International Journal of Scientific and Innovative Mathematical Research (IJSIMR)
Volume 1, Issue 2, October - 2013, PP 121-133
ISSN 2347-307X (Print) & ISSN 2347-3142 (Online)
www.arcjournals.org

A Computational Study of a Large Network with Arithmetic Progression on Pessimistic Time Estimate

Venkata Lakshmi Narasimhacharyulu Kanduri[1]
[1]Faculty of Mathematics, Department of Mathematics,
Bapatla Engineering College,
Bapatla-522101,India.
kvlna@yahoo.com

Maddi.N.Murali Krishna[2]
[2]III M.C.A, Department of M.C.A,
Bapatla Engineering College,
Bapatla-522101, India.
naveen.krishna1991@gmail.com

K.Praveen kumar[3]
[3]Department of IT,
School of Computing,
Vignan University,Guntur,india.
praveen.kazipeta.kumar@gmail.com

Received: 3-08-2013 **Revised: 07-09-2013** **Accepted: 08-09-2013**

Abstract: *The paper aspires to conclude whether Arithmetic Progression (A.P) in a particular case will substantiate a network or not. A huge network is considered in a specific way with 124 activities which are formed with 94 nodes. A.P is implemented on pessimistic time estimate (m) among the three time estimates namely optimistic, most likely and pessimistic. An algorithmic study has been performed on the network. Elite noteworthy results are launched. All float values are also ciphered. Critical path is delineated and project analysis has been followed up. Periodical analysis is attained with standard normal distribution curves.*

Keywords: *Network, Time estimates, Float, Critical path, Normal distribution.*

AMS Classification: *90-08, 90B10, 90C90*

1. INTRODUCTION

Total float values play a vital role in networks. It is very useful to identify the critical path in an effective manner. There are only three possibilities for total float values i.e. positive, negative and zero. Total float value comes positive only when the resources are extra. In such case one has the liberty to reallocate the required resources .Total float values become negative in the case of the resources which are not adequate and also activity may not be finite. In such case extra resources are to be included. Total float values will be zero when resources are sufficient to complete the activity. The critical path can also be classified as 'the delay took place in its start time will cause a further delay in the culmination of entire project'.

Acharyulu,K.V.L.N et.al. [1-5] discussed on Networks with various progressions. S.D Sharma [6] specified many useful applications of PERT&CPM in 1999. PERT algorithm was employed on various models by Billy E.Gillett [7] in 1979.Levin and Kirkpatrick [9] disclosed about planning and control with PERT and CPM in 1966.Wiest and Levy [8] explained the concept of PERT/CPM elaborately for beginners of operations research in 1969.

In the present work, it is aimed to clarify whether Arithmetic Progression (A.P) in a particular case will substantiate a network or not. A huge network is considered in a specific way with 124

activities which are formed with 94 nodes. A.P is applied on pessimistic time estimate (m) among the three time estimates. A scientific study has been employed on the network. Some noteworthy results are obtained. All float values are also determined. Critical path is illustrated and project analysis has been carried out. Periodical analysis is put through with standard normal distribution curves.

2. BASIC CONSTRUCTION OF NETWORK

A network is constituted with 94 nodes and 124 activities in a scientific way for analyzing the influence of Arithmetic Progression. A.P is used on pessimistic time estimate (m) in case (II) among the three estimates.

