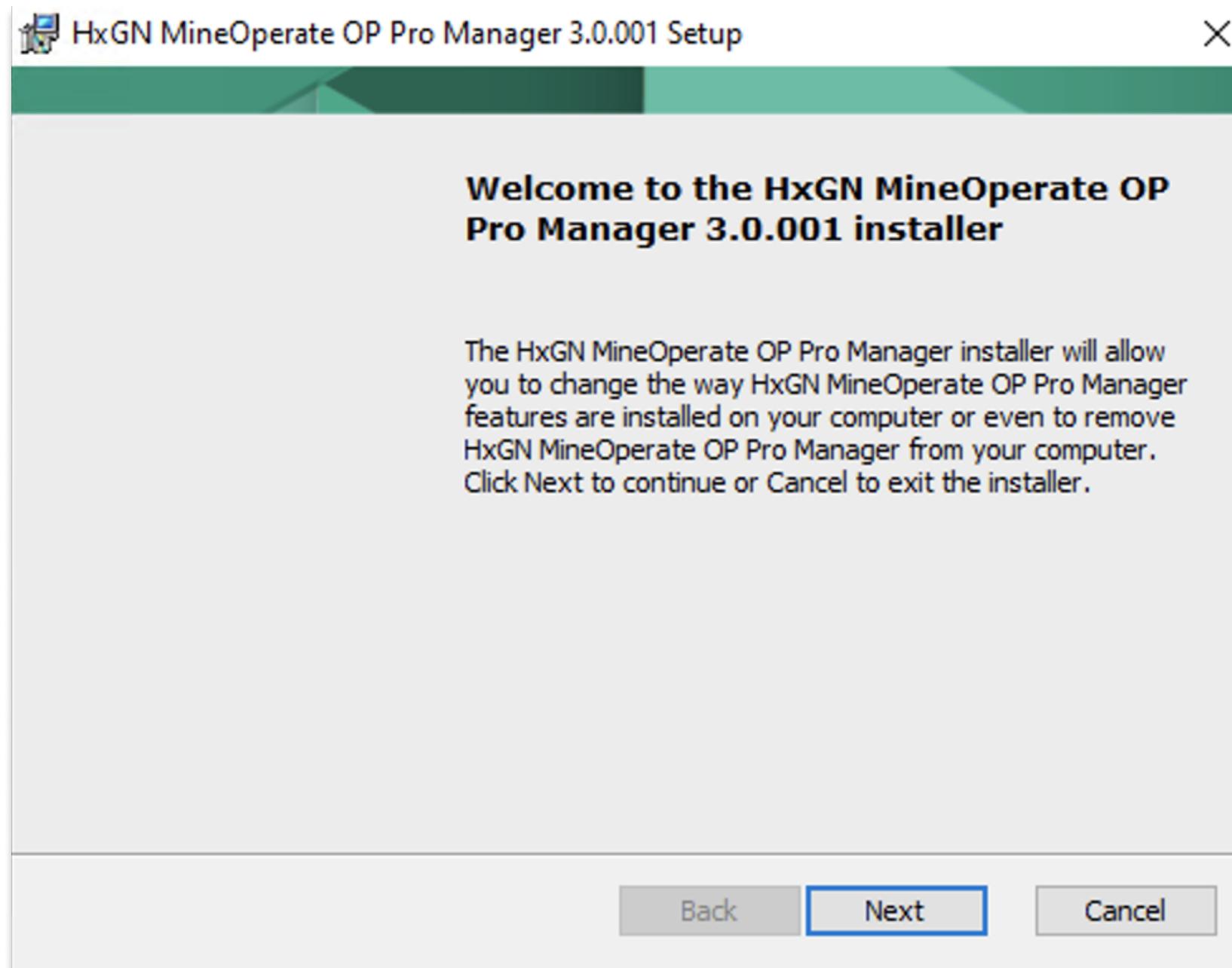
NEW BRANDING

SPLASH SCREEN



NEW BRANDING

ABOUT SCREEN



NEW BRANDING

INSTALLER



NEW BRANDING

SHORTCUT





NEW BRANDING



ATTACHED VIEW ICONS



DETACHED VIEW ICONS

VIEW BAR



	ADDS VIEW TO FAVORITED ITEMS
	PINS VIEW TO LOCATION (SAVES LOCATION)
	DETACH VIEW FROM MENU TRAY
	ATTACH A DETACHED VIEW TO MENU TRAY

NEW BRANDING

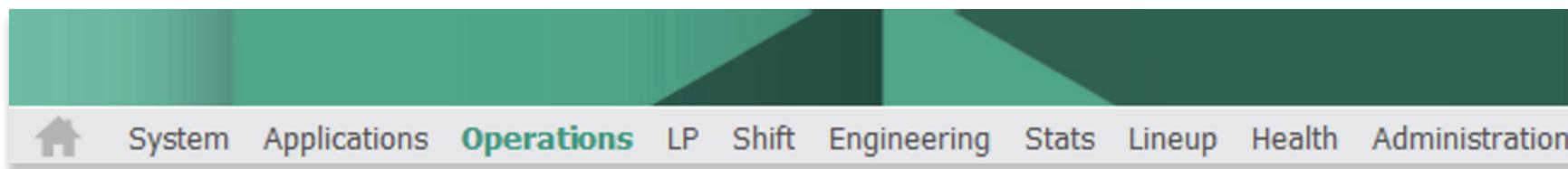
VIEW BAR ICONS



<input type="checkbox"/>	FULL SCREEN A DETACHED VIEW
	RESTORE SCREEN FROM FULL SCREEN
<hr/>	MINIMIZE A DETACHED VIEW
	CLOSE VIEW

