COPING WITH OVERLOAD
BY THE TIME YOU ARE IN OVERLOAD IT IS TOO LATE
AVOIDING OVERLOAD IS THE ONLY STRATEGY
GLOC  ‘G’ force loss of consciousness
OLOC OVERLOAD loss of conscious/cognition
OLOC Off with the fairies
TWO FLAVOURS OF OLOC

RAPID OVERLOAD AND SHUTDOWN

GRADUAL OVERLOAD AND SHUTDOWN
Who thinks that they have suffered OLOC?
Mental Exercise

Starting with the number 3031, mentally deduct 13 until I tell you to stop.
That is the rapid onset.
Let’s try again

Starting with the number 1111 mentally subtract 13 until I tell you to stop.
That is gradual onset.
Which one is the most likely?
WHY DOES THIS HAPPEN?
Rapid onset can cause ‘FIGHT OR FLIGHT’ AND SHUTDOWN.

This is a primitive brain response.
Gradual onset can cause decay in performance and possible shutdown.
EITHER WAY YOU WILL SUFFER OLOC.
The brain does not give you any feedback about its state. You are your brain! At least most people are!
There is a fine line between ‘managing’ and the Primitive Brain taking over.
HUMAN INFORMATION PROCESSING
Sensory input is combined with information stored in the MEMORY in order to develop MEANING.
The brain must sift information stream for Relevant Cues (SIGNALS) versus Irrelevant Cues (NOISE)
HUMAN INFORMATION PROCESSING SEQUENCE

1. Inputs
2. Receptors
3. Filter
4. Perceptions
5. Working Memory (7 ± 2)
6. Filter
7. Decision Process
8. Long Term Memory (knowledge experience)
9. Single Channel Processor
10. Feedback
11. CENTRAL EFFECTOR MECHANISM
12. Response

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BANDWIDTH is the rate of information transmission over a channel.
Bandwidth of the EYE is 1000 bits/second
Bandwidth of the EAR is 10000 bits/second
Bandwidth of the BRAIN is lower than the Sensory System
Most sensory information is filtered out to better match the BANDWIDTH of the BRAIN which functions as a LIMITED SINGLE CHANNEL SYSTEM
Highly PROBABLE events convey little information and just confirm what we anticipate.
Highly IMPROBABLE events convey substantial information because they are not anticipated.
Information load has functional effects on HUMAN PERFORMANCE
Information load dramatically affects the speed of a response
Information load dramatically affects the accuracy of a response.
Information load can an WILL freeze processing (OLOC)
There is a fine line between managing a state and the primitive brain taking over.
Most of the 30,000 pilots surveyed report that their decision making is as good in emergencies as under normal conditions, that they can leave behind personal problems, and that they perform effectively when fatigued. Such inaccurate self perceptions can lead to overconfidence in difficult situations. Helmreich on error.
CA: ah--
FO: yeah let’s put the brakes on--
COPING WITH OVERLOAD
You cannot cope with overload!
(That’s all she wrote)
You stay away from OLOC
You must recognise the early warning signs
Confusion
Loss of Situational Awareness
Missing radio calls
Unfinished sentences
Silences when there should not be.
Mood change
No one home (off with the fairies)(again)
Forgetting (not sure what)
etc...
PREDISPOSITION FOR OLOC
Chronic Stress (personal)
Tired
Fatigued
Duty Time
Weather
MEL’s
Diversion/Missed approach
Corporate Pressure
Experience (Expert/Novice)
CRM skills (PNM’s)
New on type
Sick Pax
Severe Turbulence
Married
COGNITIVE OVERLOAD

Level of Capabilities

Safety Margin

Workload

Time

Task 1

Task 2

Task 3

Task 4
COGNITIVE OVERLOAD

FLIGHT PHASES - TIME

NOMINAL TASK LOADING
Pre-Flt - Taxi - T/O - Clb - Crz - Des - App - GA - Roll-out - Taxi - Post Flight

INCREASED TASK LOADING
(Weather, Malfunctions, etc.)

ACUTE STRESS

INCIDENT/CRASH POTENTIAL

CHRONIC STRESS

DEGRADATION OF CAPACITY

TASK REQUIREMENTS
List and discuss threats ahead
THINK worse case scenario
PLAN COPING STRATEGY.
Consider carefully your predispositions and forecast/predict possible overload and if you will be able to cope ensuring spare capacity.
SET LIMITS
Only one missed approach before diverting or holding
Divert fuel
Passenger comfort
Hold before approach to rebuild capacity
Create a trigger to recognise your overload
ACCURATELY REHEARSE IN DETAIL TO CREATE A SOLID MENTAL MODEL
What if something else happens!
Advise your intentions
Cabin
Company
ATC
Pax
Continue to update your situation and DO NOT ACCEPT ANY FURTHER RISK.
Abnormal and Emergency events singularly do not cause overload because they are trained for and therefore ANTICIPATED. The crew have a mental model and a mind map.
Multiple Emergency events or ‘Novel’ events can cause overload because they are NOT ANTICIPATED and there is excessive information and NO mental model.
IF ALL ELSE FAILS
The ‘NO NAME CHECKLIST’
This is when there is no check list for the state you are in.
Stop and recover your capacity. Verbalise your current mental state. Do we have control? Do we need to land immediately or ASAP? Dispense with all unnecessary check lists. Plan for worse case.
The industry is in love with TEM (Threat and Error Management)
CRM is not talked about
Most companies have dropped LOFT (simulator exercises)
‘PILOT ERROR’ is making a comeback
Some regulators have dropped the ball or never held it.
Mild overload will cause ERROR
Medium overload will cause MISTAKES
High overload will cause DISFUNCTION...Every time.
All incidents and crashes involve error and mostly due to overload.
We need more awareness training of our human performance limits. Limits need to be demonstrated and observed (like stalling). We must be taught to assess the demand and decide if our capacity is sufficient. LOFT sessions can demonstrate our HIP limits and develop mental models and mind maps (expertise).
Questions or discussion.