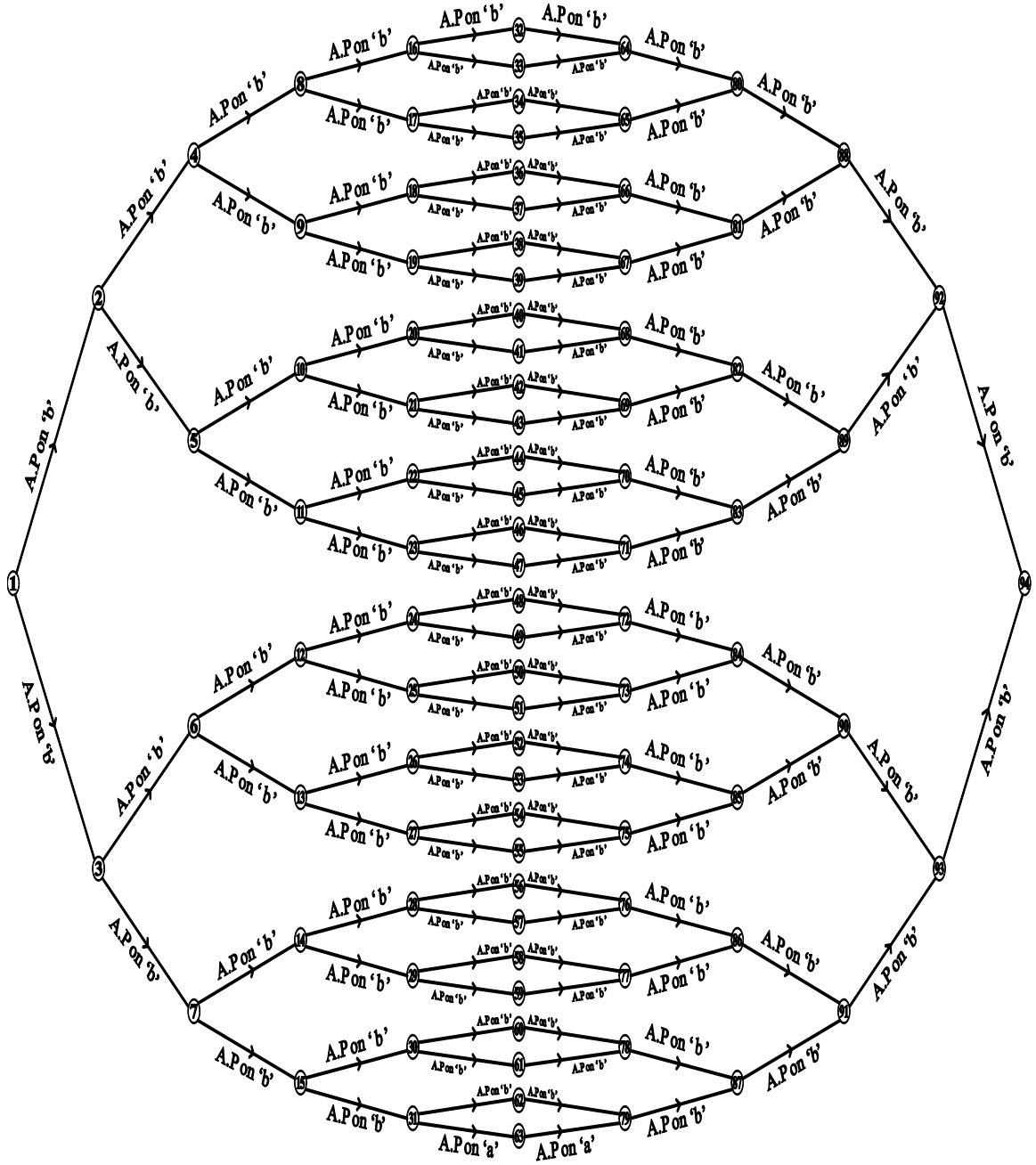

Fig.1: Network diagram with 124 activities and 94 nodes

3. PRELIMINARIES AND NOTATIONS

- **TE**= Earliest excepted completion time of event (TE)
- **Def**: For the fixed value of j=TE(j)=Max[TE(i)+ET(i,j)] which ranges over all activities from i-j.
- **TL**= Latest allowable event completion time (TL)
- **Def**: For the fixed value of i=TL(i)=Min[TL(j)+ET(i,j)] which ranges over all activities from i-j.
- **ET**= Excepted completion time of activity (I,J)
- **a** = Optimistic time estimate
- **m** = Most likely time estimate
- **b** = Pessimistic time estimate
- **ES** = Earliest start of an activity
- **EF** = Earliest finish of an activity
- **LS** = Latest start of an activity
- **LF** = Latest finish of an activity
- **TF** = Total Float
- **Def:** TF of activity i-j = LF_{i-j}-EF_{i-j} (or) LS_{i-j}-ES_{i-j}
- **FF** = Free Float
- **Def:** FF of activity i-j = TF - (TL-TE) of node j
- **IF** = Independent Float
- **Def:** IF of activity i-j = FF - (TL-TE) of node i
- **SE=**Slack event time
- **CPI**=Critical Path Indicator
- **SCT**= Scheduled Time
- **σ** = Standard deviation of project length

4. MATERIAL AND METHODS

Step 1: Draw the project network completion time

Step 2: Compute the excepted duration of each activity by using the formula $ET = \frac{a+4m+b}{6}$

From the time estimates a,m and p, calculate the excepted variance. σ^2 of each activity

Step 3: Calculate TE, TL

Step 4: Find Total Float, Free Float and Independent Float

Step 5: Find the critical path and identify the critical activities

Step 6: Compute project length which is a square root to sum of variance of all the critical activities.

Step 7: we can estimate the probability of completing project within specified time from the standard normal variable $Z = \frac{SCT - ETC}{\sigma}$,Where SCT is scheduled Completion time of event, ETC is expected completion time of the Project, σ =standard deviation of project length and also by using the standard normal curve.

5. RESULTS

With the help of CPM and PERT algorithm on the Network, the critical path is incurred from Table-1 which is illustrated with all activities, Time estimates, ET, Varience.ES, EF, LS, LF and all Float values. The Critical path indicator renders the critical activities in Table-1.