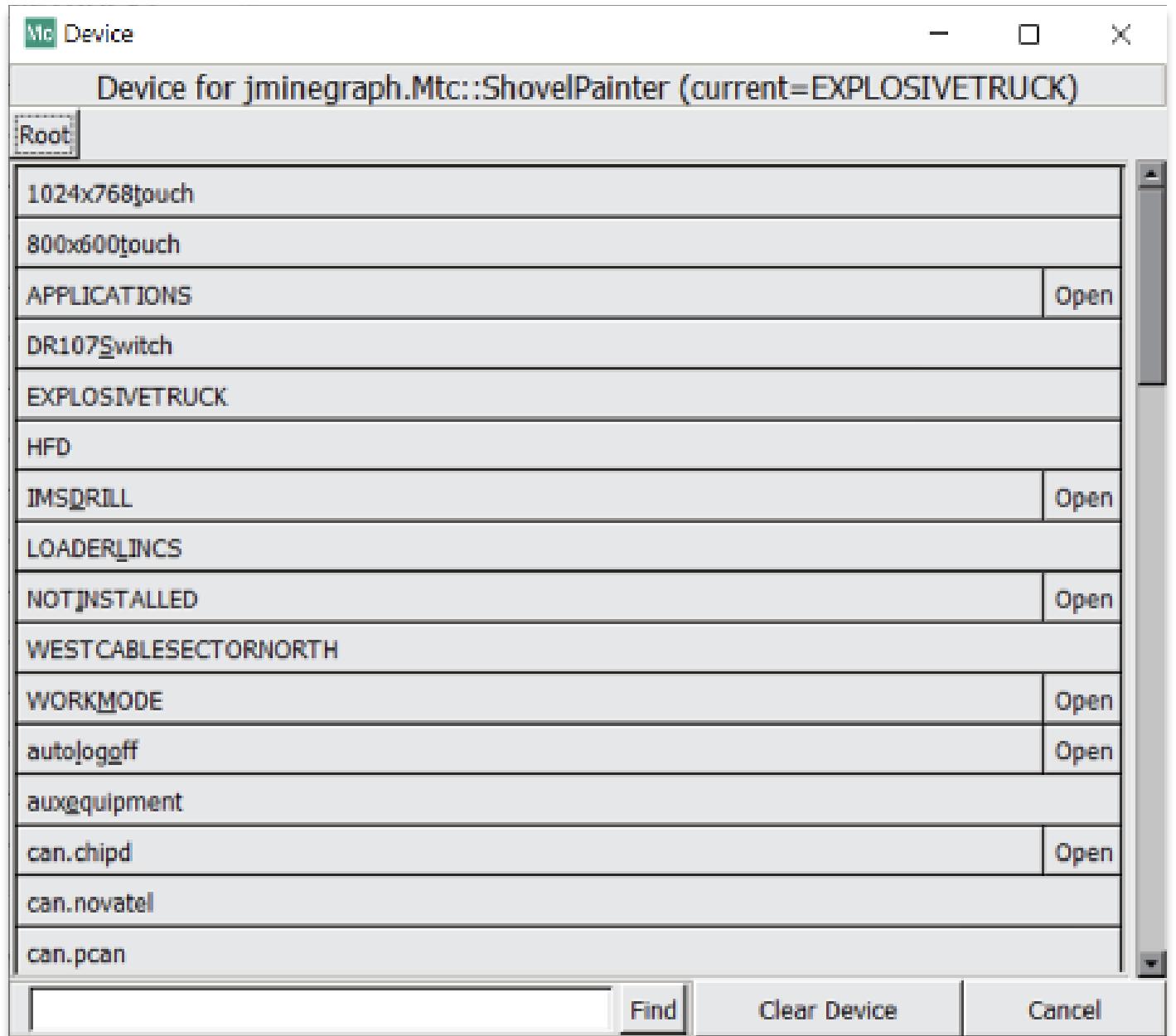
NEW BRANDING

VIEW BAR ICONS (CONT)



