1. **Allocation Strategy: (Hunting Strategy):**

**Given:**

* 3 cell re-use and total no. of channels are 15. By using this cells and channels following is the allocation strategy to get the more no. of accepted calls. Total no. of channels is 15, so to split equally, total 3 groups are created. For each group, 3 cells are present as there are total 9 cells are given and cluster size is 3 so total no. of cells in each group is 3. As there are total 15 channels are given, it’s very easy to assign channels to the group to get the maximum number of acceptance.
* I tried all the combination to assign the channels and finally it shows that cells 1, 6 and 9 has very less load and by allocating channels in the above way gives the maximum number of acceptance. In the same way I allocate the other channels to diff. combinations. For the low input, I got the 100 % acceptance for call (Total no. of incoming calls = 66, Total accepted calls = 66 and total rejected calls = 0)
* Again, I tried the diff. combination to get the max. call acceptance for the high input. By using the other strategy rate of call rejection was too high so I changed the strategy and assign the all channels in the above way so I got the best acceptance rate, still some call gets rejected. (Total no. of incoming calls = 65, Total accepted calls = 55 and total rejected calls = 10)
* Here I created following groups in which 3 cells are together in each group and for each group, 5 channels are allocated.
* Cells 1, 6 and 9 are in one group called group 1:

Channel 1,2,3,4,5 are allocated to cell 1, channel 2,3,4,5,1 are allocated to cell 6 and channel 3,4,5,1,2 are allocated to cell 9.

* Cells 2,5 and 8 are in one group called group 2:

Channel 6,7,8,9,10 are allocated to cell 2, channel 7,8,9,10,6 are allocated to cell 5 and channel 8,9,10,6,7 are allocated to cell 8.

* Cells 3, 4 and 7 are in one group called group 3:

Channel 11,12,13,14,15 are allocated to cell 3, channel 12,13,14,15,11 are allocated to cell 4 and channel 13,14,15,11,12 are allocated to cell 7.

1. **GOS and average SIR:**

**For High Input:**

* In this, out of 65 incoming calls, 55 calls are accepted and 10 calls are rejected.
* As compare to the low load, here call duration is more also because of this 10 rejected calls high GOS came out which is 15.3846 %.
* Also because of the above reason average SIR is slightly change (31.9954 dB) compare to average SIR of low input load (33.9922 dB).

**For Low Input:**

* All 65 calls are accepted and no call is rejected. Therefore, the GOS is 0 %. This result came out because of the low load.
* There is very less chance to use the same channels at the same time. Hence the interference between the co channels is very low.
* All 15 channels are handled this low load. The average SIR is calculated as 33.9922 dB. With the low load, call acceptance rate is high and the duration of the call is very less, this result is reasonable.

1. **Behavior of the system:**

* I got the same result which I expected. Depending upon the load, diff. result came out.
* For low input all incoming channels are accepted and GOS = 0%. This happens because call duration is less so all channels are not used at the same time.
* Now in second scenario, for high input, duration of the call is more, so we got some no. of rejection. Total accepted calls are 55 and rejected calls are 10 out of 55, so noise will be high and GOS goes up.
* If we compare both scenario probability of call rejection is more in high input because of the high load and call duration is more.

1. **Improvement of the system:**

* We can improve the system to get the lower GOS and higher average SIR. Here we used the fixed channel allocation system; we can use some diff allocation strategy to allocate the channel to cells. Like random channel selection.
* If we make more distance between the cells which used co-channels, thus the co-channel interference will be less.
* We already design the cluster size and assign the no. of cells in each cluster. If we split these cells into the small cells. So for each small cell, more channel will be available for each cluster, thus more call will be accepted. So GOS will be less and average SIR will be more or both.