Table-1

Activity	Time Estimates			ET	σ^2	Earliest[E]		Latest[L]		TF	FF	IF	CPI
	a	m	b			ES	EF	LS	LF				
1-2	1	2	1.5	1.75	0.0069	0	1.75	124	125.75	124	0	0	
1-3	3	4	3.5	3.75	0.0069	0	3.75	0	3.75	0	0	0	*

2-4	5	6	5.5	5.75	0.0069	1.75	7.5	185.75	191.5	184	0	-124	
2-5	7	8	7.5	7.75	0.0069	1.75	9.5	125.75	133.5	124	0	-124	
3-6	9	10	9.5	9.75	0.0069	3.75	13.5	63.75	73.5	60	0	0	
3-7	11	12	11.5	11.75	0.0069	3.75	15.5	3.75	15.5	0	0	0	*
4-8	13	14	13.5	13.75	0.0069	7.5	21.25	219.5	233.25	212	0	-184	
4-9	15	16	15.5	15.75	0.0069	7.5	23.25	191.5	207.25	184	0	-184	
5-10	17	18	17.5	17.75	0.0069	9.5	27.25	161.5	179.25	152	0	-124	
5-11	19	20	19.5	19.75	0.0069	9.5	29.25	133.5	153.25	124	0	-124	
6-12	21	22	21.5	21.75	0.0069	13.5	35.25	101.5	123.25	88	0	-60	
6-13	23	24	23.5	23.75	0.0069	13.5	37.25	73.5	97.25	60	0	-60	
7-14	25	26	25.5	25.75	0.0069	15.5	41.25	43.5	69.25	28	0	0	
7-15	27	28	27.5	27.75	0.0069	15.5	43.25	15.5	43.25	0	0	0	*
8-16	29	30	29.5	29.75	0.0069	21.25	51	245.25	275	224	0	-212	
8-17	31	32	31.5	31.75	0.0069	21.25	53	233.25	265	212	0	-212	
9-18	33	34	33.5	33.75	0.0069	23.25	57	219.25	253	196	0	-184	
9-19	35	36	35.5	35.75	0.0069	23.25	59	207.25	243	184	0	-184	
10-20	37	38	37.5	37.75	0.0069	27.25	65	191.25	229	164	0	-152	
10-21	39	40	39.5	39.75	0.0069	27.25	67	179.25	219	152	0	-152	
11-22	41	42	41.5	41.75	0.0069	29.25	71	165.25	207	136	0	-124	
11-23	43	44	43.5	43.75	0.0069	29.25	73	153.25	197	124	0	-124	
12-24	45	46	45.5	45.75	0.0069	35.25	81	135.25	181	100	0	-88	
12-25	47	48	47.5	47.75	0.0069	35.25	83	123.25	171	88	0	-88	
13-26	49	50	49.5	49.75	0.0069	37.25	87	109.25	159	72	0	-60	

13-27	51	52	51.5	51.75	0.0069	37.25	89	97.25	149	60	0	-60	
14-28	53	54	53.5	53.75	0.0069	41.25	95	81.25	135	40	0	-28	
14-29	55	56	55.5	55.75	0.0069	41.25	97	69.25	125	28	0	-28	
15-30	57	58	57.5	57.75	0.0069	43.25	101	55.25	113	12	0	0	
15-31	59	60	59.5	59.75	0.0069	43.25	103	43.25	103	0	0	0	*
16-32	61	62	61.5	61.75	0.0069	51	112.75	279	340.75	228	0	-224	
16-33	63	64	63.5	63.75	0.0069	51	114.75	275	338.75	224	0	-224	
14-34	65	66	65.5	65.75	0.0069	53	118.75	269	334.75	216	0	-212	
17-35	67	68	67.5	67.75	0.0069	53	120.75	265	332.75	212	0	-212	
18-36	69	70	69.5	69.75	0.0069	57	126.75	257	326.75	200	0	-196	
18-37	71	72	71.5	71.75	0.0069	57	128.75	253	324.75	196	0	-196	
19-38	73	74	73.5	73.75	0.0069	59	132.75	247	320.75	188	0	-184	
19-39	75	76	75.5	75.75	0.0069	59	134.75	243	318.75	184	0	-184	
20-40	77	78	77.5	77.75	0.0069	65	142.75	233	310.75	168	0	-164	
20-41	79	80	79.5	79.75	0.0069	65	144.75	229	308.75	164	0	-164	
21-42	81	82	81.5	81.75	0.0069	67	148.75	223	304.75	156	0	-152	
21-43	83	84	83.5	83.75	0.0069	67	150.75	219	302.75	152	0	-152	
22-44	85	86	85.5	85.75	0.0069	71	156.75	211	296.75	140	0	-136	
22-45	87	88	87.5	87.75	0.0069	71	158.75	207	294.75	136	0	-136	
23-46	89	90	89.5	89.75	0.0069	73	162.75	201	290.75	128	0	-124	
23-47	91	92	91.5	91.75	0.0069	73	164.75	197	288.75	124	0	-124	
24-48	93	94	93.5	93.75	0.0069	81	174.75	185	278.75	104	0	-100	
24-49	95	96	95.5	95.75	0.0069	81	176.75	181	276.75	100	0	-100	