NEW USER INTERFACE

UPDATED COLORS OF WIDGETS
AND COMPONENTS



NEW USER INTERFACE

REMOVED ICONS ACROSS
APPLICATION



NEW USER INTERFACE

HOVER EFFECT





CONTAINER DEVELOPMENT

MENU ORGANIZATION

- DEFAULTS TO NEW UI/UX MENU TRAY AND VIEWS
- LEGACY APPEARANCE CAN BE RETURNED THROUGH CONFIG



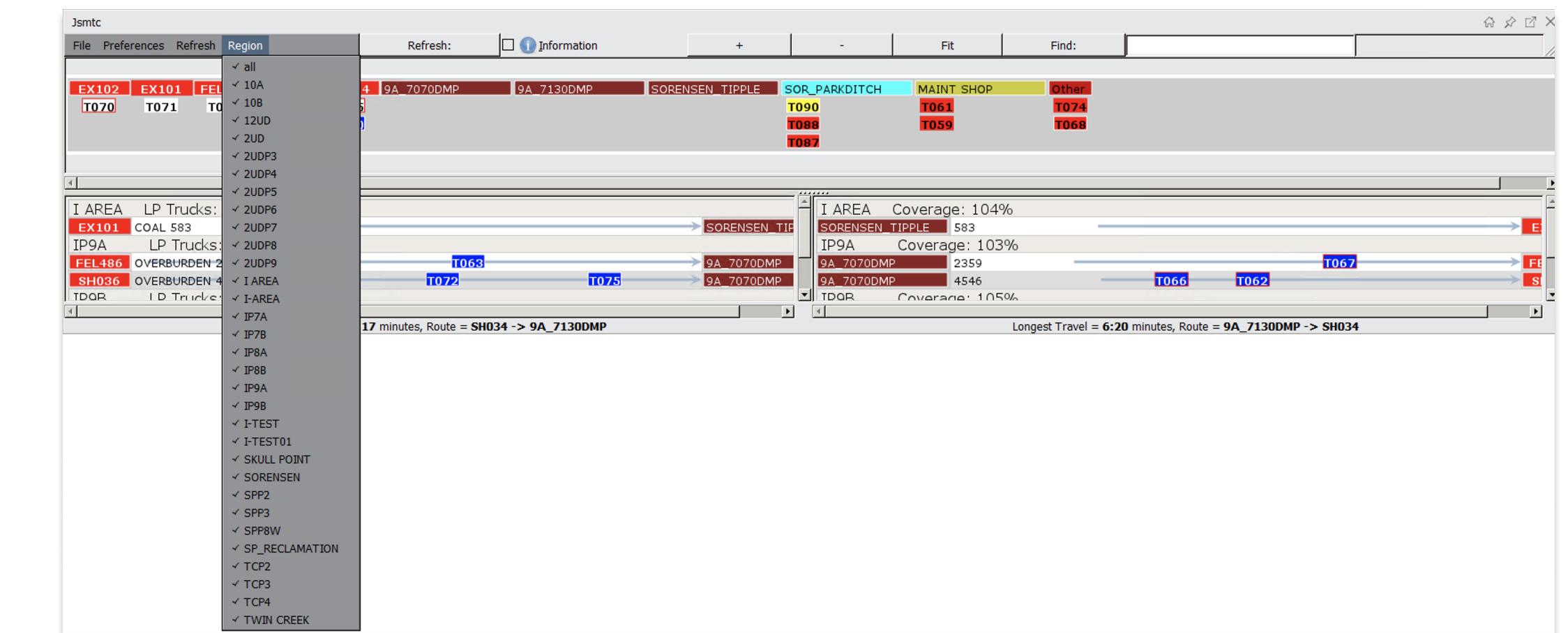
CONTAINER DEVELOPMENT

OLD MENU CONFIG

APPLICATION	MODULE	ATTRIBUTE	VALUE
jminegraph	jminegraph	use_mdi_interface	false

MTC IMPROVEMENT

REGION FILTER



MTC IMPROVEMENT

HAUL AND TRAVEL COLUMNS



MTC IMPROVEMENT

LIMITATION



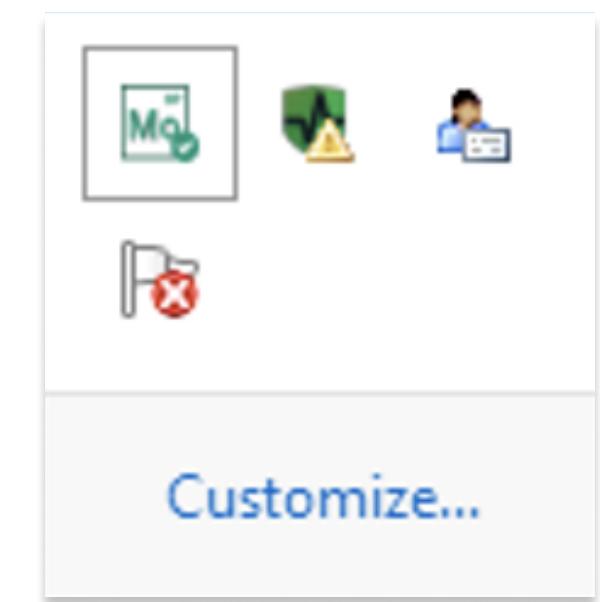
NO PATHS DISPLAYED FOR WORKING SHOVEL IF REGION IS
BLANK