25-50	**97**	**98**	**97.5**	**97.75**	**0.0069**	**83**	**180.75**	**175**	**272.75**	**92**	**0**	**-88**	
25-51	**99**	**100**	**99.5**	**99.75**	**0.0069**	**83**	**182.75**	**171**	**270.75**	**88**	**0**	**-88**	
26-52	**101**	**102**	**101.5**	**101.75**	**0.0069**	**87**	**188.75**	**163**	**264.75**	**76**	**0**	**-72**	
26-53	**103**	**104**	**103.5**	**103.75**	**0.0069**	**87**	**190.75**	**159**	**262.75**	**72**	**0**	**-72**	
27-54	**105**	**106**	**105.5**	**105.75**	**0.0069**	**89**	**194.75**	**153**	**258.75**	**64**	**0**	**-60**	
27-55	**107**	**108**	**107.5**	**107.75**	**0.0069**	**89**	**196.75**	**149**	**256.75**	**60**	**0**	**-60**	
28-56	**109**	**110**	**109.5**	**109.75**	**0.0069**	**95**	**204.75**	**139**	**248.75**	**44**	**0**	**-40**	
28-57	**111**	**112**	**111.5**	**111.75**	**0.0069**	**95**	**206.75**	**135**	**246.75**	**40**	**0**	**-40**	
29-58	**113**	**114**	**113.5**	**113.75**	**0.0069**	**97**	**210.75**	**129**	**242.75**	**32**	**0**	**-28**	
29-59	**115**	**116**	**115.5**	**115.75**	**0.0069**	**97**	**212.75**	**125**	**240.75**	**28**	**0**	**-28**	
30-60	**117**	**118**	**117.5**	**117.75**	**0.0069**	**101**	**218.75**	**117**	**234.75**	**16**	**0**	**-12**	
30-61	**119**	**120**	**119.5**	**119.75**	**0.0069**	**101**	**220.75**	**113**	**232.75**	**12**	**0**	**-12**	
31-62	**121**	**122**	**121.5**	**121.75**	**0.0069**	**103**	**224.75**	**107**	**228.75**	**4**	**0**	**0**	
31-63	**123**	**124**	**123.5**	**123.75**	**0.0069**	**103**	**226.75**	**103**	**226.75**	**0**	**0**	**0**	*
32-64	**125**	**126**	**125.5**	**125.75**	**0.0069**	**112.75**	**238.5**	**340.75**	**466.5**	**228**	**4**	**-224**	
33-64	**127**	**128**	**127.5**	**127.75**	**0.0069**	**114.75**	**242.5**	**338.75**	**466.5**	**224**	**0**	**-224**	
34-65	**129**	**130**	**129.5**	**129.75**	**0.0069**	**118.75**	**248.5**	**334.75**	**464.5**	**216**	**4**	**-212**	
35-65	**131**	**132**	**131.5**	**131.75**	**0.0069**	**120.75**	**252.5**	**332.75**	**464.5**	**212**	**0**	**-212**	
36-66	**133**	**134**	**133.5**	**133.75**	**0.0069**	**126.75**	**260.5**	**326.75**	**460.5**	**200**	**4**	**-196**	
37-66	**135**	**136**	**135.5**	**135.75**	**0.0069**	**128.75**	**264.5**	**324.75**	**460.5**	**196**	**0**	**-196**	
38-67	**137**	**138**	**137.5**	**137.75**	**0.0069**	**132.75**	**270.5**	**320.75**	**458.5**	**188**	**4**	**-184**	
39-67	**139**	**140**	**139.5**	**139.75**	**0.0069**	**134.75**	**274.5**	**318.75**	**458.5**	**184**	**0**	**-184**	
40-68	**141**	**142**	**141.5**	**141.75**	**0.0069**	**142.75**	**284.5**	**310.75**	**452.5**	**168**	**4**	**-164**	

41-68	**143**	**144**	**143.5**	**143.75**	**0.0069**	**144.75**	**288.5**	**308.75**	**452.5**	**164**	**0**	**-164**	
42-69	**145**	**146**	**145.5**	**145.75**	**0.0069**	**148.75**	**294.5**	**304.75**	**450.5**	**156**	**4**	**-152**	
43-69	**147**	**148**	**147.5**	**147.75**	**0.0069**	**150.75**	**298.5**	**302.75**	**450.5**	**152**	**0**	**-152**	
44-70	**149**	**150**	**149.5**	**149.75**	**0.0069**	**156.75**	**306.5**	**296.75**	**446.5**	**140**	**4**	**-136**	
45-70	**151**	**152**	**151.5**	**151.75**	**0.0069**	**158.75**	**310.5**	**294.75**	**446.5**	**136**	**0**	**-136**	
46-71	**153**	**154**	**153.5**	**153.75**	**0.0069**	**162.75**	**316.5**	**290.75**	**444.5**	**128**	**4**	**-124**	
47-71	**155**	**156**	**155.5**	**155.75**	**0.0069**	**164.75**	**320.5**	**288.75**	**444.5**	**124**	**0**	**-124**	
48-72	**157**	**158**	**157.5**	**157.75**	**0.0069**	**174.75**	**332.5**	**278.75**	**436.5**	**104**	**4**	**-100**	
49-72	**159**	**160**	**159.5**	**159.75**	**0.0069**	**176.75**	**336.5**	**276.75**	**436.5**	**100**	**0**	**-100**	
50-73	**161**	**162**	**161.5**	**161.75**	**0.0069**	**180.75**	**342.5**	**272.75**	**434.5**	**92**	**4**	**-88**	
51-73	**163**	**164**	**163.5**	**163.75**	**0.0069**	**182.75**	**346.5**	**270.75**	**434.5**	**88**	**0**	**-88**	
52-74	**165**	**166**	**165.5**	**165.75**	**0.0069**	**188.75**	**354.5**	**264.75**	**430.5**	**76**	**4**	**-72**	
53-74	**167**	**168**	**167.5**	**167.75**	**0.0069**	**190.75**	**358.5**	**262.75**	**430.5**	**72**	**0**	**-72**	
54-75	**169**	**170**	**169.5**	**169.75**	**0.0069**	**194.75**	**364.5**	**258.75**	**428.5**	**64**	**4**	**-60**	
5575	**171**	**172**	**171.5**	**171.75**	**0.0069**	**196.75**	**368.5**	**256.75**	**428.5**	**60**	**0**	**-60**	
56-76	**173**	**174**	**173.5**	**173.75**	**0.0069**	**204.75**	**378.5**	**248.75**	**422.5**	**44**	**4**	**-40**	
57-76	**175**	**176**	**175.5**	**175.75**	**0.0069**	**206.75**	**382.5**	**246.75**	**422.5**	**40**	**0**	**-40**	
58-77	**177**	**178**	**177.5**	**177.75**	**0.0069**	**210.75**	**388.5**	**242.75**	**420.5**	**32**	**4**	**-28**	
59-77	**179**	**180**	**179.5**	**179.75**	**0.0069**	**212.75**	**392.5**	**240.75**	**420.5**	**28**	**0**	**-28**	
60-78	**181**	**182**	**181.5**	**181.75**	**0.0069**	**218.75**	**400.5**	**234.75**	**416.5**	**16**	**4**	**-12**	
61-78	**183**	**184**	**183.5**	**183.75**	**0.0069**	**220.75**	**404.5**	**232.75**	**416.5**	**12**	**0**	**-12**	
62-79	**185**	**186**	**185.5**	**185.75**	**0.0069**	**224.75**	**410.5**	**228.75**	**414.5**	**4**	**4**	**0**	
63-79	**187**	**188**	**187.5**	**187.75**	**0.0069**	**226.75**	**414.5**	**226.75**	**414.5**	**0**	**0**	**0**	*

64-80	**189**	**190**	**189.5**	**189.75**	**0.0069**	**242.5**	**432.25**	**466.5**	**656.25**	**224**	**12**	**-212**	
65-80	**191**	**192**	**191.5**	**191.75**	**0.0069**	**252.5**	**444.25**	**464.5**	**656.25**	**212**	**0**	**-212**	
66-81	**193**	**194**	**193.5**	**193.75**	**0.0069**	**264.5**	**458.25**	**460.5**	**654.25**	**196**	**12**	**-184**	
67-81	**195**	**196**	**195.5**	**195.75**	**0.0069**	**274.5**	**470.25**	**458.5**	**654.25**	**184**	**0**	**-184**	
68-82	**197**	**198**	**197.5**	**197.75**	**0.0069**	**288.5**	**486.25**	**452.5**	**650.25**	**164**	**12**	**-152**	
69-82	**199**	**200**	**199.5**	**199.75**	**0.0069**	**298.5**	**498.25**	**450.5**	**650.25**	**152**	**0**	**-152**	
70-83	**201**	**202**	**201.5**	**201.75**	**0.0069**	**310.5**	**512.25**	**446.5**	**648.25**	**136**	**12**	**-124**	
71-83	**203**	**204**	**203.5**	**203.75**	**0.0069**	**320.5**	**524.25**	**444.5**	**648.25**	**124**	**0**	**-124**	
72-84	**205**	**206**	**205.5**	**205.75**	**0.0069**	**336.5**	**542.25**	**436.5**	**642.25**	**100**	**12**	**-88**	
73-84	**207**	**208**	**207.5**	**207.75**	**0.0069**	**346.5**	**554.25**	**434.5**	**642.25**	**88**	**0**	**-88**	
74-85	**209**	**210**	**209.5**	**209.75**	**0.0069**	**358.5**	**568.25**	**430.5**	**640.25**	**72**	**12**	**-60**	
75-85	**211**	**212**	**211.5**	**211.75**	**0.0069**	**368.5**	**580.25**	**428.5**	**640.25**	**60**	**0**	**-60**	
76-86	**213**	**214**	**213.5**	**213.75**	**0.0069**	**382.5**	**596.25**	**422.5**	**636.25**	**40**	**12**	**-28**	
77-86	**215**	**216**	**215.5**	**215.75**	**0.0069**	**392.5**	**608.25**	**420.5**	**636.25**	**28**	**0**	**-28**	
78-87	**217**	**218**	**217.5**	**217.75**	**0.0069**	**404.5**	**622.25**	**416.5**	**634.25**	**12**	**12**	**0**	
79-87	**219**	**220**	**219.5**	**219.75**	**0.0069**	**414.5**	**634.25**	**414.5**	**634.25**	**0**	**0**	**0**	*
80-88	**221**	**222**	**221.5**	**221.75**	**0.0069**	**444.25**	**666**	**656.25**	**878**	**212**	**28**	**-184**	
81-88	**223**	**224**	**223.5**	**223.75**	**0.0069**	**470.25**	**694**	**654.25**	**878**	**184**	**0**	**-184**	
82-89	**225**	**226**	**225.5**	**225.75**	**0.0069**	**498.25**	**724**	**650.25**	**876**	**152**	**28**	**-124**	
83-89	**227**	**228**	**227.5**	**227.75**	**0.0069**	**524.25**	**752**	**648.25**	**876**	**124**	**0**	**-124**	
84-90	**229**	**230**	**229.5**	**229.75**	**0.0069**	**554.25**	**784**	**642.25**	**872**	**88**	**28**	**-60**	
85-90	**231**	**232**	**231.5**	**231.75**	**0.0069**	**580.25**	**812**	**640.25**	**872**	**60**	**0**	**-60**	
86-91	**233**	**234**	**233.5**	**233.75**	**0.0069**	**608.25**	**842**	**636.25**	**870**	**28**	**28**	**0**	