JAMS CONNECTION STATUS

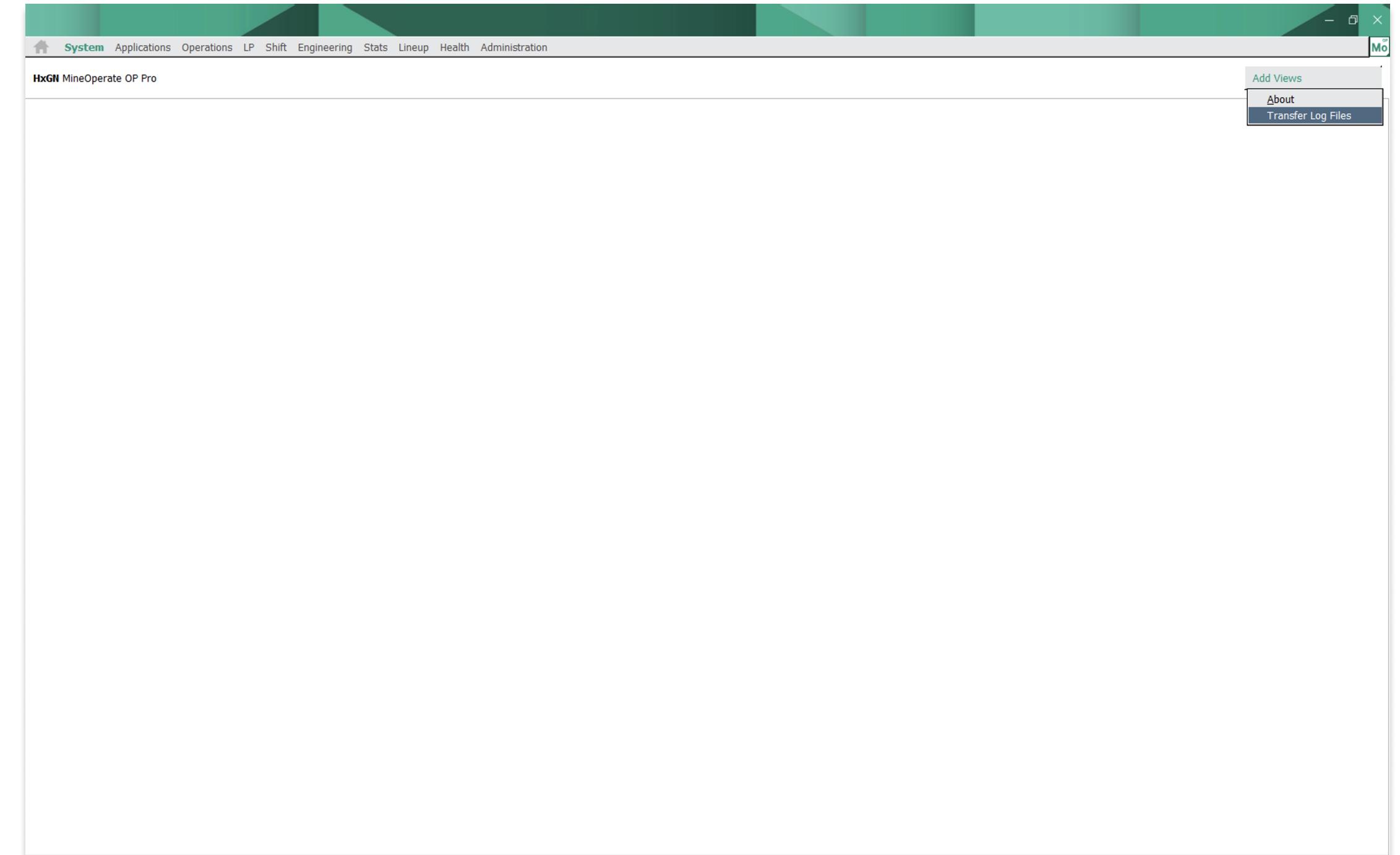
WINDOWS TRAY





OP PRO MANAGER

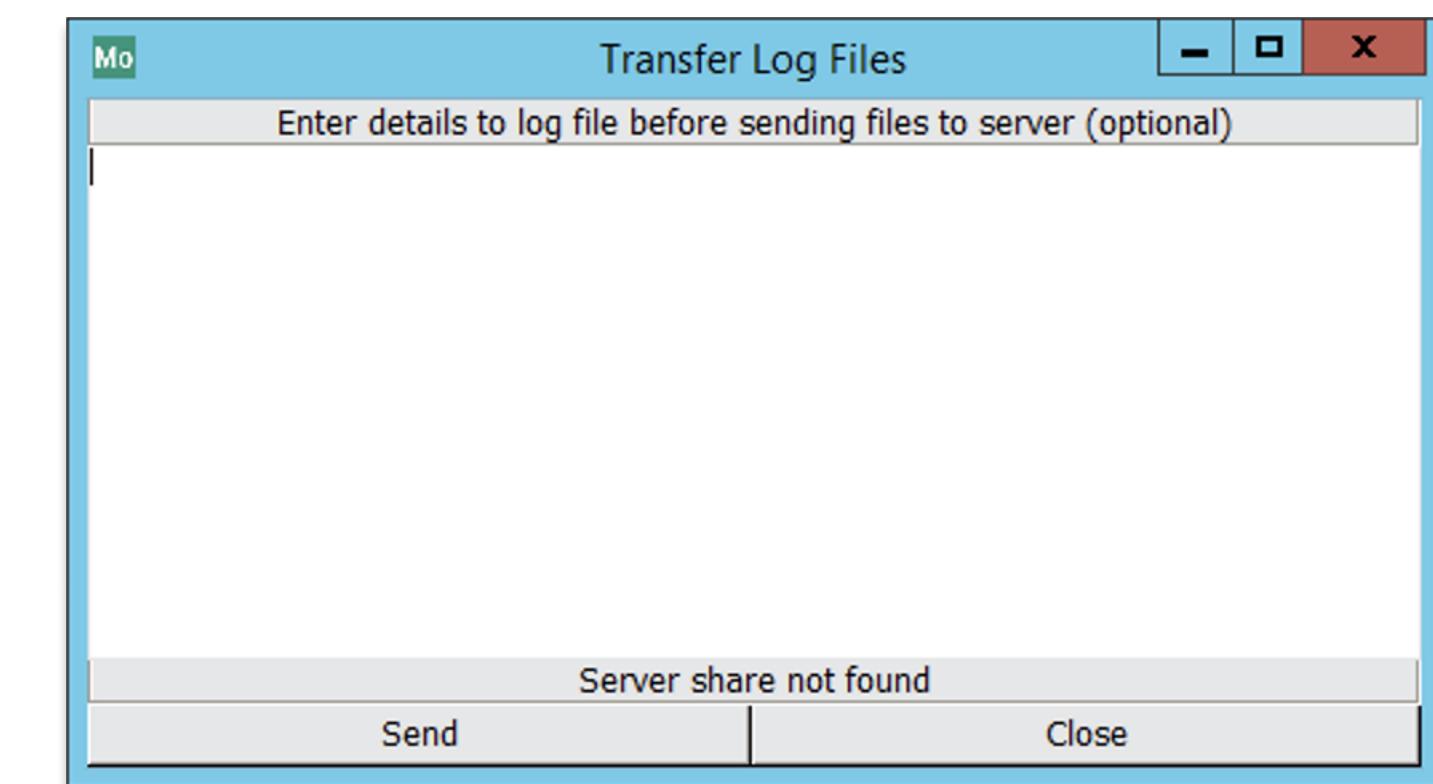
TRANSFER LOG FILES MENU
SELECTION





OP PRO MANAGER

TRANSFER LOG FILE DIALOG





OP PRO MANAGER

TRANSFER LOG FILE
NOTIFICATIONS

■	SERVER SHARE NOT FOUND
■	COPY FAILED
■	FAILED TO COPY %d FILES OF %d
■	COPYING FILE %d OF %d
■	FILE TRANSFER SUCCESSFUL



OP PRO MANAGER

TRANSFER LOG FILE
CONFIGURATIONS

■ SHARE NAME IS CONFIGURED IN SAMBA (/etc/samba/smb.conf)

APPLICATION	MODULE	ATTRIBUTE	VALUE
jminegraph	log_file_upload_controller	share_name	Jigsaw
jminegraph	log_file_upload_controller	logs_path	OPProManagerLogs



BROADCAST

NMEA

TOOL POSITION

- CREATE NMEA STRINGS FROM HPGPS POINTS

- REBROADCAST TO CONFIGURED END POINTS

- FOLLOWING FORMAT:

\$PHEXTPOS,hhmmss.ss,ddmmyy,abcdefg,xxxx.xxxx,M,yyyy.yyyy,M,zzzz.zzzz,M*hh



BROADCAST NMEA

NMEA FORMAT BREAKDOWN

HEXTPOS	HEXAGON TOOL POSITION
hhmmss.ss	UTC TIME OF POINT HOURS MINUTES SECONDS . MILLISECONDS
ddmmmyy	UTC TIME OF POINT DAY MONTH YEAR
abcdefg	NAME OF POINT - CENTER, TOOL, GPS_1, ETC.