87-91	235	236	235.5	235.75	0.0069	634.25	870	634.25	870	0	0	0	*
88-92	237	238	237.5	237.75	0.0069	694	931.75	878	1115.75	184	60	-124	
89-92	239	240	239.5	239.75	0.0069	752	991.75	876	1115.75	124	0	-124	
90-93	241	242	241.5	241.75	0.0069	812	1053.8	872	1113.75	60	60	0	
91-93	243	244	243.5	243.75	0.0069	870	1113.8	870	1113.75	0	0	0	*
92-94	245	246	245.5	245.75	0.0069	991.75	1237.5	1115.75	1361.5	124	124	0	
93-94	247	248	247.5	247.75	0.0069	1113.75	1361.5	1113.75	1361.5	0	0	0	*

Critical path is obtained as below

$$1 \xrightarrow{3.75} 3 \xrightarrow{11.75} 7 \xrightarrow{27.75} 15 \xrightarrow{59.75} 31 \xrightarrow{123.75} 63 \xrightarrow{187.75} 79 \xrightarrow{219.75} 87 \xrightarrow{235.75} 91 \xrightarrow{243.75} 93 \xrightarrow{247.75} 94$$

Project Length is defined as $\sqrt{\text{Sum of Variances of each Critical activity}}$

i.e Project Length $= \sqrt{0.0069+0.0069+0.0069+0.0069+0.0069+0.0069+0.0069+0.0069+0.0069+0.0069}$
=0.2626

The values of TE, TL and SE corresponding to every node are tabulated in table (2).

Table-2

Nodes	TE	TL	SE	Nodes	TE	TL	SE
1	0	0	0	48	174.75	278.75	104
2	1.75	125.75	124	49	176.75	276.75	100
3	3.75	3.75	0	50	180.75	272.75	92
4	7.5	191.5	184	51	182.75	270.75	88
5	9.5	133.5	124	52	188.75	264.75	76
6	13.5	73.5	60	53	190.75	262.75	72
7	15.5	15.5	0	54	194.75	258.75	64
8	21.25	233.25	212	55	196.75	256.75	60
9	23.25	207.25	184	56	204.75	248.75	44
10	27.25	179.25	152	57	206.75	246.75	40
11	29.25	153.25	124	58	210.75	242.75	32
12	35.25	123.25	88	59	212.75	240.75	28
13	37.25	97.25	60	60	218.75	234.75	16
14	41.25	69.25	28	61	220.75	232.75	12

15	**43.25**	**43.25**	**0**	**62**	**224.75**	**228.75**	**4**
16	**51**	**275**	**224**	**63**	**226.75**	**226.75**	**0**
17	**53**	**265**	**212**	**64**	**242.5**	**466.5**	**224**
18	**57**	**253**	**196**	**65**	**252.5**	**464.5**	**212**
19	**59**	**243**	**184**	**66**	**264.5**	**460.5**	**196**
20	**65**	**229**	**164**	**67**	**274.5**	**458.5**	**184**
21	**67**	**219**	**152**	**68**	**288.5**	**452.5**	**164**
22	**71**	**207**	**136**	**69**	**298.5**	**450.5**	**152**
23	**73**	**197**	**124**	**70**	**310.5**	**446.5**	**136**
24	**81**	**181**	**100**	**71**	**320.5**	**444.5**	**124**
25	**83**	**171**	**88**	**72**	**336.5**	**436.5**	**100**
26	**87**	**159**	**72**	**73**	**346.5**	**434.5**	**88**
27	**89**	**149**	**60**	**74**	**358.5**	**430.5**	**72**
28	**95**	**135**	**40**	**75**	**368.5**	**428.5**	**60**
29	**97**	**125**	**28**	**76**	**382.5**	**422.5**	**40**
30	**101**	**113**	**12**	**77**	**392.5**	**420.5**	**28**
31	**103**	**103**	**0**	**78**	**404.5**	**416.5**	**12**
32	**112.75**	**340.75**	**228**	**79**	**414.5**	**414.5**	**0**
33	**114.75**	**338.75**	**224**	**80**	**444.25**	**656.25**	**212**
34	**118.75**	**334.75**	**216**	**81**	**470.25**	**654.25**	**184**
35	**120.75**	**332.75**	**212**	**82**	**498.25**	**650.25**	**152**
36	**126.75**	**326.75**	**200**	**83**	**524.25**	**648.25**	**124**
37	**128.75**	**324.75**	**196**	**84**	**554.25**	**642.25**	**88**
38	**132.75**	**320.75**	**188**	**85**	**580.25**	**640.25**	**60**
39	**134.75**	**318.75**	**184**	**86**	**608.25**	**636.25**	**28**
40	**142.75**	**310.75**	**168**	**87**	**634.25**	**634.25**	**0**
41	**144.75**	**308.75**	**164**	**88**	**694**	**878**	**184**
42	**148.75**	**304.75**	**156**	**89**	**752**	**876**	**124**
43	**150.75**	**302.75**	**152**	**90**	**812**	**872**	**60**
44	**156.75**	**296.75**	**140**	**91**	**870**	**870**	**0**
45	**158.75**	**294.75**	**136**	**92**	**991.75**	**1115.75**	**124**
46	**162.75**	**290.75**	**128**	**93**	**1113.75**	**1113.75**	**0**

47	164.75	288.75	124	94	1361.5	1361.5	0

6. PERIODICAL ANANLYSIS

Periodical analysis is carried out with some particular schedule times. The standard normal variables with the probability from zero to one are made out. The percentage of probabilities of completion of the Project are computed and given in the following Table-3.

Table-3

ST	TE	Z	probability	Probability (%)
1360	1361.5	-5.7121	0	0
1361	1361.5	-1.9040	0.0287	2.87
1362	1361.5	1.9040	0.9713	97.13
1363	1361.5	5.7121	1	1

The Standard Normal Curves are depicted from Fig.2-Fig.4

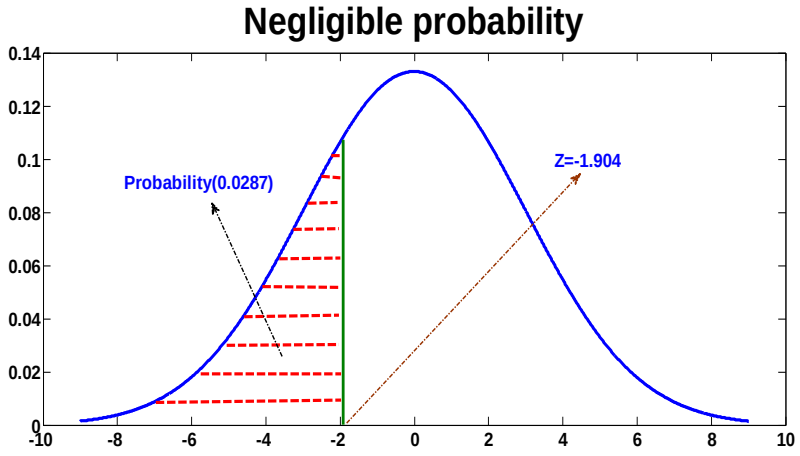

Fig.2

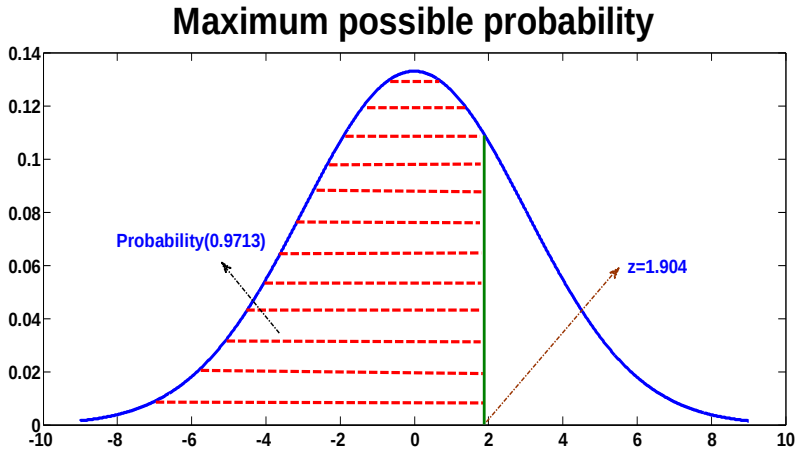

Fig.3

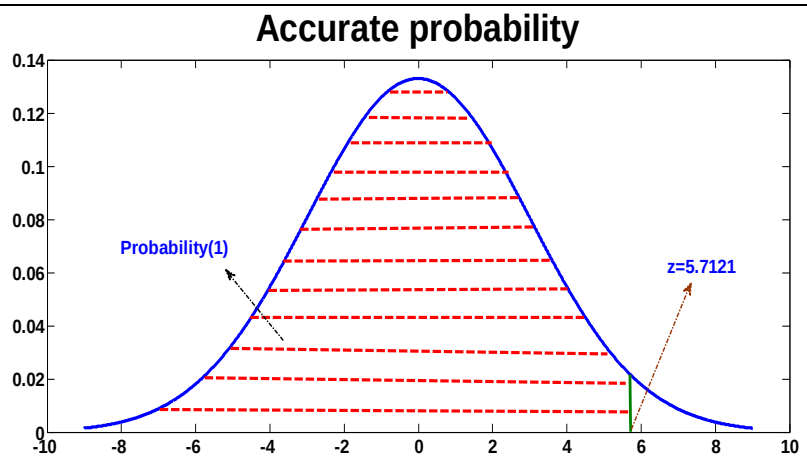

Fig.4

7. CONCLUSIONS

From the computational study, the following conclusions are obtained.