BROADCAST NMEA

NMEA FORMAT BREAKDOWN

xxxx.xxxx	EASTING OR PITCH ANGLE (IF THIS IS A CAB_ANGLES POINT)
M	M OR DEG (METERS IF THIS IS A COORDINATE, DEG IF THIS IS A CAB ANGLE)
yyyy.yyyy	NORTHING OR ROLL ANGLE
M	M OR DEG (METERS IF THIS IS A COORDINATE, DEG IF THIS IS A CAB ANGLE)



BROADCAST NMEA

NMEA FORMAT BREAKDOWN

zzzz.zzzz	ELEVATION OR AZIMUTH ANGLE
M	M OR DEG (METERS IF THIS IS A COORDINATE, DEG IF THIS IS A CAB ANGLE)
M*hh	CHECKSUM



BROADCAST NMEA CONFIGURATION

APPLICATION	MODULE	ATTRIBUTE	VALUE
JAMS	gpsHP	rebroadcast.tool	port=<port>;antenna=3



BROADCAST

NMEA

CONFIGURATION BREAKDOWN

PORT	TCP OR UDP PORT TO SEND OR LISTEN FROM
ANTENNA	MUST BE 3 FOR TOOL POSITION. 1 OR 2 CAN BE LEFT OR RIGHT GPS ANTENNA DEPENDING ON GEOMETRY
REBROADCAST.<KEY>	KEY IS ARBITRARY NAME (E.G. GPSLEFT)



BROADCAST NMEA

JIRA LINK

[HTTPS://JIRA.HEXAGONMINING.COM/BROWSE/MOPS-19759](https://jira.hexagonmining.com/browse/MOPS-19759)

MORE DETAILS



BREAK FUNCTION IMPROVEMENTS



- tiedown_now
- tiedown_optimized
- tiedown_shiftchange

BREAKS

XML FOR NEW BREAK ENUMS



CODE BOX

```
jigsaw@OPProServer → ~ /opt/Jigsaw/Tools/xml_loader -database  
<database url> /opt/Jigsaw/xml/BreakType.xml  
/opt/Jigsaw/xml/TiedownOption.xml
```

BREAKS

RUNNING XML LOADER



- OTHER MANAGER VIEWS CAN BE CONFIGURED FOR POP UP
- POPUP CAN BE CONFIGURED WHEN MESSAGE LOGGED TO
popup_views
- "<event name 1>=<name of view to pop up 1>"

BREAKS

POPUP BREAKS VIEW AT A
CONFIGURABLE TIME BEFORE
BREAK START FOR REVIEW



MODULE	SUBJECT	ATTRIBUTE	VALUE
model	Break	break_popup_interval	300
jminegraph	popup_listeners	init	break_popup=break_view
model	Break	accept_break_seconds	300
jminegraph	exceptions	:accept_break	auto_accept=false

BREAKS

POPUP CONFIGURATIONS



- IF ACCEPTED, STARTS AT CONFIGURED TIME
- IF REJECTED, CANCEL FIELD SET TO TRUE
- IF IGNORED, WILL NOT START AT CONFIGURED TIME

BREAKS

CONFIRM BREAK BEFORE
ACTIVATING

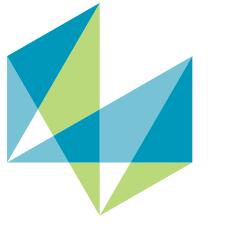


EXCEPTION ROUTING TABLE

USERNAME	SUBJECT
DISPATCHER	:accept_break

BREAKS

CONFIRM BREAK BEFORE
ACTIVATING CONFIGS



BREAKS

PHRASES			
PHRASE	TRANSLATION	LANGUAGE	SCOPE
message_accept_break	Break # {a[:Break]} starting	English	any

CONFIRM BREAK BEFORE
ACTIVATING CONFIGS (CONT)



Trucks							
Truck		Data					
Name	Activity	Reason	Assignment	ETA	Next Assignment	Current Break	Assignment Tiedown
TR510	Traveling	Ready 2000 Production	EX316	-352654:14	EX316	test_break_1 Night	RA0914
TR511	Traveling	Delay 4100 Shift change/Prestart	EX319	-708179:46	EX319	test_break_1 Night	797 CRIB HUT
TR512	Empty	Delay 4100 Shift change/Prestart	TEST_TIEDOWN	-640362:24	EX317	test_break_1 Night	TEST_TIEDOWN
TR513	Hauling	Delay 4100 Shift change/Prestart	N 175 TRIDENT DUMP	-708179:47	EX316	test_break_1 Night	RA0914
TR514	Waiting	Delay 4100 Shift change/Prestart	EX318	-708179:45	EX318	test_break_1 Night	797 CRIB HUT
TR515	Inactive	Standby 3200 Labour shortage - AL	EX314	-801967:59			
TR516	Tipping	Delay 4100 Shift change/Prestart	N 175 TRIDENT DUMP	-708179:46	EX316	test_break_1 Night	RA0914
TR517	Inactive	Down 1011 Scheduled service	WASHBAY	00:00			
TR518	Waiting	Delay 4100 Shift change/Prestart	EX314	-640362:24	EX314	test_break_1 Night	RA0706
TR519	Hauling	Delay 4100 Shift change/Prestart	N 175 TRIDENT DUMP	-708179:46	EX316	test_break_1 Night	RA0914
TR520	Traveling	Delay 4100 Shift change/Prestart	EX316	-356743:19	EX316	test_break_1 Night	
TR521	Hauling	Delay 4100 Shift change/Prestart	TEST_STOCKPILE	-356743:20	EX315	test_break_1 Night	
TR522	Tipping	Delay 4100 Shift change/Prestart	EX317	-587159:47	EX317	test_break_1 Night	
TR523	Moving Empty	Delay 4100 Shift change/Prestart	797 CRIB HUT	-708179:45	EX314	test_break_1 Night	
TR524	Moving Empty	Delay 4100 Shift change/Prestart	797 CRIB HUT	-708179:47	EX316	test_break_1 Night	
TR525	Empty	Delay 4100 Shift change/Prestart	EX314	-640362:24	EX314	test_break_1 Night	RA0706
TR526	Hauling	Delay 4100 Shift change/Prestart	N 175 TRIDENT DUMP	-708179:45	EX316	test_break_1 Night	RA0914
TR527	Traveling	Delay 4100 Shift change/Prestart	EX320	-356743:19	EX320	test_break_1 Night	
TR528	Hauling	Delay 4100 Shift change/Prestart	N 175 TRIDENT DUMP	-708179:46	EX316	test_break_1 Night	RA0914
TR529	Hauling	Delay 4100 Shift change/Prestart	TEST_STOCKPILE	-356743:18	EX320	test_break_1 Night	
TR530	Moving Empty	Delay 4100 Shift change/Prestart	797 CRIB HUT	-708179:47	EX314	test_break_1 Night	
TR531	Inactive	Down 1011 Scheduled service	797 CRIB HUT	-708179:46	EX317	test_break_1 Night	

BREAKS

MANUAL TIEDOWN ASSIGNMENTS



BREAKS

- IF LOCKED, OPTIMAL TIEDOWN WILL NOT TAKE PLACE
- ADD assignment.tiedown_lock TO TRUCK VIEW CONFIG

MANUAL TIEDOWN
ASSIGNMENTS FUNCTIONALITY



- CAN EXCLUDE LOADING UNITS AND ASSIGNED TRUCKS FROM BREAK
- CAN APPLY BREAKS TO SPECIFIC REGIONS
- IF TRUCK LOADING OUTSIDE REGION, BREAK WILL NOT APPLY
- CAN ONLY APPLY BREAKS TO A SHOVEL AND REGION AT THE SAME TIME

BREAKS

EXCLUDE LOADING UNIT
CIRCUIT FROM BREAK



- CAN BE CANCELED BEFORE OR AFTER BREAK STARTS
- CANCELED BY CHECKING BOX IN CANCEL COLUMN IN BREAK VIEW
- UNCHECKING BOX UNCANCELS BREAK
- ASSIGNED BREAKS WILL REMAIN ASSIGNED UNTIL FINISHED IF NOT CANCELED BEFORE ASSIGNMENT

BREAKS

CANCELLATION



APPLICATION	MODULE	ATTRIBUTE	VALUE
jminegraph	break_view	init	attrs=.., canceled actions=apply,add,delete
jminegraph	jminegraph	cancel_break_by_default	true
model	Break	reset_canceled_after_break_end	true

BREAKS

CANCELLATION CONFIG



BREAKS

`cancel_break_by_default`

HAVE THE CANCELED VALUE DEFAULT TO TRUE WHEN A BREAK IS CREATED IN MINEOPS

`reset_canceled_after_break_end`

MAKE JAMS RESET THE VALUE OF CANCELED TO TRUE WHEN A BREAK ENDS

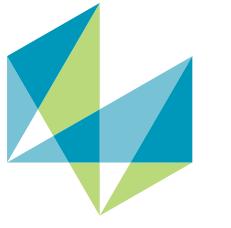
CONFIG DESCRIPTION



- USES PROJECTED ARRIVAL, QUEUE AND DEPARTURE TIMES
- CHECKS IF TRUCK CAN COMPLETE ANOTHER HAUL CYCLE BEFORE TIEDOWN BREAK ENDS
- ASSIGNS TRUCK TO TIEDOWN IF ANOTHER LOAD IS NOT FEASIBLE
- CONSIDERS `last_bucket_seconds` FROM BREAK CLASS

BREAK OPTIMIZATION

CONSIDER LOAD AND DUMP
QUEUE CAPACITIES AND WAIT
TIMES BEFORE TIEDOWN
ASSIGNMENTS



- ENSURES LOADING UNITS STOP PRODUCTION BEFORE SHIFT END
- SENDS TRUCKS TO TIEDOWN IF TRUCK WILL NOT BE ABLE TO RECIEVE LAST BUCKET BY CONFIGURED TIME
- MUST TIEDOWN EMPTY IS CONFIGURABLE ON PER BREAK BASIS
- VIEW INTERNAL RELEASE NOTES FOR CONFIGURATION AND MORE DETAILS

BREAK OPTIMIZATION

CONSIDER LOAD AND DUMP
QUEUE CAPACITIES AND WAIT
TIMES BEFORE TIEDOWN
ASSIGNMENTS



- HANDLE MULTIPLE BREAKS WITH OVERLAPPING START AND END TIMES

- ASSIGN BREAKS TO SHOVELS TO APPLY BREAKS TO ASSIGNED TRUCKS

- SET BREAK LIMIT TO LIMIT MULTIPLE BREAKS OF SAME TYPE

- DISPATCHERS CAN OVERRIDE BREAK LIMIT TO BE ELIGIBLE IF LIMIT HAS BEEN REACHED

BREAKS

ALLOW BREAKS TO OVERLAP



BREAKS

- CAN ONLY HAVE ONE BREAK AT A TIME
- IF TRUCK QUALIFIES FOR MULTIPLE BREAKS, FIRST BREAK TO START IS CONSIDERED
- FOR CONFIGURATIONS AND MORE DETAILS REFERENCE THE RELEASE NOTES