(i).The influence of A.P on network with SCT and ETC is accomplished as below

(a).A.P endorses incisively only when SCT is greater than ETC.

(b).A.P does not endorse when SCT is less than or equal to ETC.

(c). Standard Normal Distribution curves supply the percentage of possibilities of the Project.

(ii).Constant Variances can be traced in any activity of the Network.

(iii).In Critical Path

(a).All Total Float values of Critical activities are vanished.

(b).The value of Slack event of each node in critical path is zero.

(c). TE and TL are equal at each node in critical path.

(iv).In the data of Net work, A.P is looked at optimistic time estimate, the expected completion time of successive activity is magnified step by step.

(v). A.P endorses the Network with the condition even though the network has huge size.

REFERENCES

[1] K.V.L.N.Acharyulu and Nagu Vadlana,(2013). Influence of G.P on Networks - A Scientific study on Case (I), International Journal of Computer Networking, Wireless and Mobile Communications, Vol. 3, Issue 2, pp. 83-92.

[2] K.V.L.N.Acharyulu and Maddi.N.Murali Krishna,(2013). Impact of A.P on Networks - A Computational study on Case (I), International Journal of Computer Networking, Wireless and Mobile Communications, Vol. 3, Issue 2, pp. 93-102.

[3] K.V.L.N.Acharyulu and Maddi.N.Murali Krishna,(2013). Some Remarkable Results in Row and Column both Dominance Game with Brown's Algorithm, International Journal of Mathematics and Computer Applications Research,Vol. 3, No.1, pp.139-150.

[4] K. V. L. N. Acharyulu, Maddi. N. Murali Krishna, Sateesh Bandikalla & Nagu Vadlana,(2013). A Significant Approach On A Special Case Of Game Theory, International Journal of Computer Science Engineering and Information Technology Research, Vol. 3, Issue 2, pp. 55-78.

[5] K.V.L.N.Acharyulu and Maddi.N.Murali Krishna, (2013). A Scientific Computation On A Peculiar Case of Game Theory in Operations Research, International Journal of Computer Science Engineering and Information Technology Research,Vol. 3 , No.1, pp.175-190.

[6] S.D.Sharma,(1999). Operations Research,PP.4.300-4.355, Kedar Nath Ram Nath & Co.

[7] Billy E. Gillett,(1979).Introduction to operations Research, Tata McGraw-Hill Publishing Company limited, PP.434-453,New York.

[8] Wiest, J.D., and F-Levy,(1969).A management Guide to PERT/CPM, Patrick-mall, Inc. Engle Wood Cliffs, N.J.

[9] Levin, R., and C.A. Krik Patrick,(1966).Planning and control with PERT/CPM, McGraw-Hill Book company, New York.

AUTHORS BIOGRAPHY

Venkata Lakshmi Narasimhacharyulu Kanduri:

K.V.L.N.Acharyulu is working as Associate Professor in the Department of Mathematics, Bapatla Engineering College, Bapatla which is a prestigious institution of Andhra Pradesh. He took his M.Phil. Degree in Mathematics from the University of Madras and stood in first Rank,R.K.M. Vivekananda College,Chennai. Nearly for the last twelve years he is rendering his services to the students and he is applauded by one and all for his best way of teaching. He has participated in some seminars and presented his papers on various topics. More than 70 articles were published in various International high impact factor Journals. He obtained his Ph.D from ANU under the able guidance of Prof. N.Ch.Pattabhi Ramacharyulu,NIT,Warangal. He is a Member of Various Professional Bodies and created three world records in research field. He received so many awards and rewards for his research excellency in the field of Mathematics.

Maddi.N.Murali Krishna: He is a III MCA student studying in Bapatla Engineering College.He completed his graduation(BCA) in Bapatla college of Arts & Science with first class.He has a zeal to invent new findings in computer applications with the aid of Matehematics.He published more than 5 articles in high impact factor journals under the guidance of Dr.K.V.L.N.Acharyulu. He presented his ideas on various computer applications.He has participated in Microsoft Code Marathon (Windows 8 Appfest 2012) - A Guinness World Record event held on 21st and 22nd September at Bangalore and developed an innovative application on Periodic Table.

K. Praveen Kumar received B.Tech(Information Technology) Degree from JNTU in 2004 and M.Tech (Computer Science& Engineering) Degree from VMU in 2007 .He is presently working as Assistant professor in the Department of IT,Vignan university(VU),Guntur,india. His interest of research area is computer Networks.

.