ALLOW BREAKS TO OVERLAP



- ASSIGNED TRUCKS FROM ATTRIBUTE ADDED
- DISPLAYS CURRENT SHOVEL OR REGION TRUCKS WILL BE SELECTED FROM FOR BREAK
- FIELD CAN BE ADDED TO BREAK VIEW TO SELECT SHOVEL OR REGION
- ELIMINATES NEED TO SHOW BOTH SHOVEL AND REGION FIELD IN BREAK VIEW

BREAKS

ASSIGNED TRUCKS FROM FIELD LOGIC



BREAKS

APPLICATION	MODULE	ATTRIBUTE	VALUE
jminegraph	break_view	init	attrs=...,assign_trucks_from:nil,locations,excluded_trucks,excluded_shovels,canceled,must_tiedown_empty,last_bucket_seconds;actions=apply,add,delete

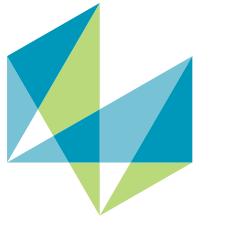
ASSIGNED TRUCKS FROM FIELD LOGIC CONFIGURATION



- MINIMIZE TRUCK IDLE TIME BEFORE BREAK ENDS
- MINIMIZE TRAVEL TIME TO NEXT LOCATION AFTER END OF BREAK
- USERS NO LONGER NEED TO SET TRUCK TIEDOWN MANUALLY OR THROUGH LINEUP TOOL BEFORE START OF TIEDOWN BREAK
- OPTIMIZER WILL DETERMINE WHICH TRUCKS ARE ELIGIBLE

BREAKS

ADD NEW LOGIC FOR
SELECTING TIEDOWN
LOCATIONS



- BASED ON CONFIGURATION OF BREAK
- IF OPTIMIZER IS NOT ABLE TO FIND TIEDOWN MESSAGE IS SENT TO DISPATCH
- OPTIMIZER WILL TRY TO ASSIGN TRUCK TO QUALIFYING LOCATION CONTAINING < minimum truck count
- ELSE TRUCK WILL BE ASSIGNED TO CLOSEST TIEDOWN

BREAKS

ADD NEW LOGIC FOR
SELECTING TIEDOWN
LOCATIONS (CONT)



BREAKS

- IF must_tiedown_empty IS TRUE, WILL ONLY RECEIVE TIEDOWN ASSIGNMENT WHEN EMPTY
- FOR MORE INFORMATION AND CONFIGS REFERENCE THE RELEASE NOTES

ADD NEW LOGIC FOR
SELECTING TIEDOWN
LOCATIONS (CONT)



BREAKS

- CAN CONFIGURE mustTiedownEmpty FOR EACH BREAK TYPE

MUST TIEDOWN EMPTY
CONFIGURATION CAN BE
CONFIGURED BY BREAK TYPE



APPLICATION	MODULE	ATTRIBUTE	VALUE
model	Break	tiedown_now_must_tiedown_empty	true
model	Break	tiedown_optimized_must_tiedown_empty	true
model	Break	tiedown_shift_change_must_tiedown_empty	true

BREAKS

MUST TIEDOWN EMPTY
CONFIGURATION



- BREAK ALERT LOG WILL SEND BREAK START AND END TO DISPATCHER

FILE CONTENTS

config.jams

```
...
[logger
port=1110;enable=action,exception,optimizer,restriction;enable_exception
=break_alert]
...
```

BREAKS

SEND MESSAGE TO
DISPATCHER WHEN BREAK
STARTS AND ENDS



- CONFIGURABLE TIME
- ALLOW DISPATCH TO MAKE CHANGES IF NECESSARY
- DOWN TRUCKS OR CURRENT TRUCKS ON BREAK WILL NOT BE CONSIDERED
- OPTIMIZER CONTINUOUSLY CHECKS IF TRUCK IS ELIGIBLE

BREAKS

POPULATE CURRENT BREAK FIELD BEFORE BREAK STARTS



BREAKS

APPLICATION	MODULE	ATTRIBUTE	VALUE
model	Break	populate_current_break_seconds	300

POPULATE CURRENT BREAK
FIELD BEFORE BREAK STARTS
CONFIGURATION



BREAKS

- CANCELED FIELD WILL BE **TRUE** WHEN BREAK ENDS
- ACCEPTED FIELD WILL BE **FALSE** WHEN BREAK ENDS

CANCELED AND ACCEPTED
FIELDS SHOULD BE RESET ONCE
BREAK ENDS



ENHANCEMENT

OPTIMIZER IMPROVEMENTS

- REASSIGNMENTS
- IMPROVED PROJECTED IDLE TIME
- LOGGING
- ASSIGNMENT REASSIGNMENT VIEW



ENHANCEMENT

OPTIMIZER IMPROVEMENTS (CONT)

- PROJECTED SHIFT TOTAL
- SHOVEL PRIORITY LOGGING
- IMPROVED RESTRICTIONS
- EXTRA FILTERING



REASSIGNMENTS

- HANDLES REASSIGNMENT CALCULATIONS RESULTING IN NO AVAILABLE ASSIGNMENTS
- WILL KEEP PREVIOUS ASSIGNMENT
- OR PLACE EQUIPMENT IN STANDBY



IMPROVED

PROJECTED IDLE TIME

- IMPROVED PROJECTED IDLE TIME FOR TRUCK IN OTHER SHOVEL QUEUE
- CALCULATED BASED ON TRUCK'S PROJECTED POSITION IN QUEUE IF REASSIGNED



LOGGING

- ADDED LOG MESSAGES FOR SHOVELS
- ADDED LOG MESSAGES FOR DUMPS



- LIST OF TRUCKS ASSIGNED TO THE SHOVEL THAT ARRIVE BEFORE THE TRUCK
- LIST OF TRUCKS ASSIGNED TO THE SHOVEL THAT ARRIVE AFTER THE TRUCK
- THE GRADE AND MATERIAL THAT THE SHOVEL IS CURRENTLY DIGGING
- THE ROUTE THAT THE TRUCK WOULD TAKE TO THE SHOVEL FROM THE TRUCK'S CURRENT LOCATION

LOGGING

SHOVELS



LOGGING

- THE SHOVEL'S CURRENT DIG RATE, TARGET DIG RATE, CURRENT FEED RATE, AND THE PATH RATE
- THE LIST OF REASONS THE TRUCK IS BEING REASSIGNED

SHOVELS (CONT)



- THE LIST OF POSSIBLE DUMP REASSIGNMENTS
- THE DUMP THAT IS BEING CONSIDERED FOR REASSIGNMENT
- THE TRAVEL TIME TO THE DUMP
- DIFFERENCE IN TRAVEL TIME COMPARED TO THE ORIGINAL DUMP ASSIGNMENT

LOGGING

DUMPS



- A LIST OF TRUCKS ASSIGNED TO THE DUMP THAT ARRIVE BEFORE THE TRUCK
- LIST OF TRUCKS ASSIGNED TO THE DUMP THAT ARRIVE AFTER THE TRUCK
- THE MATERIAL AND GRADE THAT THE TRUCK IS CURRENTLY HAULING
- THE ROUTE THE TRUCK WOULD TAKE FROM IT'S CURRENT LOCATION TO THE DUMP

LOGGING

DUMPS (CONT)



■ THE DUMP'S CURRENT FEED RATE

■ PATH RATE FROM THE TRUCK'S SHOVEL TO THE DUMP

■ THE DUMP'S CURRENT CAPACITY LIMIT

■ THE CURRENT DESIRED FEED RATE FOR THE DUMP

LOGGING

DUMPS (CONT)



LOGGING

- THE LIST OF REASONS THE TRUCK IS BEING REASSIGNED

DUMPS (CONT)



ASSIGNMENT AND REASSIGNMENT VIEW

- PROVIDE DISPATCHER BETTER UNDERSTANDING OF ASSIGNMENTS MADE BY OPTIMIZER
- PROVIDES DETAILS FOR SHOVEL AND DUMP ASSIGNMENTS
- PROVIDES DETAILS FOR REASSIGNMENTS



■	QUEUES
■	PRIORITIES
■	LOCKS
■	RESTRICTIONS

ASSIGNMENT AND REASSIGNMENTS

DETAILS COVERED



CALCULATED FOR THE SHOVELTONSHOUR AND
DUMPTONSHOUR

■
FORMULA
projected_tons

Current Tonnage for Loading Unit or Dump + (Current Feedrate *
Remaining Shift Hours)

PROJECTED SHIFT TOTAL

CALCULATION



■	TONSSHovel_HOUR_VIEW
■	TONSDump_HOUR_VIEW
■	TONSSTOCKPILE_HOUR_VIEW
■	SHOWS PROJECTED TONNAGE FOR EACH SHOVEL/DUMP FOR THE SHIFT

PROJECTED SHIFT TOTAL

VIEWS



SHOVEL PRIORITY LOGGING

- SHOWS EFFECT CHANGING SHOVEL PRIORITY
- SHOWS EFFECT OF CHANGING SHOVEL PERCENT COVERAGE



FORMULA
priority_factor

(priority_factor = priority*(percent_coverage/100.0))

SHOVEL PRIORITY LOGGING

CALCULATIONS



FORMULA
haulage_deficit

priority_factor * required_haulage - actual_haulage - capacity *
(delay/3600.0)

SHOVEL PRIORITY LOGGING

CALCULATIONS



- LPPATHS CREATED FOR DUMPS WITH ZERO CAPACITY AND TARGET FEED RATE

- CHECK ROUTE RESTRICTIONS FOR SPECIFIC LOADING EQUIPMENT AND ANY ROAD SEGMENTS

- ALLOW DISPATCHERS TO "SPLIT" TRAFFIC FOR DIFFERENT CIRCUITS ALONG DIFFERENT PATHS

- CAN BE SINGLE DIRECTION OR TWO WAY RESTRICTION

LP AND BEST PATH

IMPROVED RESTRICTIONS



- CHECK BEST PATH FOR SPECIFIED EQUIPMENT
- SHOWS CORRECT PATH TAKING INTO ACCOUNT IMPROVED RESTRICTIONS
- BEST PATH ON EQUIPMENT WILL TAKE INTO ACCOUNT IMPROVED RESTRICTIONS

LP AND BEST PATH

IMPROVED RESTRICTIONS



EXTRA FILTERING

- VIEW LP PATHS BASED ON TRUCK TYPES OR SINGLE TRUCK



- PATHS LEADING FROM DIG UNITS TO DUMPS OR VICE VERSA
- LIMIT THE PATHS TO A SELECTION OF DIG UNITS OR DUMPS
- VIEW PATHS FOR ONE OR MORE TRUCK TYPES AT THE SAME TIME
- VIEW PATHS FOR A SINGLE TRUCK

EXTRA FILTERING

LP PATH DIALOG OPTIONS



SHIFT DUMP

ADDED FREE TEXT COMMENT
FIELD

- FREE TEXT COMMENT FIELD CAN BE ADDED ON SHIFT_DUMP
- FREE TEXT COMMENT FIELD CAN BE ADDED ON SHIFT_STATE



SHIFT DUMP

CONFIGURATION

APPLICATION	MODULE	ATTRIBUTE	VALUE
jminegraph	shift_dump_view	init	attrs=...,shift_dump_extents.com ment,..
jminegraph	shift_state_view	init	attrs=...,shift_state_extents.com ment,..